

## Modifications to OPEN PLAN

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### Introduction

OPEN PLAN (a product of WST Corporation) has been selected as the management software for the SSC construction project, and the SSC Project Planning and Management (PP&M) Division has been engaged in implementing this program to provide the appropriate Cost and Schedule Control Functions. Many changes have been made to the standard OPEN PLAN release, in order to adapt it to the SSC requirements. However, only minimum modifications have been made to the OPEN PLAN data base structure, and all program changes have been carefully designed so that they blend seamlessly into OPEN PLAN's menu-driven shell program. It should not be very apparent to the user when he encounters new coding written especially for the SSC. At least for now, the intention is for the PP&M Division to maintain the SSC version of OPEN PLAN, which would be used by all SSC groups.

An earlier SSC Note, "Tracking Project Progress with OPEN PLAN" (SSC-N-311), discussed the strengths and shortcomings of the standard release version of OPEN PLAN and suggested important modifications, which have now been made. Attachment 1 to this note is a brief set of instructions which is used with the tutorial course which has been developed for the SSC version of OPEN PLAN.

The operation of OPEN PLAN can be understood in terms of two major functions: (1) creating a **baseline budget and schedule**, and (2) comparing actual **project progress** to this previously defined baseline.

### Project Baseline

The following procedure is used to create a baseline budget and schedule in OPEN PLAN:

1. A new *project* is created, and supporting files (calendar file, resource availability file, and code files) are set up as needed.
2. The *activities* are entered, along with the resource requirements for each activity (a complex time profile for a resource requirement can be approximated using a number of rectangular profiles). The precedence relations among the activities are entered; they define the "logic" within the project.
3. A *time analysis* is performed using an OPEN PLAN utility, and the "early" and "late" dates are calculated for each activity.
4. Various reports can now be used to examine details of the projected budget and schedule.

A "logic drawing" can be printed to show graphically the logical relationships among the activities.

The report SSCBAR4 is a bar chart or Gantt chart showing the scheduling of all activities.

The report ACTRES lists all the resource requirements for each activity.

The report RESCOST2 calculates the resource costs for each activity. Fixed costs, labelled with an "@" sign (such as "@MAT"), are separately subtotalled from the labor costs.

The report AGGLIST can be used to perform a time aggregation of resource requirements. For example, the total engineering effort required to accomplish all the work scheduled for each month can be tabulated.

**Warning:** The standard release of OPEN PLAN includes many reports, and these reports may or may not be useful for the SSC. However, the use of reports not specifically mentioned in this note may lead to unpredictable results, because of possible incompatibilities with the SSC modifications to OPEN PLAN.

5. At this point, the OPEN PLAN user can use a utility to set the *baseline* dates to, say, the early dates.

### Actual Project Progress

The following procedure is used to compare the actual project progress with the previously defined project baseline. The SSC Cost Performance Report (SCPR1) and SSC Schedule Performance Report (SSPR1) are completely new reports written specially for the SSC. Examples of these reports are included as Attachments 2 and 3. SCPR1 superficially resembles one of the OPEN PLAN standard reports, but the calculations contained in this report are entirely new.

1. The *actual progress* on each activity which has already begun is entered using a screen accessed via the "SSC Progress" option in one of the OPEN PLAN menus. Among the entries which may be applicable are the actual start date, the remaining duration, the BCWP, and the ACWP.
2. A *new time analysis* creates a modified schedule, which may be examined using SSCBAR4 and AGGLIST.
3. The *cost and schedule performance* can be analyzed and reported using SCPR1 and SSPR1. Any deviation from the project baseline (i.e., cost overruns and schedule delays) will be revealed in these reports.

### Future Modifications

There is no doubt that the SSC version of OPEN PLAN will continue to evolve as new requirements become apparent. Nevertheless, I believe that the code has now been upgraded to the point where it can be used effectively to track progress on the SSC. The program should be used to control actual costs and schedules, in order to de-bug the existing code thoroughly.

The following program modifications are under consideration or in progress:

1. During the construction period, the PP&M Division will maintain and update an SSC *summary OPEN PLAN project* (i.e., a network of perhaps 250 activities spanning the entire SSC construction effort). Most of these "activities" will actually represent entire *sub-projects*, of perhaps 50 to 100 activities each, which will be maintained by the responsible SSC divisions and groups. Therefore, a new utility is being written to summarize sub-projects (especially the resource requirements of sub-projects) as "activities" in a higher-level network.
2. More program development will be needed in OPEN PLAN to provide a complete historical record of project progress. For example, it would be useful to plot the cumulative ACWP for each month throughout a year. These data will probably be stored using dBASE III PLUS and then plotted using LOTUS or OPEN PLAN.
3. An interface to an accounting system must be developed. dBASE III PLUS will probably be used to collect the ACWP for each cost account and to enter them into the OPEN PLAN files.

## Tutorial for OPEN PLAN (WST Corp.)

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1. | > "OPLAN (enter)"
2. New entry in project directory, use TEST07 as model [System Management; Project Directory]  
Accept "SSC" as the Screenform Name.
3. View supporting files  
Calendar file TEST01 [Data Entry; Calendars]  
Resource availability file TEST07 [Data Entry; Resource Availability]  
Code files C1T05 and C2T05 [Reports; General Reports; "CODELEVL"]
4. Enter activities [Data Entry; Activity Details]
5. Enter resource requirements ["/" for secondary command line; "R"]  
Time is defined in number of *working days*, as given in the calendar file.
6. Perform time analysis [Processing; Time Analysis]
7. Optional:  
Create logic drawing [Reports; Create Logic Drawing]  
Print logic drawing [Reports; Create Logic Drawing; "STANDARD"; "IBM132"]
8. Print reports [Reports; General Reports]  
SSCBAR4  
ACTRES  
RESCOST2  
AGGLIST (once to perform aggregation, once for report)  
Resources are aggregated by *calendar days*, not *working days*.
9. Set baseline dates [Utilities; Set Project Baseline]
10. Enter progress [SSC Applications; SSC Progress]
11. Perform new time analysis [Processing; Time Analysis]
12. Print reports [Reports; General Reports]  
New schedules:  
SSCBAR4  
AGGLIST (once to perform aggregation, once for report)  
Cost and Schedule Performance:  
SCPR1  
SSPR1
13. Move project to another IBM - PC [System Management; Project Backup/Restore]

OPEN PLAN

Superconducting Super Collider

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REPORT: SCPR1

SSC Detailed Cost Performance Report - CWBS Level 3 within CWBS Level 2

REPORT DATE: 23SEP97

PROJECT: TEST07

Test07 New calculations

TIME NOW: 01APR87

Current Period: 01MAR87 - 01APR87

ACTIVITY	CURRENT PERIOD		CUMULATIVE TO DATE		AT COMPLETE	
	BUDGET BCWS	ACTUAL ACWP	BUDGET BCWS	ACTUAL ACWP	BUDGET BCWS	ACTUAL ACWP
100 planning	0	21	21	20	21	20
106 system t	0	0	0	0	0	0
Subtotal:	0	21	21	20	21	20
TOTAL:	0	21	21	20	21	20

\*\*\* 3 - Proj Management and Support

\*\*\*\*\* 31 - Management

	BUDGET BCWS	ACTUAL ACWP	BUDGET BCWS	ACTUAL ACWP	BUDGET BCWS	ACTUAL ACWP	VARIANCE	VARIANCE	VARIANCE	VARIANCE
GRAND TOTAL:	182	150	154	154	203	150	-4	-32	-53	-4

REPORT: SSPR1 SSC Detailed Schedule Performance Report - OBS Level 2 within OBS Level 1 REPORT DATE: 23SEP87

PROJECT: TEST07 Test07 New calculations TIME NOW: 04/01/87

Id	Description	Schedule		Sched New (Early) Finish	Var. Days	Cumulative To Date		Forecast		Difference Forecast2- Forecast1
		Baseline Finish	New Finish			Budget Varcosts	ACWP Varcosts	Budget - Varcosts	ACWP + Rem.Costs	

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\*\*\*\*\* A - Construction Division

100	planning	03/01/87	03/15/87	-14		21	1	20	0	20	20	0
106	system test	10/01/87	10/30/87	-29		8	0	0	8	8	8	0
102	Cryogenics	06/09/87	06/24/87	-15		96	0	14	39	96	53	-43
104	vacuum	05/01/87	05/30/87	-29		16	-5	5	16	21	21	0
105	beam feedback	07/01/87	07/30/87	-29		21	0	0	21	21	21	0
103	safety	08/31/87	09/29/87	-29		11	0	0	11	11	11	0
101	civil construction	07/29/87	07/29/87	0		575	0	115	460	575	575	0
	Total for	/	A			748	-4	154	555	752	709	-43
	Total for					748	-4	154	555	752	709	-43

GRAND TOTAL

748	-4	154	555	752	709	-43
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