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MASTER

Recalling ISX Shot Data Files from the Off-Line Archive

J. S. Stanton

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RECALLING ISX SHOT DATA FILES FROM THE OFF-LINE ARCHIVE

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ABSTRACT

This document describes a set of computer programs designed to allow access to ISX shot data files stored on off-line disk packs. The programs accept user requests for data files and build a queue of end requests. When an operator is available to mount the necessary disk packs, the system copies the requested files to an on-line disk area. The programs run on the Fusion Energy Division's DECsystem-10 computer. The request queue is implemented under the System 1022 (TM) data base management system. The support programs are coded in MACRO-10 and FORTRAN-10.

1. USER'S GUIDE

1.1 INTRODUCTION

ISX shot data files are archived on a series of mountable disk packs. Since only a limited number of packs may be on-line at any one time, a data file that is required may not be available. In order to reduce the inconvenience caused by the off-line data files, a system to copy files from the archive packs to an on-line area has been developed. The system is called the ISX recall system (RECALL).

The RECALL system accepts as input lists of shot numbers to be copied into the on-line area. The lists are placed in a queue of recall requests. The queue may be scanned to determine the status of one or all requests. When an operator is available to mount the off-line disk packs, a batch job is created which issues MOUNT commands for the necessary packs and copies the requested files.

1.2 THE QUEUE RECALL REQUEST PROGRAM

The queue recall request program (QRCL) places shot numbers in the recall queue. The recall queue is actually a System 1022 data base (System 1022 is a general purpose data base management system). QRCL makes one entry in the queue for each shot file requested. The queue may then be interrogated using the interactive features of System 1022.

QRCL requires as input a list of the shot numbers to be recalled. The list may be entered from a terminal or it may be in a file. In either case, the shot numbers are entered one to a line with an optional file letter preceding the number. The file letter is used to differentiate between the many data sets generated during each shot.

One should recall only those data sets actually needed. If the list is in a file, it should be recorded in ASCII with a carriage-return, line-feed sequence following each shot number. The output of the TECO editor is just such a file. A FORTRAN analysis program could also create such a file in response to shots missing from a sequence it was attempting to process.

Each batch of shots to be recalled must be assigned a one- to ten-character identifier. This identifier may be used to query the status of the request. A suggested standard is to begin each request id with the initials of the requestor. A number of commands have been developed to make it easy to check the status of all of one user's requests if this convention is followed.

QRCL asks a number of questions that require a Yes or No answer. A response of (return) to such a question defaults to the first possible answer listed in the question. As an example an entry of (return) in response to the question:

"WOULD YOU LIKE TO SEE THE HELP FILE? (N/Y):"

defaults to "NO".

The execution of QRCL is controlled by the user's responses to the following questions.

"WOULD YOU LIKE TO SEE THE HELP FILE? (N/Y):"

A response of "Y" instructs QRCL to list a brief set of instructions on the user's terminal. Any other entry instructs QRCL to skip the instructions.

"DO YOU WANT TO SEE ARCHIVE INFORMATION MESSAGES? (Y/N):"

Entering "Y" or (return) causes QRCL to list information concerning the archive location of each shot in the recall request. An entry of "N" suppresses this listing.

"ENTER AN ID FOR THIS GROUP OF SHOTS:"

The user must enter at least one character and no more than ten to identify this recall request. The value entered may be used to check the status of the request.

"ARE SHOT NUMBERS IN A FILE? (Y/N):"

A response of "Y" or (return) directs QRCL to ask for the name of the file that contains the shot numbers. The form of that question is:

"Enter new file specs. End with an \$(ALT)"

respond with the name of the file.

A response of "N" to the "in a file" question causes QRCL to prompt for a list of shot numbers from the terminal. The form of that prompt is:

"ENTER THE FILE LETTER AND SHOT # "

respond with the shot numbers needed, one to a line. End with a blank line, i.e., two carriage returns.

"ANY MORE SHOTS? (N/Y):"

After a list of shot numbers has been processed, QRCL asks this question. If more shot numbers are to be entered in the queue, respond with "Y"; otherwise enter "N" or (return).

1.3 EXAMPLE OF AN EXECUTION OF THE QUEUE RECALL REQUESTS PROGRAM

.RUN QRCL[230,2301]

WOULD YOU LIKE TO SEE THE HELP FILE? (N/Y):Y

QRCL IS THE PROGRAM USED TO QUEUE REQUESTS FOR RECALL OF ARCHIVED ISX DATA FILES. THE REQUESTS ARE ACCUMULATED UNTIL AN OPERATOR IS AVAILABLE TO MOUNT THE NEEDED ARCHIVE DISK PACKS.

QRCL EXPECTS A LIST OF SHOT NUMBERS OPTIONALLY PRECEDED BY A FILE LETTER. THE LIST MAY BE ENTERED FROM THE USER'S TERMINAL OR A FILE.

THE FIRST QUESTION ASKED BY QRCL AFTER THE HELP PROMPT CONCERNS THE PRINTING OF THE ARCHIVE LOCATION OF EACH OF THE REQUESTED SHOTS. THIS INCLUDES THE DISK PACK AND SUBFILE DIRECTORY (SFD) THE SHOT IS ARCHIVED UNDER.

THE NEXT PROMPT REQUESTS THAT THE USER ENTER A NAME FOR THIS GROUP OF SHOTS. THIS NAME IS USED TO CHECK THE STATUS OF A RECALL REQUEST. THE RECOMMENDED FORMAT CONSISTS OF THE USER'S INITIALS FOLLOWED BY 1 TO 7 LETTERS OF UNIQUE IDENTIFICATION.

THE NEXT QUESTION ASKS IF THE SHOT LIST IS IN A FILE OR IF IT WILL BE ENTERED FROM THE USER'S TERMINAL.

IF THE FILE OPTION IS SELECTED, QRCL WILL ASK FOR THE NAME OF THE FILE. THE FILE SHOULD BE IN ASCII WITH ONE SHOT PER LINE LEFT JUSTIFIED. IF A FILE LETTER IS SPECIFIED, IT MUST BE THE FIRST CHARACTER ON THE LINE.

FOR THE TERMINAL OPTION THE PROGRAM WILL PROMPT THE USER TO ENTER FILE LETTERS AND SHOT NUMBERS. THE FILE LETTER IS OPTIONAL. TO EXIT FROM THE INPUT SEQUENCE, ENTER A BLANK LINE OR A (CNTRL)Z.

FINALLY QRCL ASKS IF THE USER WANTS TO ENTER ANY MORE SHOTS. A RESPONSE OF YES CAUSES THE PROGRAM TO RETURN TO THE "ARE SHOT NUMBERS IN A FILE PROMPT".

DO YOU WANT TO SEE ARCHIVE MESSAGES (Y/N):Y

ENTER AN ID FOR THIS GROUP OF SHOTS:TST11D

ARE SHOT NUMBERS IN A FILE?(Y/N):Y

Unit=2 DSK:RECALL.DAT/ACCESS=SEQIN/MODE=ASCII

Enter new file specs. End with an \$(ALT)

*TEST.DAT\$

FL	SHOT	SFD	PACK	FLAGS	LSFD	HSFD
B	9456	0447	003	0	0366	0477
	17310	1034	005	0	1001	1125
C	17798	1054	005	0	1001	1125
L	17798	1054	005	0	1001	1125
	123	0003	001	0	0001	0200
A	10234	0477	003	0	0366	0477
G	4345	0207	002	0	0201	0365
A	9456	0447	003	0	0366	0477
SHOT:81567 HAS NOT BEEN ARCHIVED.						
S	678	0025	001	0	0001	0200
S	123	0003	001	0	0001	0200
	10234	0477	003	0	0366	0477
P	4345	0207	002	0	0201	0365
A	9456	0447	003	0	0366	0477
SHOT:81567 HAS NOT BEEN ARCHIVED.						
P	678	0025	001	0	0001	0200

16:INPUT 14:QUEUED 2:NOT FOUND
ANY MORE SHOTS? (N/Y):Y

ARE SHOT NUMBERS IN A FILE?(Y/N):N

ENTER FILE LETTER AND SHOT #N2345

FL	SHOT	SFD	PACK	FLAGS	LSFD	HSFD
N	2345	0111	001	0	0001	0200

ENTER FILE LETTER AND SHOT #12345

FL	SHOT	SFD	PACK	FLAGS	LSFD	HSFD
	12345	0601	004	0	0500	1000

ENTER FILE LETTER AND SHOT #XYZ

ERROR ON INPUT OF SHOT NUMBER. XYZ TRY AGAIN.

ENTER FILE LETTER AND SHOT #9999

FL	SHOT	SFD	PACK	FLAGS	LSFD	HSFD
	9999	0470	003	0	0366	0477

ENTER FILE LETTER AND SHOT #

20:INPUT 17:QUEUED 3:NOT FOUND
ANY MORE SHOTS? (N/Y):N

STOP

END OF EXECUTION

CPU TIME: 1.52 ELAPSED TIME: 16.60

EXIT

1.4 LISTING OF THE FILE TEST.DAT USED IN THE QRCL EXAMPLE

B9456
17310
C17798
L17798
123
A10234
G4345

A9456
81567
S678
S123
10234
P4345
A9456
K81567
P678

1.5 BATCH EXECUTION FOR THE QUEUE RECALL REQUESTS PROGRAM

A command file has been created which allows a user to run the QRCL program in a batch mode. To use this feature, make a file of shots to be recalled and then enter:

.DO BATQUE[230,2301] request-id,file-spec

EXAMPLE

.DO BATQUE[230,2301] TST44,TEST.DAT

.DEL BQ.CTL
Files deleted:
BQ.CTL
01 Blocks freed
.MAKE BQ.CTL
*I.RUN QRCL
N
Y
TST44

Y
 TEST.DAT\$
 \$EIX\$
 .SUBMIT BQ.CTL

Sample log file produced by BATOC

10:47:09 BAJOB BATCON version 13(1071) running BQ sequence 5923 in stream 1 for XYZ
 10:47:09 BAFIL Input from DSKDO:BQ.CTL[xxx.yyy]
 10:47:09 BAFIL Output to DSKDO:BQ.LOG[xxx.yyy]
 10:47:09 BASUM Job parameters
 Time:00:05:00 Unique:YES Restart:NO

10:47:13 MONTR
 10:47:13 MONTR .LOGIN xxx/yyy
 10:47:13 USER JOB 40 ORNL Fusion Energy 603a TTY162
 10:47:14 USER 1047 17-Apr-80 Thur
 10:47:16 MONTR
 10:47:16 MONTR .LOCATE 1
 10:47:17 MONTR MODE FEDUSC(1) ORNL Fusion Energy 603a 09-05-79 Located
 10:47:17 MONTR ..RUN QRCL
 10:47:17 USER
 10:47:19 USER
 10:47:19 USER WOULD YOU LIKE TO SEE THE HELP FILE? (N/Y. Y
 10:47:19 USER
 10:47:19 USER DO YOU WANT TO SEE ARCHIVE MESSAGES (Y/N):Y
 10:47:19 USER
 10:47:19 USER ENTER AN ID FOR THIS GROUP OF SHOTS:TST44
 10:47:19 USER
 10:47:19 USER ARE SHOT NUMBERS IN A FILE?(Y/N):Y
 10:47:19 USER
 10:47:19 USER Unit=2 DSK:RECALL.DAT/ACCESS=SEQIN/MODE=ASCII
 10:47:19 USER
 10:47:19 USER Enter new file specs. End with an \$(ALT)
 10:47:19 USER *TEST.DAT\$
 10:47:19 USER

FL	SHOT	SFD	PACK	FLAGS	LSFD	HSFD
B	9456	0447	003	0	0366	0477
	17310	1034	005	0	1001	1125
C	17798	1054	005	0	1001	1125
L	17798	1054	005	0	1001	1125
	123	0003	001	0	0001	0200
A	10234	0477	003	0	0366	0477
G	4345	0207	002	0	0201	0365
S	9456	0447	003	0	0366	0477
SHOT:81567 HAS NOT BEEN ARCHIVED.						
S	678	0025	001	0	0001	0200
S	123	0003	001	0	0001	0200
	10234	0477	003	0	0366	0477
P	4345	0207	002	0	0201	0365
A	9456	0447	003	0	0366	0477
SHOT:81567 HAS NOT BEEN ARCHIVED.						
P	678	0025	001	0	0001	0200

10:47:28 USER

```

10:47:28 USER      16:INPUT    14:QUEUED    2:NOT FOUND
10:47:28 USER ANY MORE SHOTS? (N/Y):
10:47:28 USER STOP
10:47:28 USER
10:47:28 USER END OF EXECUTION
10:47:28 USER CPU TIME: 1.03 ELAPSED TIME: 10.58
10:47:28 MONTR EXIT
10:47:28 MONTR
10:47:28 MONTR .KJOB DSKD0:BQ.LOG=/W/B/Z:0
10:47:29 LGOUT Job 40, User [xxx,yyy] Logged off TTY162 1047 17-Apr-80
10:47:29 LGOUT Runtime 1.40 Sec

```

1.6 USER COMMANDS FOR INTERROGATION OF THE RECALL REQUEST QUEUE

A number of MIC commands have been developed to allow a user of the RECALL system to inquire about the status of a recall request. To access commands, PPN [230,2301] should be established as a library. This may be accomplished by entering the following commands.

```

.R SETSRC
*LIB[230,2301]
*(CNTRL)C

```

Another way to establish a library is to place a file called SWITCH.INI in one's on-line disk area. The file may be created with an editor such as TECO. The content of the file should be the following:

```
LOGIN/LIB:[230,2301]
```

The SWITCH.INI file has a number of other uses which are documented in the Operating System Command Manual.

1.6.1 ".DO LSTGRP request-id"

Produces a listing of those shots which have yet to be recalled to the on-line area from the recall request list named "request-id".

EXAMPLE

.DO LSTGRP TST11D

.R 1022

4/17/80

System 1022A (114B)

* @CR

RECALL FILE OPEN.

73 RECS FOUND.

* FIND BATCH EQ "TST11D"

17 RECS FOUND.

* @TR

BATCH	DATE REQ.	SHOT	SFD	PACK	APR-01-198x
TST11D	APR-17-1980	123	0003	001	
TST11D	APR-17-1980	123	0003	001	
TST11D	APR-17-1980	678	0025	001	

. . .
. . .
. . .

TST11D	APR-17-1980	17310	1034	005
TST11D	APR-17-1980	17798	1054	005
TST11D	APR-17-1980	17798	1054	005

* Q

EXIT

1.6.2 ".DO LSTGCT partial-request-id"

Generates a list of all shots which are in the queue and belong to a group of shots that have the string "partial-request-id" in their request identifier.

EXAMPLE

.DO LSTGCT TST

.R 1022

4/17/80

System 1022A (114B)

* @OR

RECALL FILE OPEN.

73 RECS FOUND.

* FIND BATCH CT "TST"

26 RECS FOUND.

* @TR

BATCH	DATE REQ.	SHOT	SFD	PACK	APR-01-198x
TST11D	APR-17-1980	123	0003	001	
TST11D	APR-17-1980	123	0003	001	
TST11D	APR-17-1980	678	0625	001	
.	.	.	.	.	
.	.	.	.	.	
.	.	.	.	.	
TST15A	APR-15-1980	17310	1034	005	
TST15A	APR-15-1980	17798	1054	005	
TST15A	APR-15-1980	17798	1054	005	

* Q

EXIT

1.6.3 ".DO LSTSAF"

Lists all of the shot data files in the queue, with a count of the number of requests for each file.

EXAMPLE

.DO LSTSAF

.R 1022

4/17/80

System 1022A (114B)

* @LSTSAF

RECALL FILE OPEN.

73 RECS FOUND.

00123:	4		
S00123:	4		
TOTAL REQUESTS FOR SHOT 00123 =		8	
P00678:	4		
S00678:	4		
TOTAL REQUESTS FOR SHOT 00678 =		8	
A00987:	1		
TOTAL REQUESTS FOR SHOT 00987 =		1	
E02345:	1		
N02345:	2		
P02345:	1		
Q02345:	1		
TOTAL REQUESTS FOR SHOT 02345 =		5	
.	.	.	
.	.	.	
.	.	.	
32500:	1		
TOTAL REQUESTS FOR SHOT 32500 =		1	
32700:	1		
TOTAL REQUESTS FOR SHOT 32700 =		1	

* Q
EXIT

1.6.4 "DO LSTSHT"

Types all of the shots in the queue with a count of the number of requests for each shot.

EXAMPLE

.DO LSTSHT

.R 1022

4/17/80

System 1022A (114B)

* @OR

RECALL FILE OPEN.

73 RECS FOUND.

* VAL SHOT.

123 (8)

678 (8)

987 (1)

2345 (5)

4345 (8)

. . .

. . .

. . .

32100 (1)

32500 (1)

32700 (1)

* Q.

EXIT

2. OPERATOR'S GUIDE

2.1 INTRODUCTION

The function of the operator in the ISX RECALL system is to mount the archive disk packs needed to satisfy users' requests for shot data files. The recall requests are stored in a System 1022 (TM) data base. The data base may be queried using a set of MIC commands developed for the operator or with standard System 1022 commands. The main items of interest to the operator are the number of packs to be mounted and how long the requests for those packs have been pending. Three MIC commands are available to answer questions about the above items: PAKLST; lists the identification of each pack to be mounted and the number of requests for each pack, PACKAGE; outputs the age of the requests for each pack, and AGE; lists the requests by date of entry. After the RECALL queue has been examined, the next action by the operator is to satisfy one or more of the pack mount requests. Two MIC commands have been implemented for this function: ONEPAK which creates a batch job to mount a single specified pack and copy the requested files from it to the on-line ISX pack; and ALLPAK which generates a batch job to mount and copy files from all requested packs.

2.2 INTERROGATION OF THE RECALL REQUEST QUEUE

The following MIC commands are for use by the operator of the RECALL system to determine number and nature of pack requests in the recall queue.

2.2.1 "DO PAKLST"

Generates a list of the packs to be mounted with a count of the number of requests for each pack.

EXAMPLE

.DO PAKLST

```
.R 1022
6/17/80
System 1022A (114B)
* @OR
RECALL FILE OPEN.
16 RECS FOUND.
* @PL
TOK000 REQUESTS:    5
TOK001 REQUESTS:    8
TOK002 REQUESTS:    3
TOTAL OF    3 PACKS TO MOUNT.
* Q
EXIT
```

2.2.2 "DO PAKAGE"

Creates a listing of the age of the requests for each pack in the recall request queue.

EXAMPLE

.DO PAKAGE

```
.R 1022
6/17/80
System 1022A (114B)
* @OR
RECALL FILE OPEN.
16 RECS FOUND.
* @PAKAGE
16 RECS FOUND.
PACK TOK000
    1 REQUESTS 127 DAYS OLD.
    2 REQUESTS 31 DAYS OLD.
    1 REQUESTS 16 DAYS OLD.
    1 REQUESTS 7 DAYS OLD.
PACK TOK001
    2 REQUESTS 94 DAYS OLD.
    1 REQUESTS 73 DAYS OLD.
```

```

          1 REQUESTS  48 DAYS OLD.
          2 REQUESTS  31 DAYS OLD.
          1 REQUESTS  28 DAYS OLD.
          1 REQUESTS  12 DAYS OLD.
PACK TOK002
          1 REQUESTS  31 DAYS OLD.
          1 REQUESTS  20 DAYS OLD.
          1 REQUESTS  16 DAYS OLD.
* Q
EXIT

```

2.2.3 "DO AGE"

Outputs the recall requests from the oldest to the most recent.

EXAMPLE

```

.DO AGE

.R 1022
6/17/80
System 1022A (114B)
* @OR
RECALL FILE OPEN.
16 RECS FOUND.
* @AGE
16 RECS FOUND.
PACK TOK000 HAS      1 REQUESTS 127 DAYS OLD.
PACK TOK001 HAS      2 REQUESTS  94 DAYS OLD.
PACK TOK001 HAS      1 REQUESTS  73 DAYS OLD.
PACK TOK001 HAS      1 REQUESTS  48 DAYS OLD.
PACK TOK000 HAS      2 REQUESTS  31 DAYS OLD.
PACK TOK001 HAS      2 REQUESTS  31 DAYS OLD.
PACK TOK002 HAS      1 REQUESTS  31 DAYS OLD.
PACK TOK001 HAS      1 REQUESTS  28 DAYS OLD.
PACK TOK002 HAS      1 REQUESTS  20 DAYS OLD.
PACK TOK000 HAS      1 REQUESTS  16 DAYS OLD.
PACK TOK002 HAS      1 REQUESTS  16 DAYS OLD.
PACK TOK001 HAS      1 REQUESTS  12 DAYS OLD.
PACK TOK000 HAS      1 REQUESTS   7 DAYS OLD.
* Q
EXIT

```

2.3 SATISFYING REQUESTS FOR PACK MOUNTS

The following MIC commands are used to build batch control files that will request the mounting of archive disk packs and then copy the

desired files to the on-line ISX pack. After a control file has been created, enter: "SUBMIT RECALL" to start the batch job.

2.3.1 "DO ONEPAK xxx"

Develops a batch job which will mount pack "xxx" and copy the requested shot data files to the on-line pack.

EXAMPLE

```
.DO ONEPAK 001
.R 1022
6/17/80
System 1022A (114B)
* @OR.
RECALL FILE OPEN.
11 RECS FOUND.
* UPDATE ON.
* FIND PACK EQ 001.
8 RECS FOUND.
* @GU.
6 RECS FOUND.
* SORT SFD SHOT FLET.
* INIT 1 RECALL.DAT.
* LET SYSREPMODE 0.
* PRINT ON 1 PACK SFD FLET SHOT FMT A3 A4 A1 P99999 END.
* RELEASE 1.
* DUMP DATA P001.HLD DESC RECALL.DMD.
* DELETE.
* UPDATE OFF.
* Q.
EXIT
.RUN MAKJOB
PACK TOK001 REQUESTS: 6
STOP
END OF EXECUTION
CPU TIME: 0.08          ELAPSED TIME: 1.03
EXIT

.SUBMIT RECALL
```

2.3.2 "DO ALLPAK"

Generates a batch control file that mounts a . of the packs in the recall request queue.

EXAMPLE

.DO ALLPAK

```
.R 1022
6/17/80
System 1022A (114B)
* @OR
RECALL FILE OPEN.
16 RECS FOUND.
* @R2
14 RECS FOUND.
16 RECS FOUND.
System 1022 Data Loading Program
No errors on DESCRIPTION file
no input data found; 0 records loaded
EXIT
.RUN MAKJOB
PACK TOK000 REQUESTS:    5
PACK TOK001 REQUESTS:    6
PACK TOK002 REQUESTS:    3
STOP
END OF EXECUTION
CPU TIME: 0.14           ELAPSED TIME: 1.43
EXIT

.SUBMIT RECALL
```