

Shipyard Work Center Performance Analysis

PERCEPTION® Helping The
Shipyard Improve Productivity

A Training Tutorial

***PERCEPTION* compiles shipyard production information and generates concise reports on the performance of each shipyard work center.**

- 1. These reports provide valuable information about the shipyard's ability to stay within budgets and schedules for each process in production.**
- 2. These reports show priorities where management should focus most of their attention towards improving productivity and profitability.**

While *PERCEPTION* measures performance at all defined WBS levels of a project, it is equally important to monitor performance at the work center.

This tutorial describes an analysis to measure work center performance in terms of both cost (labor hours) and schedule.

This analysis can highlight the more significant problem areas, so that management can better focus their resources on resolving them early and with greater effectiveness.

***PERCEPTION* collects detailed information of costs and schedules.**

This tutorial describes work center cost and schedule performance reports that compliment reports available from within the *PERCEPTION* system.

These reports are generated using a Microsoft Excel workbook named “WorkCenterAnalysis.xls.”

Work Center Progress Reports

PERCEPTION summarizes work center progress on demand. The system measures progress and weeks ahead of planned schedules.

In addition, these reports breakdown costs by budget, earned value (BCWP), scheduled budget (BCWS), actual time charges (ACWP), and estimates at completion (EAC), estimate to complete (ETC), and projected savings/loss.

WORK-PAC Center Progress Report (PROG14)**Labor Hours**

Contract: TSHIP CONTRACT to TSHIP CONTRACT

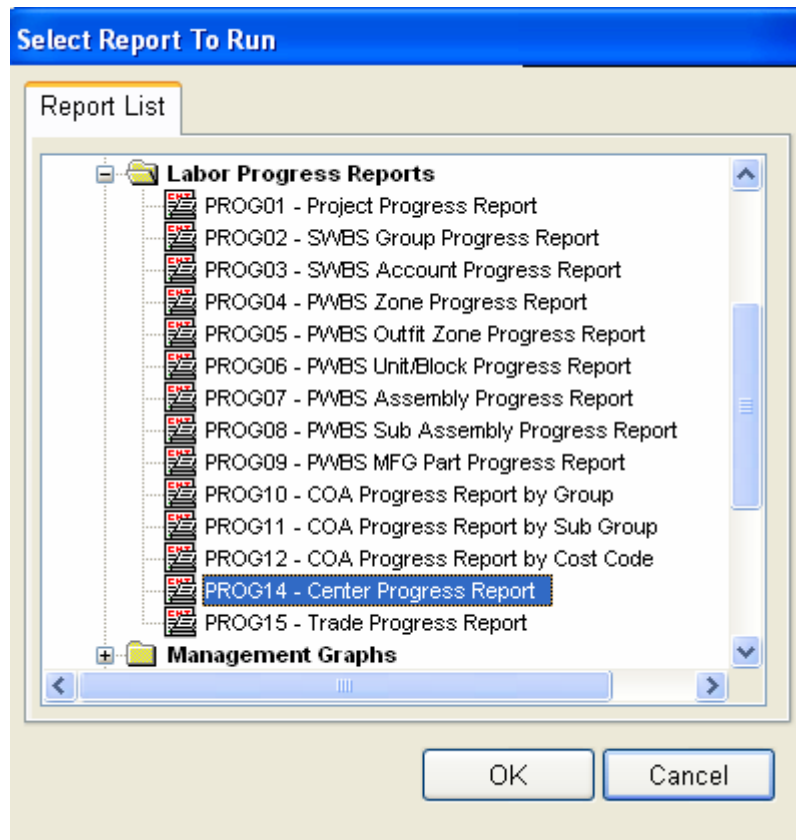
Project: 2002 to 2002

Work Center: 0 to ZZZZZZZ

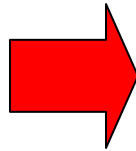
Work Center	Description	Percent Progress		Weeks Ahead	% Diff	Current Labor Hours				Final Hours			
		Planned	Actual			BCWS	BCWP	Actual Hours	Schedule Ahead	Budget	EAC	ETC	Savings
T01	Steel Fabrication	100.00	89.57	-584	-10.43	70,081	62,772	61,353	-7,309	70,081	68,500	7,147	1,581
T02	Steel Assembly	100.00	100.00	13	0.00	198,580	198,580	199,130	0	198,580	199,130	0	-550
T03	Steel Erection	100.00	98.89	-575	-1.11	64,914	64,193	56,101	-721	64,914	56,731	630	8,183
T04	Steel Weldout	100.00	94.21	-580	-5.79	93,906	88,469	98,265	-5,437	93,906	104,300	6,035	-10,394
T05	Mould Loft	100.00	100.00	17	0.00	13,802	13,802	11,420	0	13,802	11,420	0	2,382
T06	Material Control	100.00	71.46	-578	-28.54	28,981	20,710	19,874	-8,271	28,981	27,811	7,937	1,170
T07	Planning and Control	100.00	75.82	-579	-24.18	19,328	14,654	13,816	-4,673	19,328	18,222	4,406	1,106
T09	Drawing Office	100.00	79.68	-601	-20.32	27,603	21,994	21,993	-5,609	27,603	27,603	5,610	0
T10	Production Services	100.00	53.06	-584	-46.94	89,882	47,691	49,473	-42,191	89,882	93,248	43,775	-3,366
T11	Carpenter's Shop	100.00	74.29	-585	-25.71	33,244	24,698	24,450	-8,547	33,245	32,912	8,462	333
T15	Miscellaneous	100.00	17.16	-615	-82.84	14,876	2,553	2,208	-12,323	14,876	12,869	10,661	2,007
T21	Joiner Shop	100.00	22.71	-585	-77.29	27,301	6,200	6,616	-21,101	27,301	29,127	22,511	-1,826
T22	Rigging Shop	100.00	72.77	-579	-27.23	21,515	15,656	10,724	-5,858	21,515	14,738	4,014	6,777
T23	Outfit Shop	100.00	55.26	-585	-44.74	28,606	15,808	14,627	-12,798	28,606	26,470	11,843	2,136
T24	Pipe Shop	100.00	62.31	-586	-37.69	42,939	26,755	26,504	-16,184	42,939	42,534	16,030	405
T25	Machine Shop	100.00	62.02	-585	-37.98	12,023	7,457	7,712	-4,566	12,023	12,435	4,723	-412
T26	Electrical Shop	100.00	25.84	-591	-74.16	18,660	4,822	4,821	-13,838	18,660	18,660	13,839	0
T31	On-Board Joinerwork	100.00	29.76	-584	-70.24	27,921	8,309	9,404	-19,612	27,921	31,605	22,201	-3,684
T32	On-Board Rigging	100.00	56.46	-586	-43.54	34,902	19,706	16,201	-15,196	34,903	28,695	12,494	6,208
T33	On-Board Outfit	100.00	25.65	-598	-74.35	54,178	13,897	6,014	-40,281	54,178	46,369	40,355	7,810
T34	On-Board Pipework	100.00	33.90	-601	-66.10	39,511	13,394	0	-26,117	39,511	26,115	26,115	13,396

First, Run *PERCEPTION*

1. Run "Work Center Progress Report"
2. Select the desired project(s).



3. *PERCEPTION* will display the report in its window.
4. Click on File/Save As in the main menu.



PERCEPTION - Total Shipyard Management

File Edit View Environment Library Data System Reports Window Help

New... Ctrl+N
Open... Ctrl+O
Close F4
Save Ctrl+S
Save As...
Save As Web Page...
Save Work Space
Page Setup...
Print Preview
Printer SetUp...
Print Screen
Print Immediate
Print... Ctrl+P
Print Bar Code Label...
Send To
Properties
Recent
Exit

Report

2

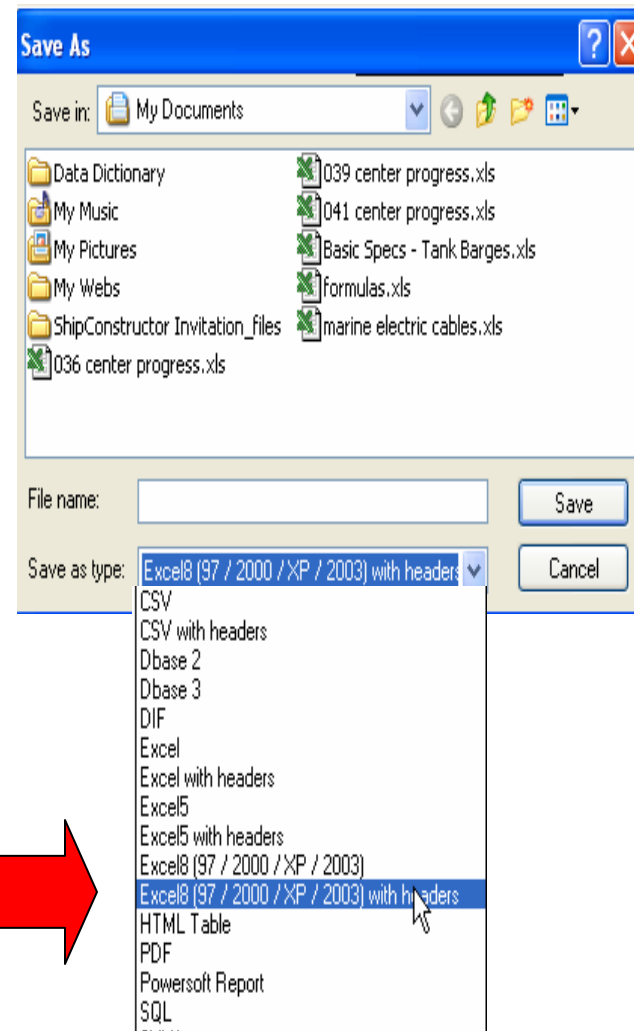
WORK-PAC Center Progress Report (PROG14) Page 1 of 1

Labor Hours

Contract: 022 to SEMESCO-EXCESS
Project: 039 to 039
Work Center: 0 to ZZZZZZZZ

	Percent Progress		Weeks Ahead	% Diff	Current Labor Hours				Final Hours			
	Planned	Actual			BCWS	BCWP	Actual Hours	Schedule Ahead	Budget	EAC	ETC	Savings
000 Assembly veld	100.00	89.95	-3	-10.05	1,195	1,074	1,101	-120	1,195	1,223	123	-29
004 Erection Fit	24.89	10.44	-8	-14.45	2,980	1,250	752	-1,730	11,975	11,390	10,638	585
005 Erection Weld	33.74	13.87	-8	-19.87	4,781	1,965	1,945	-2,816	14,170	14,021	12,076	149
006 Outfitting	19.86	4.98	-7	-14.88	1,253	314	314	-939	6,309	6,309	5,995	0
007 Air Test Tanks	76.12	4.59	-13	-71.53	761	46	46	-715	1,000	1,000	954	0
008 Hydro Tests	0.00	0.00	0	0.00	0	0	0	0	920	920	920	0
009 Machinery	0.00	0.00	0	0.00	0	0	0	0	457	457	457	0
010 Electrical	47.06	0.00	-1	-47.06	535	0	0	-535	1,137	1,137	1,137	0
012 Rigging	100.00	100.00	-5	0.00	696	696	740	0	696	740	0	-44
015 Piping	32.67	9.71	-8	-22.96	428	127	127	-301	1,310	1,304	1,177	6
900 Production Services	0.00	0.00	0	0.00	0	0	0	0	1,080	1,080	1,080	0
Report Totals	69.60	37.64	-6	-31.96	71,897	38,886	36,783	-33,011	103,299	101,208	64,425	2,091

5. Save the report as an Excel file with headers



Open The Excel File

1. Open the Excel file holding the work center report
2. Click on the box at the upper left corner of this report data to highlight the entire report data in the worksheet.
3. Click on the *Copy* button

Open “CenterEfficiencyAnalysis.xls”

1. Open “CenterEfficiencyAnalysis.xls” Excel workbook.
2. Open the “Work Center Progress” worksheet
3. Click on the worksheet cell A:1
4. Click on the *Paste* button (delete any work centers from an earlier use at the bottom that do not belong)

Open “Results” Worksheet

5. Efficiency graphics reports are produced in the “Results” worksheet.
6. Print/Email "Results" Worksheet using *File/Create Adobe PDF*.

The following describes the graphics in the “Results” worksheet

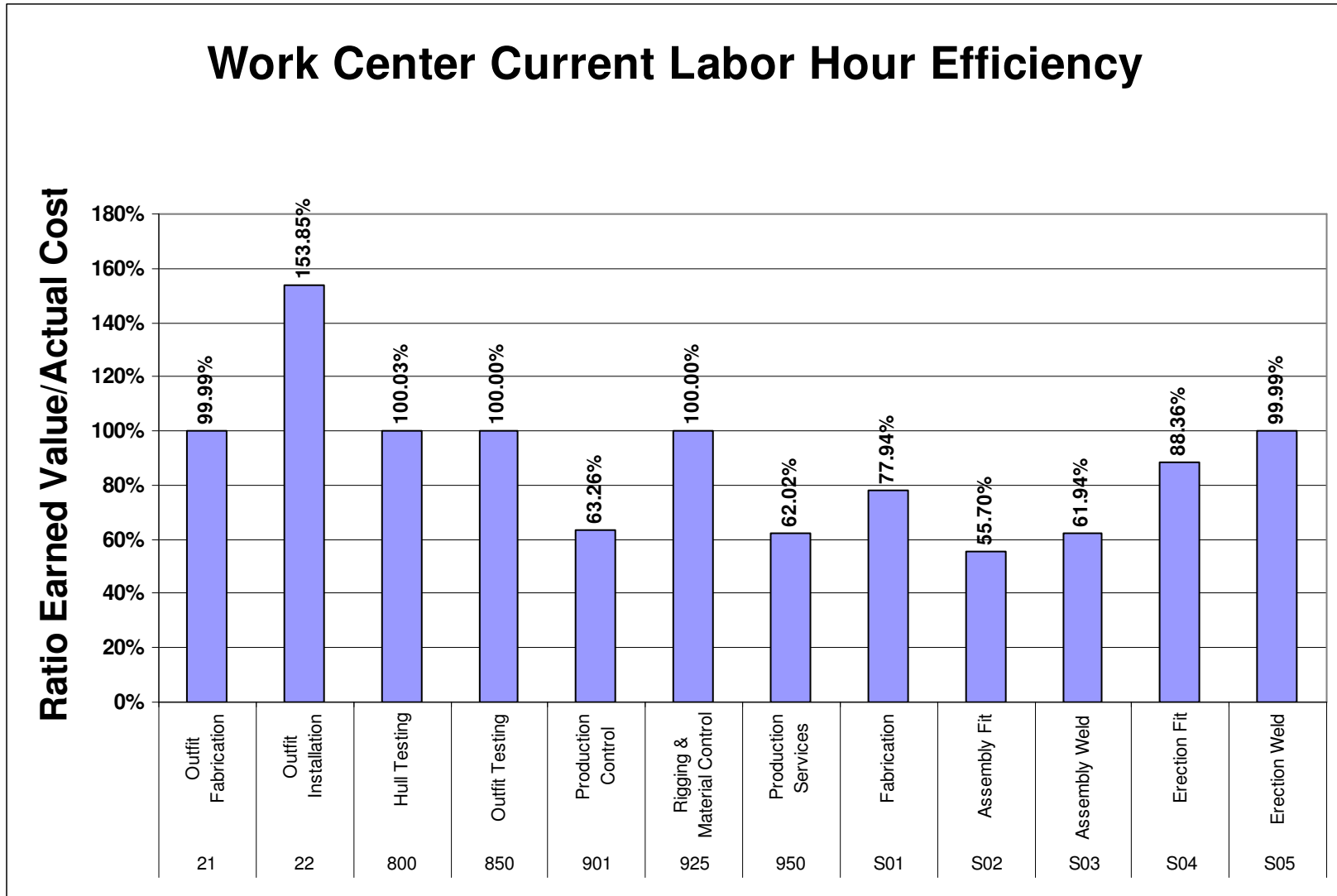
Work Center Cost Efficiency Analysis

PERCEPTION measures a work center's cost (labor hour) efficiency by the ratio of its earned value (Budgeted cost of Work Performed, or BCWP) to its actual costs charged against a project (Actual Cost of Work Performed, or ACWP).

This ratio also is called the Work Center Cost Performance Index. When the index is greater than 1.0 (the earned value is greater than the actual cost), the work center is performing better than what has been budgeted in its work orders.

On the other hand, when the index is less than 1.0, the work center is performing in an over-run condition. It is performing over its budgets.

Work Center Current Labor Hour Efficiency



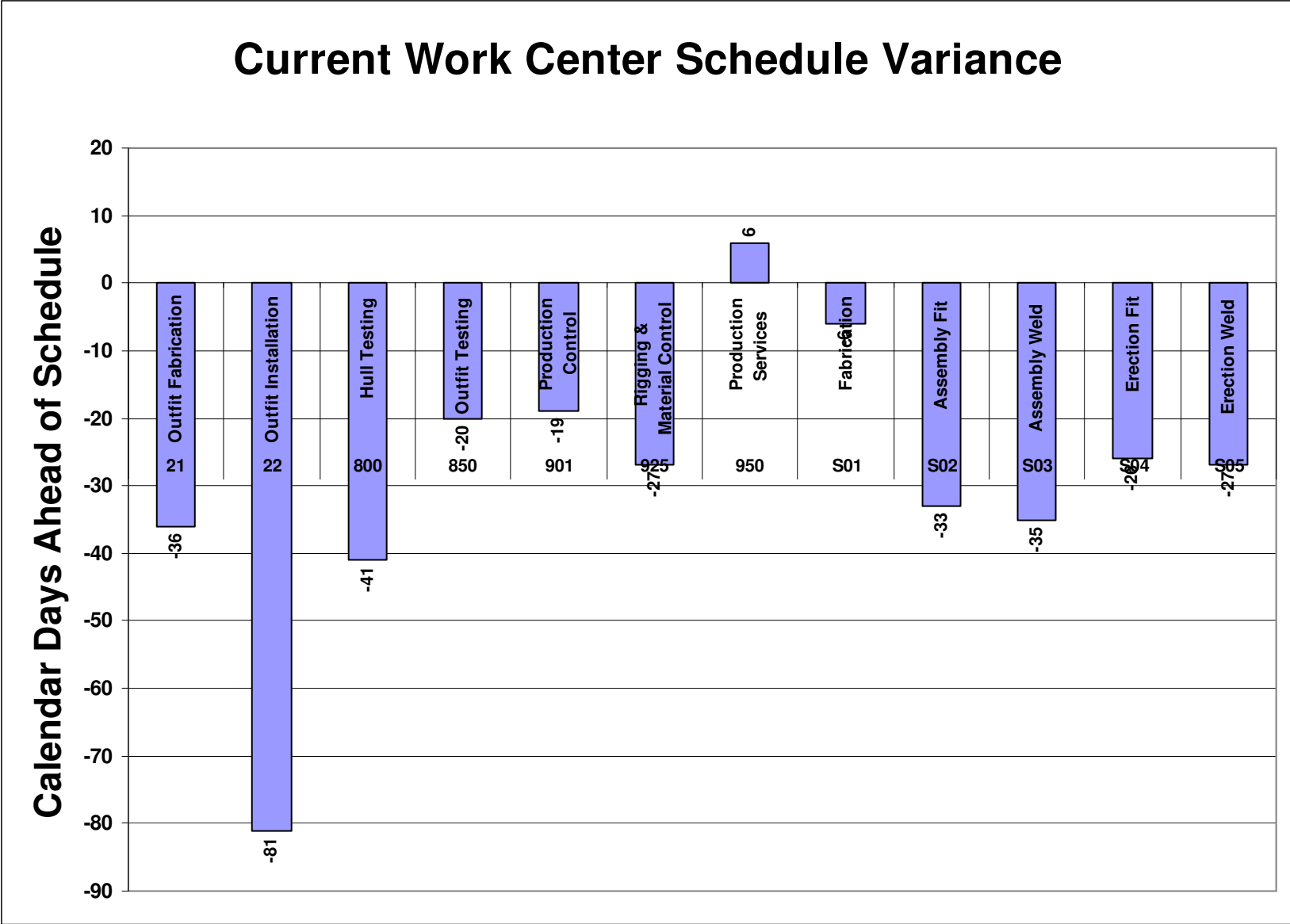
Work Center Schedule Analysis

PERCEPTION measures a work center's schedule and how far the work center is performing off the plan.

This schedule variance is given in terms of work weeks and calendar days.

This information provides a quick indication where there are the more significant schedule bottlenecks that affect not only overall schedules, but impact costs as well.

Current Work Center Schedule Variance



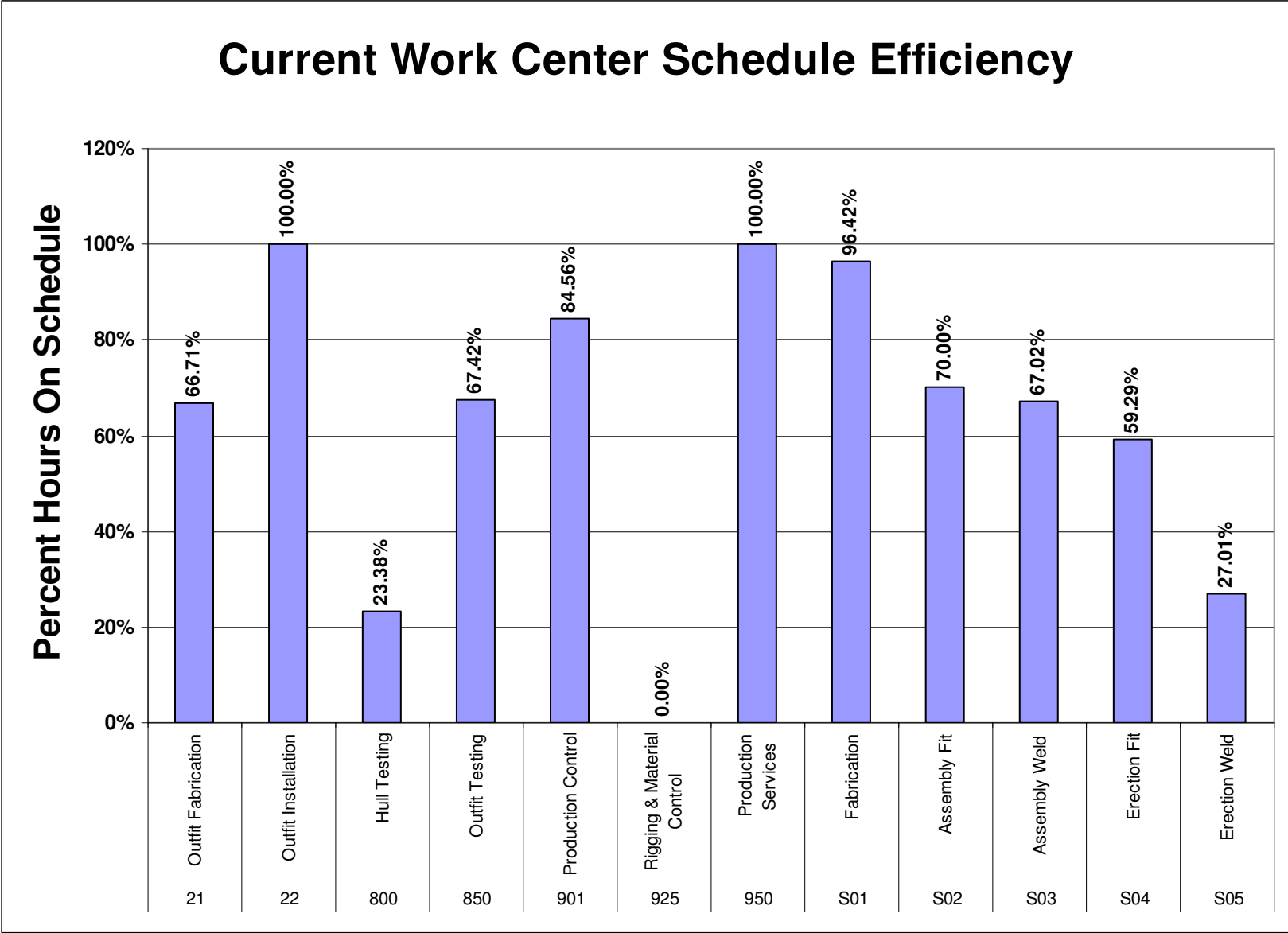
Work Center Schedule Efficiency Analysis

PERCEPTION measures a work center's schedule efficiency by the ratio of its earned value (Budgeted Cost of Work Performed, or BCWP) to its Budgeted Cost of Work Scheduled, or BCWS.

This ratio also is called the Work Center Schedule Performance Index. When the index is greater than 1.0 (the earned value is greater than the scheduled cost), the work center is performing better than what has been planned for its work orders.

On the other hand, when the index is less than 1.0, the work center is performing behind schedule.

Current Work Center Schedule Efficiency



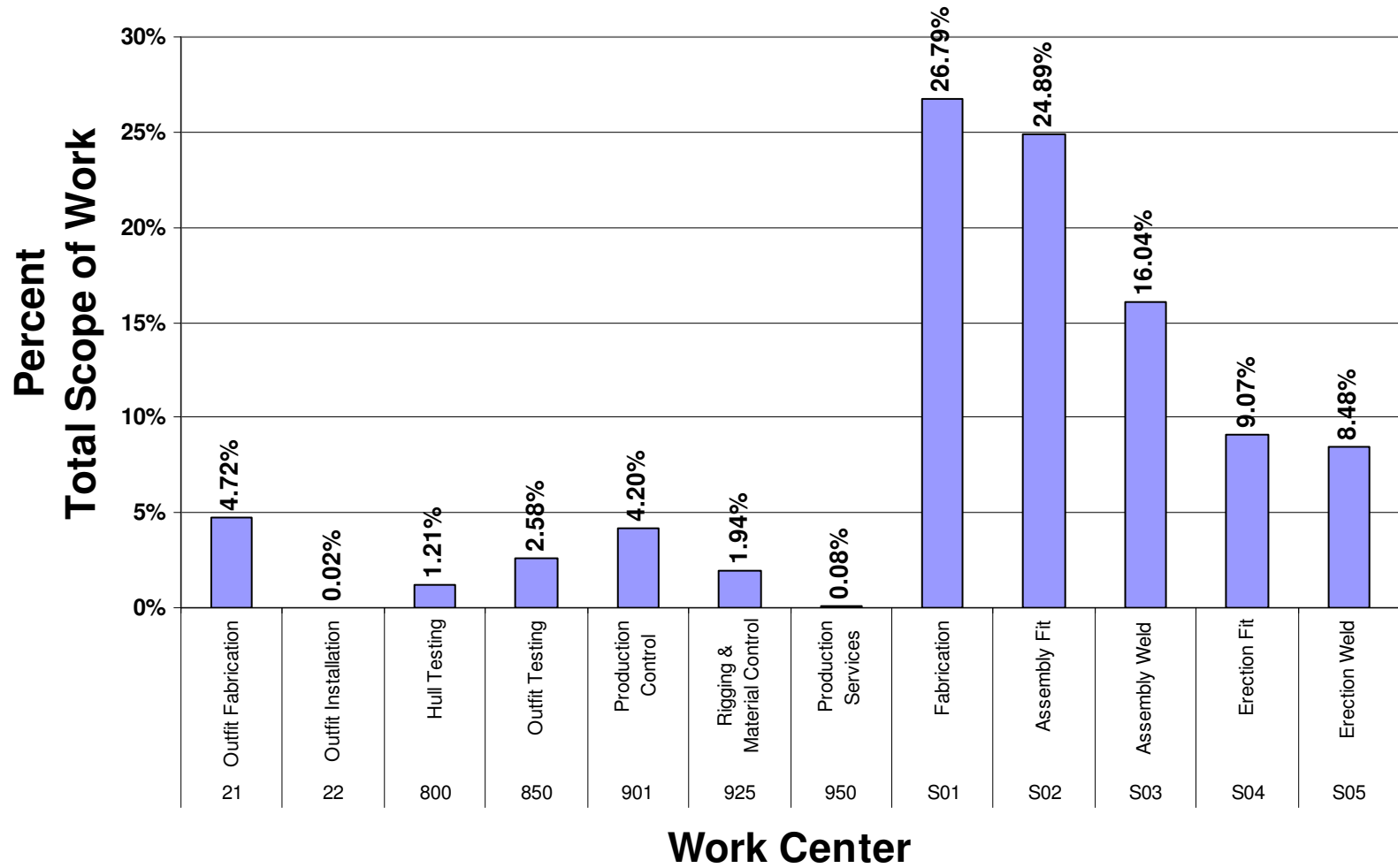
Identifying Major Work Centers

Some work centers are more involved than others in executing the scope of work of a project.

When management focuses on process improvement programs, these major work centers should receive the most attention in developing new ways to drive down costs and shorten process schedules.

These are the centers where improvements are likely to generate the most benefits for the company.

Work Center Cost Drivers

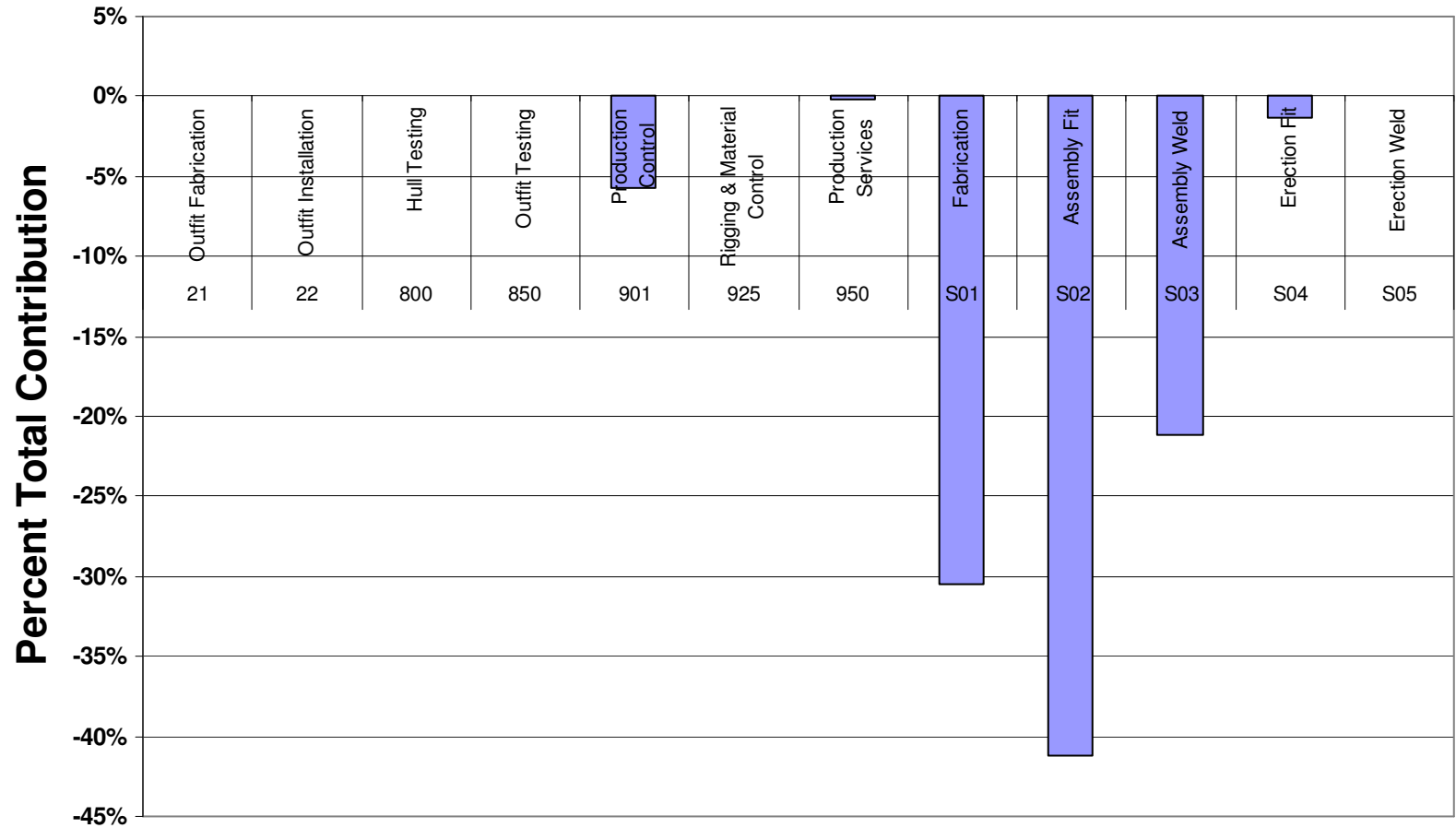


Measuring Major Work Center Contributors to Profit/Loss

Some work centers are more involved than others in executing the scope of work of a project. However, regardless of the planned scope of work, there may be other work centers that are major contributors to the overall project profit or loss.

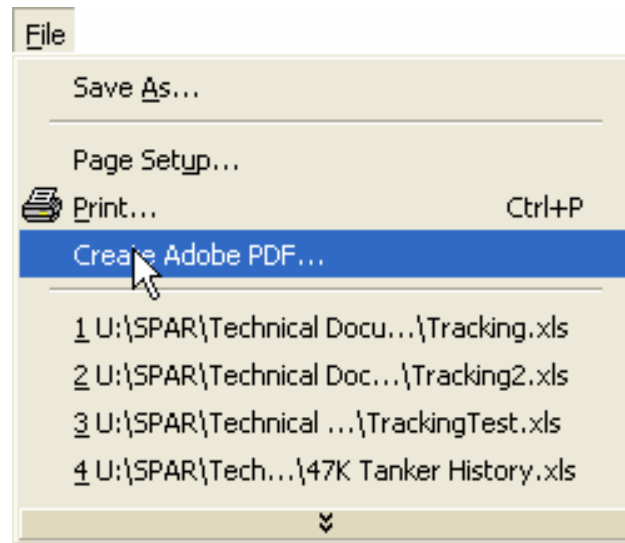
Centers that are big contributors to a project's loss require management's most immediate attention to determine the cause of their cost problems and their solutions.

Work Center Contribution to Total Project Savings/Losses

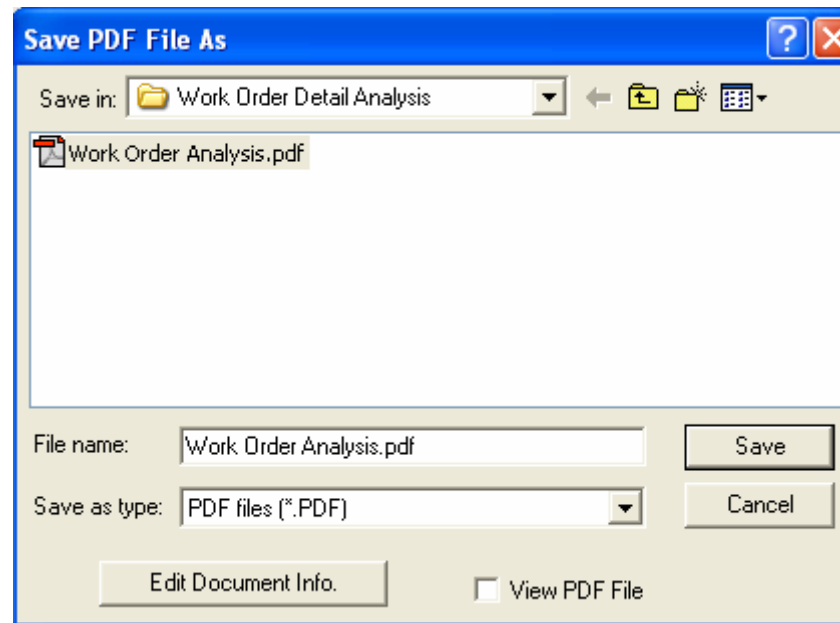


Printing & Emailing Results

To email these reports, output them to Acrobat PDF Writer: Open the “Results” worksheet and click on *File/Create Adobe PDF*



**Identify a PDF file name and directory to store it.
Then click on *Save*.**



This file then can be emailed and/or printed directly.

End Of Tutorial

PERCEPTION summarizes performance at all levels of a project. The following presentations describe those that are critical to the management of any project.

- 1. Tracking progress and estimates at completion: these reports track budget, earned value (BCWP), actual costs (ACWP), budgeted cost of work scheduled (BCWS), and estimate at completion (EAC), as well as cost/schedule variances and trends.**
- 2. Measuring and summarizing work order performance in terms of costs and schedules. The system can focus on any selection of work orders for in-depth analysis of detail performance.**
- 3. Measuring and summarizing work center performance in terms of costs and schedules. The system can focus on any selection of work orders for in-depth analysis of production process performance.**
- 4. Measuring and summarizing material resource requirements in terms of costs and schedules. The system tracks commitments, receipts, and usage of direct purchase material, subcontract work, owner-furnished material and general stock.**

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- Training & maintenance support**
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- Cost estimating services**
- Management consulting**

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