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INTEGRATION TEST PLAN
SABER 2.3 and TALONS 2.1

Job Order 82-61

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1. INTRODUCTION

This document presents a detailed description of the integration testing planned for the release of Version 2.3 of the Systematic Allocation of Batch Expendable Resources (SABER) program and Version 2.1 of the Tape Availability and Labeling on Line (TALONS) program. The primary purpose of SABER 2 is to provide Operations with a Batch Scheduler for scheduling work on the 1108 EXEC II processors, using a modified version of the present EXEC 8 SABER System. The primary purpose of TALONS is to provide a means of calling up needed input tapes and generating tape labels for new tapes.

2. BACKGROUND

SABER 2 is an EXEC 8 program which will be implemented on the 1108-7 processor and will schedule batch work for the Exec 2 processors. SABER 2 will be controlled from the simulated console in the Operations Room. The primary purpose of this scheduling is to allocate the EXEC 2 computer resources among the various IDSD user budget centers. This allocation is based on percentages assigned to the budget centers called "negotiated percentages". SABER 2 schedules batch jobs in groups called "stacks". The scheduling of a stack of jobs is accomplis for a quantity of computer time called the "target stack length" (TSL), measured in computer time. The parameters which SABER 2 uses in scheduling stacks of jobs are the TSL, the negotiated percentages, the estimated run time (ERT), priorities and facility requirements of the jobs in the EXEC 2 work backlog that are available for stacking, information about past computer time usage of the budget centers, the shift for which the jobs are to be scheduled, and the configuration of the EXEC 2 processor on which the stack is to be processed. In order that a stack of jobs be scheduled, SABER 2 first calculates the portion of the TSL each budget center should get, and then attempts to select for each budget center, jobs in the EXEC 2 backlog for the budget center whose ERT's sum up to the portion of the TSL allocated to the budget center and which satisfy any other constraints imposed by the scheduling parameters.

TALONS provides a means for calling up input tapes and generating save labels for output tapes. The TALONS CALL UP/LABELING terminal is located in the Tape Library. A TALONS Tape call-up list will appear on the TALONS terminal for a stack of jobs. The TALONS call-up list allows tapes to be retrieved and routed to the appropriate EXEC II Computer for processing. Save labels will be generated by TALONS, relieving the user of the responsibility of submitting save labels with his job. TALONS also provides Remove Run Reports which provide information to both the user (why the run was rejected) and Operations (summary of all rejected runs).

3. OBJECTIVES

The main objectives of this integration test is to verify that SABER 2 and TALONS 2 function as documented. The following SABER Commands will be individually checked:

CREATE	REBILD	BLSAB	BCREP
UPDATE	CONFIG	NONE	CPRIOR
STACK	PURGE	REMOV	CSEND
RETURN	STATUS	JOBINF	UCALUP
RELEAS	LIMITS	STKINF	DCALUP

The following TALONS Commands will be individually checked:

CLOSE REMOVE	COLUMN SWITCH	CALLUP XXXX-YYYY
CLOSE LABELS	DISREGARD	CEASE CALLUP
CLOSE CALLUP	LABELS XXXX-YYYY	BEGIN CALLUP
CEASE LPRINT	TERMINATE	BEGIN LPROC
CEASE LPROC	BEGIN RPRINT	BEGIN LPRINT
CEASE RPRINT	BLANK LABEL XX	ALTER ACCESS

In addition, the following items will be checked:

- Verify SABER 2/SABER 8 compatability.
- Verify that Operations, Work Control and Tape Library procedures are applicable to all SABER and TALONS functions.
- Verify that Stack, Call-up sheets and Removed Runs Reports are correct.
- Verify that priorities are processed correctly.
- Verify Time totals are accurate (by division).
- Ensure that Stack tapes are built and processed correctly.
- Ensure EXEC II Accounting/WFUP/SABER 2 Interface.
- Ensure that SABER 2 can process and schedule work normally under heavy loading conditions.
- Ensure that limits entered by the operator are adhered to by SABER 2.
- Ensure that all SABER 2 algorithms and stack parameters are correct and are used properly.
- Verify SABER 2/Ops Console Interface.
- Ensure accuracy of TALONS 2 Tape Labels.
- Verify SABER 2/TALONS 2 Interface.

4. THE TEST

The integration test will be designed to verify processor capabilities as follows:

- Full SABER 2 and TALONS 2 capabilities will be tested on EXEC 8 processor 1108-7 and EXEC 2 processor 1108-2 since 1108-7 is the primary SABER 2 processor and 1108-2 is the largest EXEC 2 processor
- Partial SABER 2 and TALONS 2 capabilities will be tested on EXEC 8 processor 1110 and EXEC 2 processor 1108-0. This will verify that the 1110 can provide backup in case 1108-7 were to be down for an extended period of time.
- The implementation of SABER 2 and TALONS 2 will be supported 24 hour per day as required in order to minimize confusion and maximize efficiency.

The testing will be conducted during normal weekend production on the EXEC 8 processors. Block time will be required on the EXEC 2 processor in order to verify the stack tapes and the WFUP interface.

The test backlog will include a variety of jobs which will include:

- Various size tape jobs including no-tape jobs.
- Various estimated run times.
- Various illegal run cards to verify run removal criteria.

Following completion of the test, the SABER and TALONS output will be analyzed to verify that all scheduling algorithms are accurate.

A copy of the test script is provided in Attachment A.

5. THE TEST TEAM

The test team will be comprised of the following personnel who will be in attendance (AR) or on call (OC) as indicated:

- Test Conductor AR
- Test Assistants (2) AR
- Systems Support AR
- Procedures & Training AR
- Terminal Support OC
- Computer Operator AR
- UNIVAC FE's OC
- Operations Analyst AR
- Work Control AR
- Tape Librarian AR

6. IMPLEMENTATION OF SABER 2

I. PROCEDURES AND DOCUMENTATION

There will be procedures and documentation for:

1) Work Control personnel
2) Tape Library personnel
3) Operation personnel
4) Users

II. TRAINING

The necessary training will be provided to:

1) Work Control personnel
2) Tape Library personnel
3) Operation personnel
4) Users

III. DURING TESTING

Necessary procedure and documentation changes will be noted.

IV. AFTER TESTING

Monitor SABER 2 24 hours per day as required.

ATTACHMENT A

Integration Test Script

SABER 2.3/TALONS 2.1 TEST SCRIPT

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
1.	.10	0		Initiate test activity on EXEC 8 processor	
				• OPS Console	
				• SABER 2	
				• TALONS 2	
				@XQT,AWL X2TALONS.X2TALONS	Will cause labels, call up lists, and removed run reports to be printed.
2.	120	10		EXEC 8 Processor activity	
				• CREATE ,,,,,,,,,3	Create a new SABER 2 directory. Update the LIMITS with negotiated percentages from the X2LIMITS file.
				• STATUS	Display the status of the SABER2 backlog.
				• BLSAB	Display all jobs within the available SABER2 backlog.
				• CSEND	Display the printers to which SABER2 print is directed.
				• CONFIG 0,*	Display configuration of processor 1108-0
				• CONFIG 1,*	Display configuration of processor 1108-1.

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• CONFIG 2,*	Display configuration of processor 1108-2.
				Have Work Control set up EXEC 2 test backlog and load into EXEC 8processor.	
				• UPDATE	Update EXEC 2 jobs just loaded to the SABER2 backlog.
				• STATUS	
				• BLSAB	
				• BCREP ,S	Produce a backlog report for all Budget Centers. Sym to system printer.
				• BCREP FD2	Produce a backlog report for Budget Center FD2. Display on console.
				• JOBINF Seq. no.	Display the status of a job
				• STKINF	Display the status of all active stacks.
				• STACK8,,,,,0	Build a two hour stack for processor 1108-0.
				• STATUS	
				• BCREP ,S	
				• BLSAB	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• JOBINF seq no	Display the status of a job in stack 1.
				• STKINF	
				• STKINF1	Display the contents of stack 1 and reprint the call-up list
				• BLSAB,,S	Display all jobs which are stacked.
				• RETURN 1, seqno	Return one job from stack 1
				• JOBINF seqno	Display the status of the job just returned.
				• BLSAB,,S	
				• STATUS	
				• BLSAB	
				• RELEAS 1,reelno	Release stack 1 and build a stack tape and deliver to EXEC2 processor (See Step 3).
				• STATUS	
				• BLSAB	
				• BLSAB,,R	Display all jobs which have been released.
				• JOBINF seqno.	Display the status of a release job.
				• STKINF	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• REBUILD 1,reelno	Rebuild the stack tape for stack 1. This tape will be compared with the original to ensure that they are identical.
				Load additional EXEC 2 backlog.	
				• STATUS	
				• BCREP ,S	
				• BCREP C	Display on console a budget center report for budget Center C.
				• STACK 4,,,,,1	Build a one hour stack for processor 1108-1.
				• STATUS	
				• II TALONS2	
				CALLUP 0002-0002	Reprint the callup list for stack 2.
				• BCREP ,S	
				• STKINF	
				• STKINF 2	Do not reprint callup list.
				• BLSAB	
				• BLSAB ,,S	
				• BLSAB ,FD2	Dispaly all available jobs for FD2.

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• CPRIOR S,,,FD2	Change the priority of all FD2 jobs to special.
				• BLSAB S	Display all special priority jobs.
				• BLSAB ,FD2	
				• BLSAB ,FD2,S	Display all FD2 jobs that are currently stacked.
				• JOBINF seqno	
				• CSTAT S,seqno	Change the status of seqno to stacked.
				• BLSAB,,S	
				• STKINF	
				• STKINF 0	Display stack 0 and print a callup list.
				• STATUS	
				• JOBINF seqno	
				• CSTAT A,seqno	Change status of seqno back to available.
				• STATUS	
				• STKINF	
				• STKINF 0	
				• JOBINF seqno	
				• RETURN 2	Return stack 2 to the back-log.
				• STATUS	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• BLSAB	
				• BLSAB ,,S	
				• STKINF	
				• STKINF 2	
				• UCALUP	Turn on callup on the ops console.
				• STACK 4,,,,,1	Build a one hour stack for processor 1108-1.
				• STATUS	
				• BCREP ,S	
				• BLSAB	
				• BLSAB ,,S	
				• STKINF	
				• STKINF 3	
				• DCALUP	Turn off callup on the ops console.
				• RELEAS 3,reelno	Deliver the stack tape to the EXEC 2 processor (see Step 3).
				• STATUS	
				• BLSAB ,,S	
				• BLSAB ,,R	
				• STKINF	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• STKINF 3	
				• JOBINF seqno	
				• CPRIOR S,seqno	Change the priority of seqno to special.
				• BLSAB S	Dispaly all available jobs with a special priority.
				• JOBINF seqno	
				• STACK,,,S	Build a stack of special jobs.
				• JOBINF seqno	
				• STATUS	
				• STKINF	
				• STKINF 4	
				• BLSAB S,,S	Display all stacked jobs with a special priority
				• CSTAT A,seqno	Change the status of seqno to available.
				• JOBINF seqno	
				• STATUS	
				• BLSAB S,,S	
				• STKINF	
				• STKINF 4	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• STACK 4,,,,,2	Build a one hour stack for processor 1108-2.
				• BCREP,S	
				• STATUS	
				• BLSAB	
				• BLSAB,,S	
				• STKINF	
				• STKINF 5	Do not reprint callup list
				• RELEAS 5	Build a stack tape and deliver to EXEC 2 processor
				• STATUS	
				• BLSAB,,S	
				• BLSAB,,R	
				• STKINF	
				• JOBINF seqno	
				• CSTAT H,seqno	Change seqno to a hold status
				• STATUS	
				• BLSAB,,H	Display all jobs in a hold status.
				• REMOV seqno	Remove seqno from the EXEC 2 backlog.
				• RUN SLAP5	Generate a listing of all cataloged files on the EXEC 8 processor.

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
3.	120	130		EXEC II Processor Activities	
				• Boot current floor system	
				• Using SABER2 release reports as operator instruction, load stack tapes and allow jobs to execute using 'G n LC' keyin.	
				• Skip down one stack tape to a preselected file and load one job. 'G n Fn' (n=no. of files to be skipped. 'GnLC1'	Skip n number of files Load one file.
				• When all jobs have executed dump EXEC 2 accounting. G n DAN XXX and deliver the tape to the EXEC 8 processor for loading by WFUP.	
	10	250		Load the EXEC 2 accounting data to the WFUP data base and X2WFUP file	
				• Special TAPIN on 1110	Build DBSAV for updating the X2WFUP and X2LIMITS files
				• Load DBSAVE on 1108-7	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
5.	30	260		Following loading of EXEC 2 accounting data to the WFUP data base	
				• UPDATE	The X2WFUP data will be updated to the SABER2 directory and the READ$ file should be deleted.
				• STATUS	
				• BLSAB ,,C	Display status of all closed jobs.
				• PURGE	Purge the SABER2 directory of all closed jobs.
				• LIMITS	Update limits from X2LIMITS file to ensure that percentages have changed.
				• STATUS	
				• BLSAB ,,C	
				• SLAP5	Compare with previous SLAP5 listing to ensure that all READ$ files for closed runs have been deleted
				• BLSAB	
				• BCREP,S	
				• CSTAT S,seqno	Change status of seqno to stacked.
				• JOBINF seqno	
				• STKINF 0	

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• CSTAT seqno	Change status of a second seqno to stacked.
				• JOBINF seqno	
				• STKINF 0	Print a tape callup list for stack 0.
				• STATUS	
				• II TALONS2 LABELS XXX-YYYY	Reprint several labels
				• II TALONS2 COLUMN SWITCH	Switch the labels from one column to the other.
				• II TALONS2 BLANK LABEL 05	Print 5 blank labels
				• ∂∂X C CEASE L PRINT	Stop label printing
				• ∂∂X C BEGIN LPRINT	Restart label printing
				• ∂∂X C CEASE LPROC	Stop label processing
				• ∂∂X C BEGIN LPROC	Restart label printing
				• ∂∂X C CEASE RPRINT	Stop removed run notice printing
				• ∂∂X C BEGIN RPRINT	Restart removed run notice printing

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• ∂∂X C CEASE CALLUP	Stop callup activity
				• ∂∂X C BEGIN CALLUP	Restart call up activity
				• ∂∂X C ALTER ACCESS	Change the reel number on a tape label
6.	10	190		Terminate all activity	
				• II TALONS2 CLOSE LABELS	Close the label file and punch STAFAS transaction cards. These cards will be closely checked to ensure that they are correct and can indeed be used by STAFAS.
				• II TALONS2 CLOSE CALLUP	Close the tape callup file
				• II TALONS2 CLOSE REMOVE	Close the removed history file and generate a removed runs report.
				• II TALONS2 TERMINATE FIN ∂∂ TERM	Terminate the TALONS2 terminals.
				• NONE	Terminate SABER2

STEP	DURATION	ACCUM. DURATION	START	ACTION	COMMENTS
				• @EOF @FIN @@TERM	Terminate the ops console
				• Have EXEC 8 operator complete AC keyins	Redirect all message classes back to main console.
7.		300		END-OF-TEST	