

Test Facility Request System (TFRS) Update (TFRS 2.0)

Authors:

Dennis Bowers – MTS/GRC

Alan Sikon – MTS/GRC

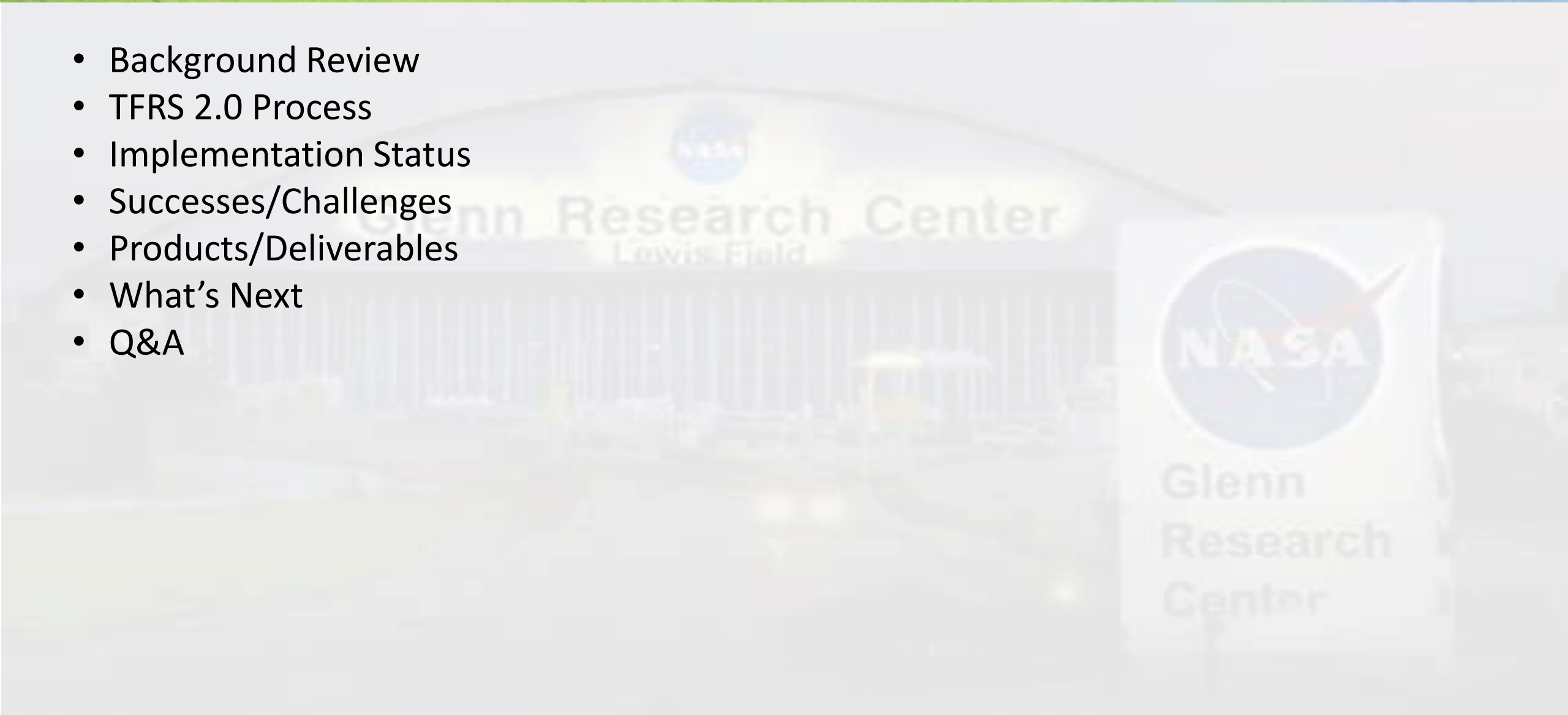
Joseph Panek - GRC

Michael Zernic - GRC

Test Facility Request System (TFRS) Augmentations Agenda



- Background Review
- TFRS 2.0 Process
- Implementation Status
- Successes/Challenges
- Products/Deliverables
- What's Next
- Q&A



NASA GRC – Lewis Field Test Facility Test Facilities



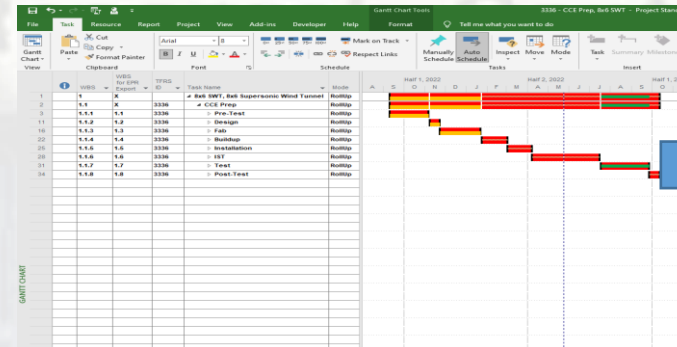
AAPL - Aero-Acoustic Propulsion Laboratory
CPRC - Chemical Propulsion Research Complex
CRCC - The Creek Road Cryogenics Complex
ECL - Exercise Countermeasures Laboratory
EPPL - The Electric Propulsion and Power Laboratory
EPRB - Electric Propulsion Research Building
ERB - Engine Research Building
IRT - Icing Research Tunnel
GEER - Glenn Extreme Environments Rig
PSL - Propulsion Systems Laboratory
PSF - Power Systems Facility
8'x6' Supersonic/9'x15' Low Speed Wind Tunnels
10'x10' Supersonic Wind Tunnel

Includes over 400 R&D Laboratories
FY23 - 241 Approved Test Requests
FY24 to date – 168 Approved Test Requests

Test Facility Request System (TFRS) - Static



- Test Facility Request System (Existing online tool)
 - Oracle Database
 - Developed for entry and approval for annual forecasting of test services
 - Aero and Space test facilities are grouped into 10 Capability Asset Groups (CAG) covering distinct test areas
 - (for example, Aero Acoustics, Fuel Cells, In Space Propulsion and Power, etc.)

A screenshot of the Test Facility Request System (TFRS) web interface. The page has a blue header with the NASA logo and the title 'Test Facility Request System'. Below the header, there are several sections for data entry, including 'Test ID', 'Test Name', 'Requester', 'Project Manager', 'Facility', 'Test Cell', 'Supporting Mission', 'WDS', 'Test Dates', 'Request Comments', and 'Test Requirements'. Each section contains input fields and dropdown menus for selecting options.

Monthly

Summary
Gantt
Chart

Project
Review
Boards
(PRBs)

- TFR is initiated using online tool
- TFR goes through approval process

- Facility Manager (FM) updates Master Facility Schedule
- FM works with Branch Chief (BC) to determine Test Start Date, level of effort, and any non-labor costs
- BC & Deputy Branch Chief (DBC) periodically meet to determine if labor updates are required

• Problem

- Current system is static
- Limits managers' abilities to keep up with changing test schedules, corresponding labor, evolving requirements, and unanticipated testing anomalies

- Project Scheduler (One Pager) creates charts for monthly Project Review Boards (PRBs)

Test Facility Request System (TFRS 2.0) - Dynamic



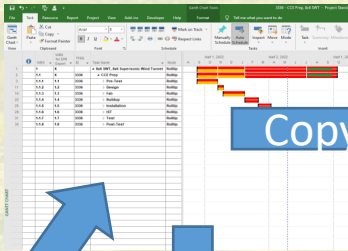
Executed for New TFR Only!

1a. TFRS (Online Tool)

New
TFR?

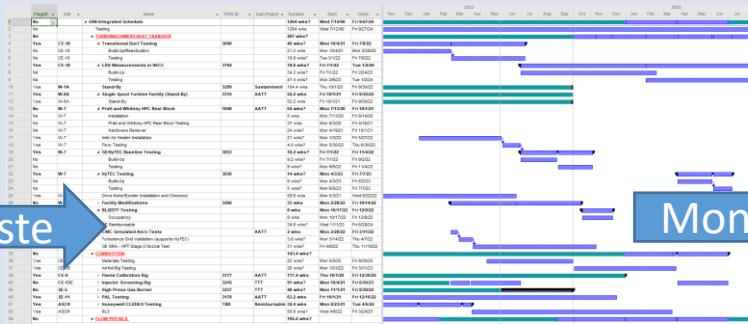
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2. Test Schedule



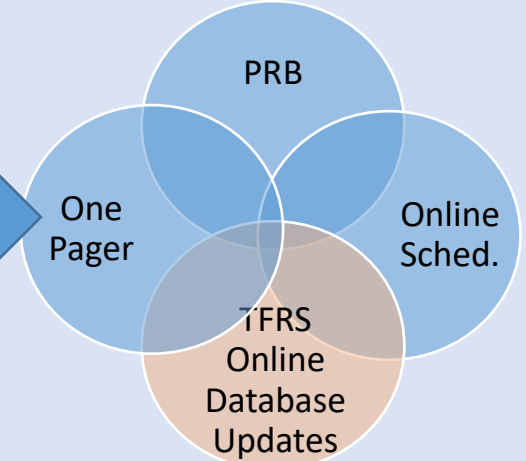
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4. Test Facility Master Schedule



Monthly

6. Deliverables



1b. TFRs Schedule and Labor Tool (SaLT)

AUTO

3. Estimated Pricing Report

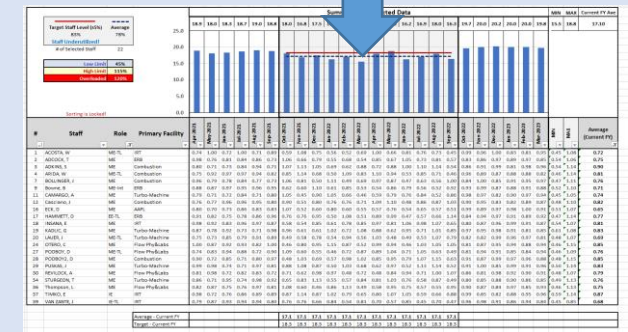
1c. Master FT Skills List

a. Updated
Schedule

b. Updated
Staffing

Automated

5. Branch Labor Tool (BLT)



7. Labor Report

Test Facility Request System (TFRS 2.0) - Dynamic



Executed for New TFR Only!

Auto (future)

1a. TFRS (Online Tool)

2. Test Schedule

4. Test Facility Master Schedule

6. Deliverables

New TFR?

Copy & Paste

AUTO

AUTO

Copy & Paste

Monthly

Automated

a. Updated Schedule

b. Updated Staffing

Auto (future)

1b. TFRs Schedule and Labor Tool (SaLT)

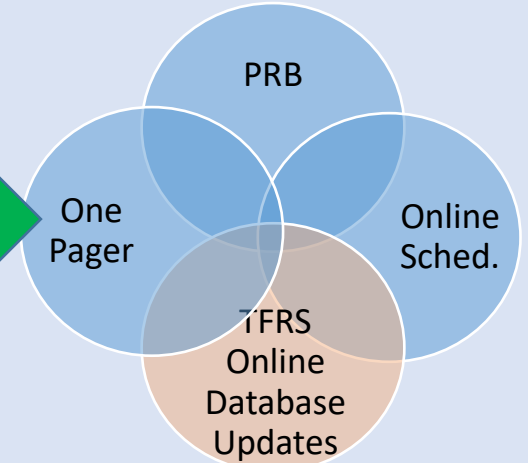
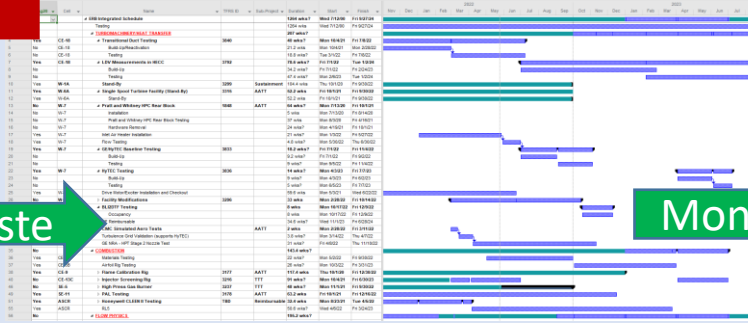
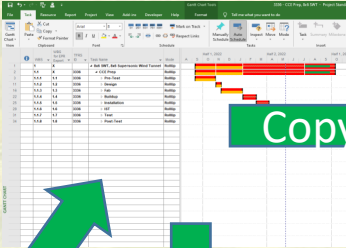
3. Estimated Pricing Report

5. Branch Labor Tool (BLT)

7. Labor Report

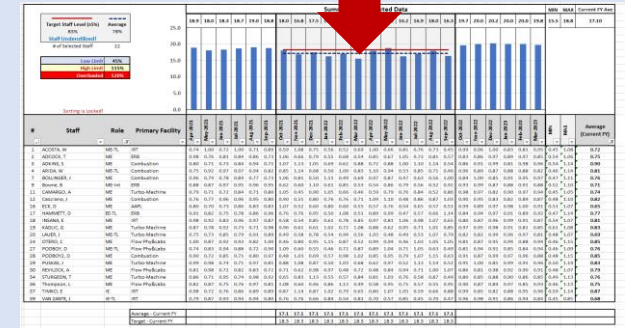
1c. Master FT Skills List

Auto - In Process



Area Based on Facility	Test Facility	Test Facility ID	Test Facility Name	Test Facility Type	Test Facility Status
ATC Facilities	ATC	1	ATC Facility	ATC	Active
ATC Facilities	ATC	2	ATC Facility	ATC	Active
ATC Facilities	ATC	3	ATC Facility	ATC	Active
ATC Facilities	ATC	4	ATC Facility	ATC	Active
ATC Facilities	ATC	5	ATC Facility	ATC	Active

FTB - TECHNICAL STAFF - Monthly Update									
Project	Facility	Staff	Rate	Hours	Cost	Notes	Organization	Change from Prev Month	TOTALS
10	Engine Research	ENR	ENR	JONES, V	EST	FTB WTE	0.00	0.00	0.00
11	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
12	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
13	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
14	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
15	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
16	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
17	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
18	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
19	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
20	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
21	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
22	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
23	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
24	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
25	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
26	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
27	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
28	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
29	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
30	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
31	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
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33	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
34	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
35	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
36	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
37	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
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66	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
67	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
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75	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00
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100	Personnel	ATC	ATC	MARTIN, S	EST	FTB WTE	0.00	0.00	0.00



Implementation Challenges/Successes



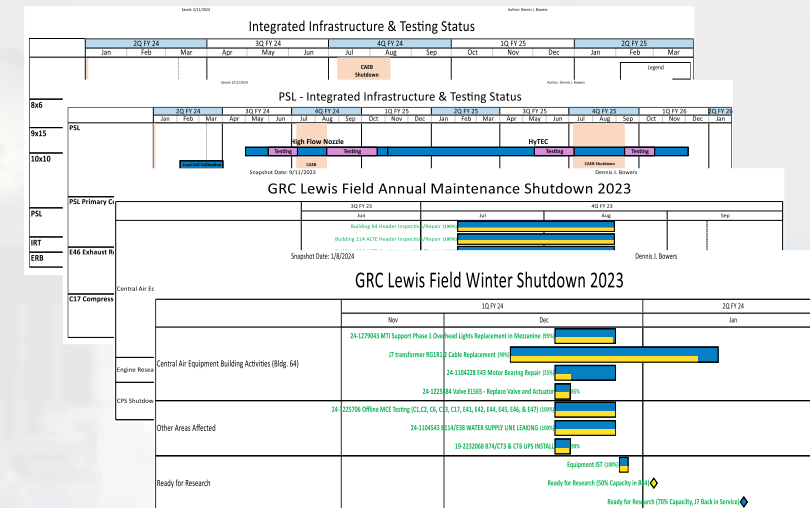
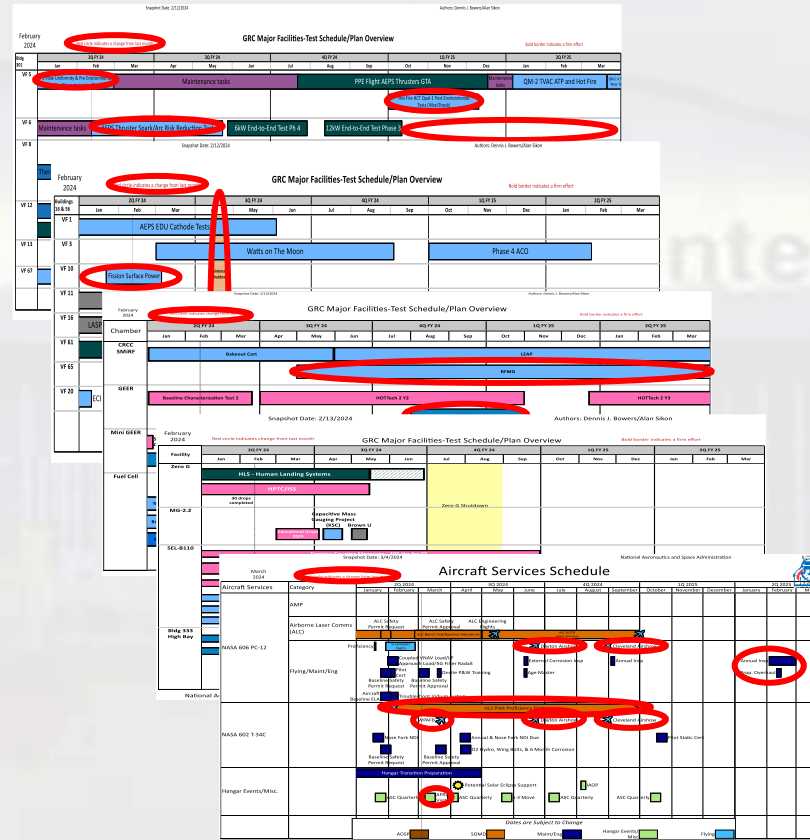
Successes

- Standardization of test facility schedules
- Flexibility of test facility schedules
- Labor data included in the test facility schedules
- Data consolidation for reporting
- Better resolution of labor data
- Generation of PRB One Pagers has gone smoother than anticipated.
- Improved quality of test estimations

Challenges

- Implementation took longer than desired due to other priorities
- Resistance to change
- New process with increased complexity
- Nomenclature standardization
- On-boarding of new users

- Integrated Test-Institutional Schedules/FURrB & CMC



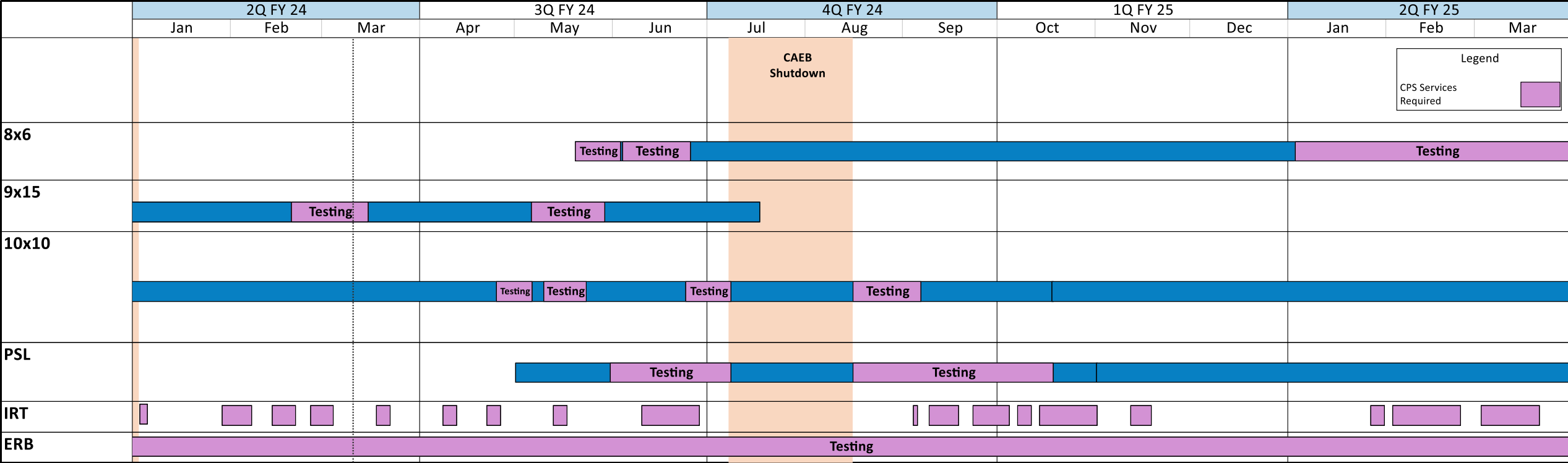
Current Products/Deliverables



Saved: 3/21/2024

Author: Dennis J. Bowers

Integrated Infrastructure & Testing Status



TFRs Monthly Aggregated Labor & Test Schedules (MALTS) – ERB



ERB February 1, 2024

FY 2024

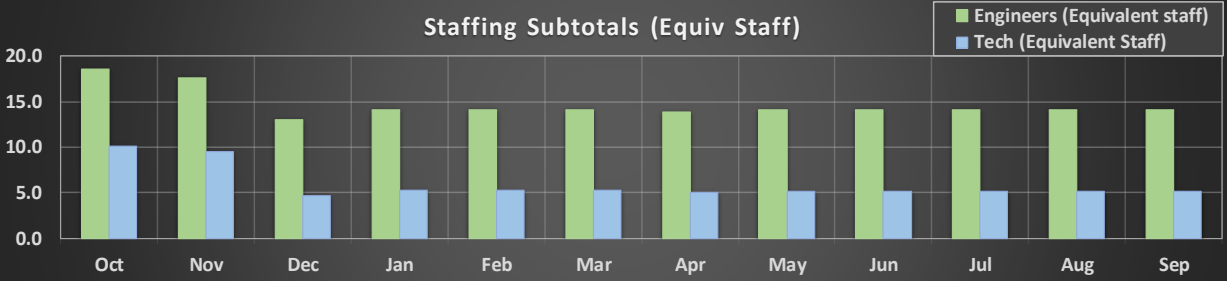
Select
Project Files

Create New
Sheet

Go to
Menu

Show All
Rows

Update
Gantt Chart



Bar Color Key		
A	B	C
D	E	F
G	H	I
J	K	L
	M	N
O		
P		

Total Hrs/Month	2919	1588	2766	1493	1948	693	2120	780	2019	743	2120	780	2171	793	2211	816	1910	705	2211	816	2211	816	2010	742
Equiv Staff/Month	18.6	10.1	17.6	9.5	13.0	4.6	14.2	5.2	14.1	5.2	14.2	5.2	13.8	5.1	14.1	5.2	14.1	5.2	14.1	5.2	14.1	5.2	14.1	5.2
Workdays/Month	22		22		21		21		20		21		22		22		19		22		22		20	

Filtered SubTotals			
14.69	5.94	26,615	10,767
20.6		37,381	

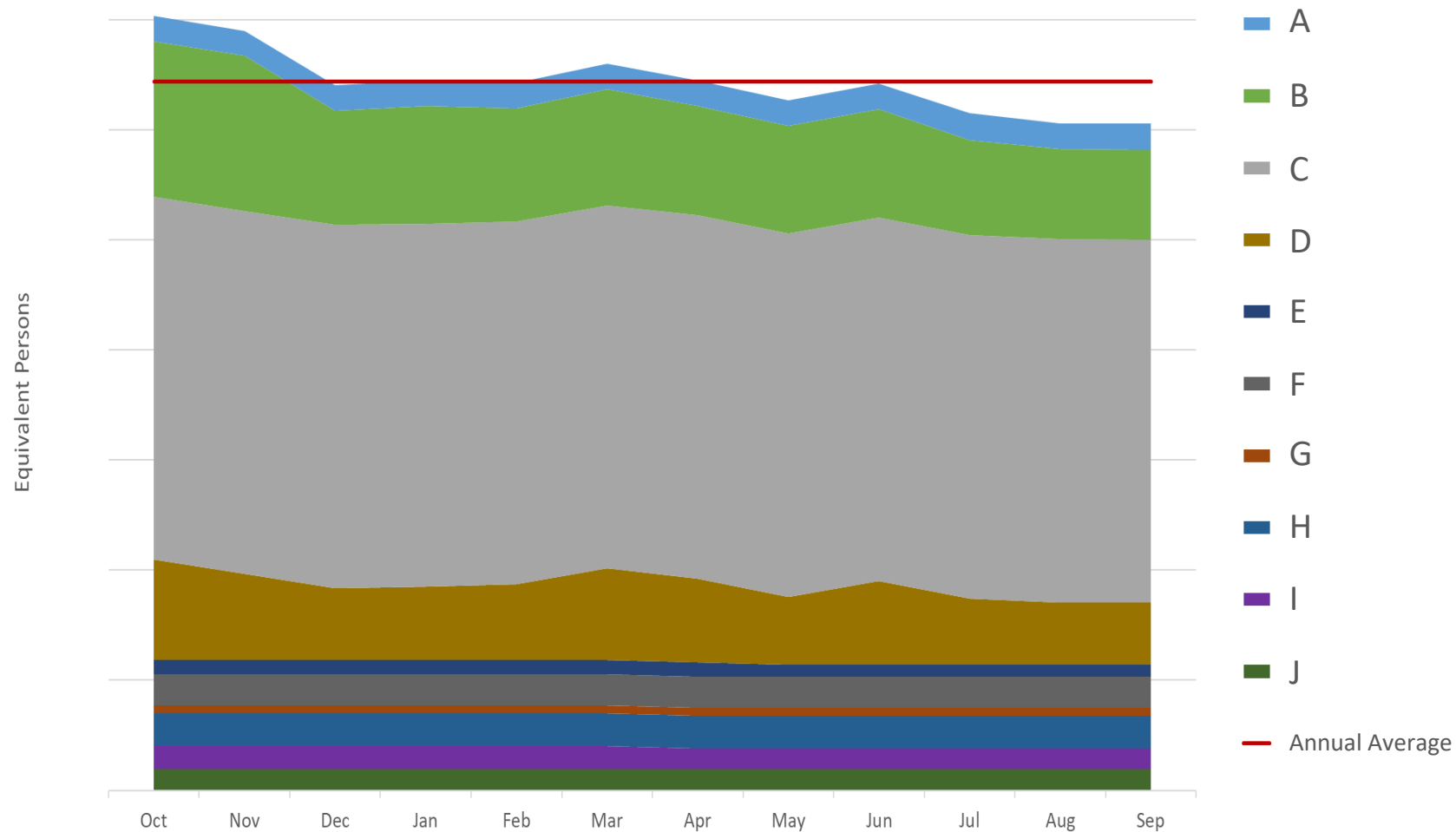
Project Totals			
Equivalent Engineers	Equivalent Technicians	Engineering Hours	Technician Hours
0.00	0.02	0	35
0.84	0.66	1,514	1,200
1.69	1.12	3,065	2,031
1.38	0.79	2,505	1,428
1.38	0.80	2,493	1,443
1.07	0.82	1,939	1,481
1.69	1.12	3,065	2,031
0.32	0.43	588	786
2.46	0.14	4,451	262
1.40	0.04	2,544	70
2.46	0.00	4,451	0

Line #	TFRS ID#	CAG	Area	Facility /Lab	Test Name	Mission/ Program/ Project	Test/Task Duration		Work days (Net)	October		November		December		January		February		March		April		May		June		July		August		September		Equivalent Engineers	Equivalent Technicians	Engineering Hours	Technician Hours
							Begin	End		Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech	Engr	Tech				
1	4442	Engine Research	ERB Combustion	ASCR	Test H1		10/2/23	9/30/24	254		3		3		3		3		3		3		3		3		3		3		3		3	0.00	0.02	0	35
2	4383	Engine Research	ERB Combustion	CE-5B	Test B1		10/2/23	12/6/23	48	706	560	673	533	135	107																		0.84	0.66	1,514	1,200	
3	4391	Engine Research	ERB Combustion	CE-9	Test A1		10/2/23	9/30/24	254	258	171	245	163	245	163	258	171	245	163	258	171	270	179	270	179	233	154	270	179	270	179	245	163	1.69	1.12	3,065	2,031
4	4439	Engine Research	ERB Combustion	CE-13C	Test H2		10/2/23	3/29/24	127	428	244	407	232	407	232	428	244	407	232	428	244													1.38	0.79	2,505	1,428
5	4438	Engine Research	ERB Combustion	CE-13C	Test J1		4/3/24	9/30/24	125												399	231	439	254	379	219	439	254	439	254	399	231	1.38	0.80	2,493	1,443	
6	4437	Engine Research	ERB Combustion	SE-5	Test A2		1/2/24	9/30/24	189							215	165	205	157	215	165	226	172	226	172	195	149	226	172	226	172	205	157	1.07	0.82	1,939	1,481
7	4390	Engine Research	ERB Combustion	SE-11	Test A3		10/2/23	9/30/24	254	258	171	245	163	245	163	258	171	245	163	258	171	270	179	270	179	233	154	270	179	270	179	245	163	1.69	1.12	3,065	2,031
8	4464	Engine Research	ERB Combustion	ERB	Test P1		10/2/23	11/29/23	43	309	412	279	373																				0.32	0.43	588	786	
10	99300	Engine Research	ERB Combustion	ERB	Test M1		10/2/23	9/30/24	254	374	22	356	21	356	21	374	22	356	21	374	22	392	23	392	23	338	20	392	23	392	23	356	21	2.46	0.14	4,451	262
25	99200	Engine Research	ERB Combustion	ERB	Test M2		10/2/23	9/30/24	254	214	6	204	6	204	6	214	6	204	6	214	6	224	6	224	6	193	5	224	6	224	6	204	6	1.40	0.04	2,544	70
37	99000	Engine Research	ERB Combustion	ERB	Test M3		10/2/23	9/30/24	254	374		356		356		374		356		374		392		392		338		392		392		356		2.46	0.00	4,451	0

Demand Workforce Summary - sMSC



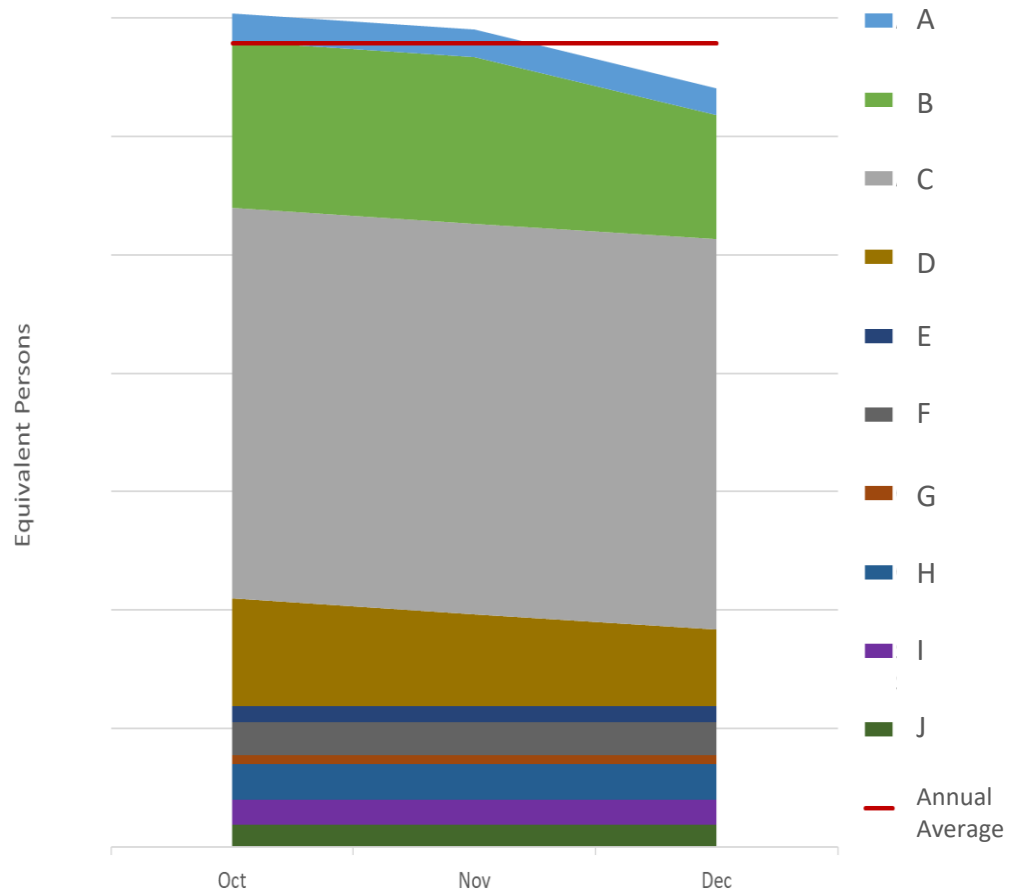
FY24 Test Services Equivalent Persons to meet TFRs Demand



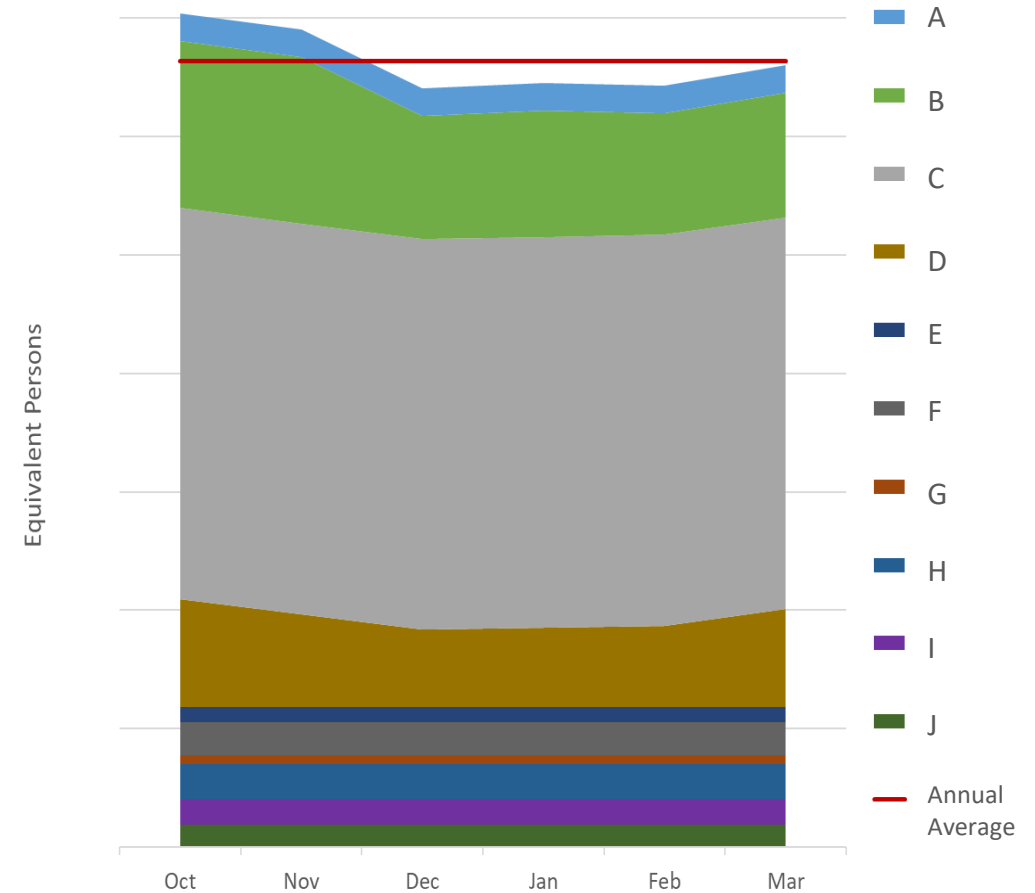
CAG	Annual Averages
A	27
B	115
C	305
D	70
E	11
F	25
G	6
H	28
I	22
J	19
Total Annual Average	628
1 st Half Average	650
1 st Quarter Average	670

Demand Workforce Summary - sMSC

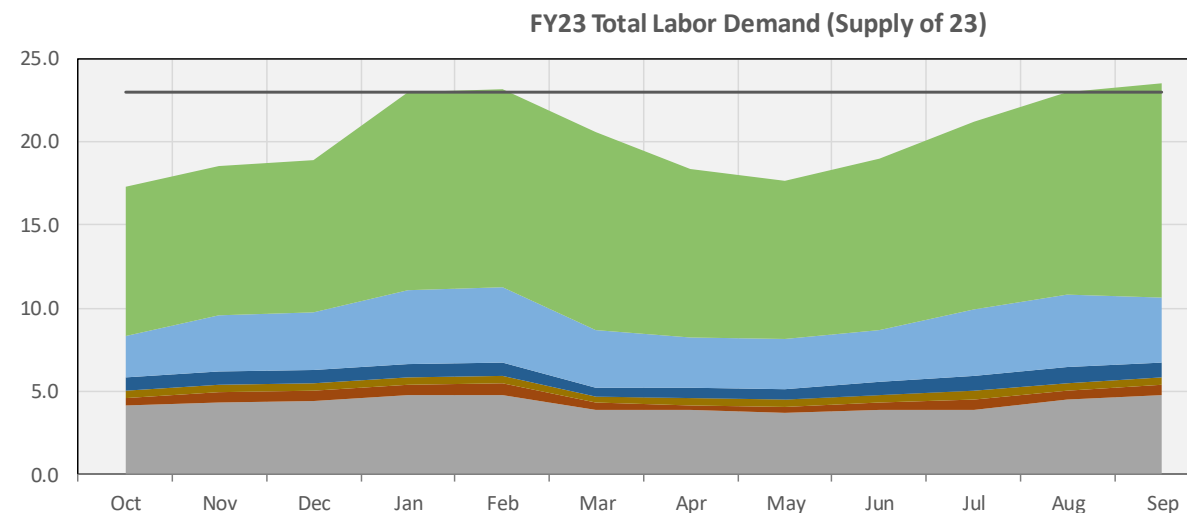
FY24 Test Services Equivalent Persons to meet TFRs Demand



FY24 Test Services Equivalent Persons to meet TFRs Demand



FX
Facilities
Management Integration Division

[illegible]

What's Next?



- Implementation
 - Training of new Facility Managers
 - Branch Labor Tool (BLT)
 - Monthly Aggregated Labor and Test Schedule (MaLT)
 - Dashboard Development/Utilization
- Sync up relevant features of TFRS 2.0 initiative with Facility project tracking tool
 - Provide a more robust and confident integrated testing and institutional schedules that may impact service delivery to test facilities and/or test capabilities
 - Enable resource plan vs actual status for Program/CESO fund-shared infrastructure and/or repair projects

Glenn Research Center
Lewis Field

Questions

Contact

dennis.j.bowers@nasa.gov



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Lewis Field

Backup



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“Dynamic” TFRS 2.0 Process

For each TFR

- TFR is initiated
- FM copies High level data from TFRS into the Schedule and Labor Tool (SaLT)
- BC and FM determine
 - Test Start Date
 - Customizable Name and duration of 1st level Test tasks (e.g. Pre-Test, Buildup, Test, Post-Test)
 - Non-Labor Costs (if known)
- BC & DBC select Test Skills from Master FT Skills List and Auto-Transfer to SaLT
- BC & DBC determine level of effort for each skill
- FM creates an individual spreadsheet Tab for the TFR (Excel Macro)
- Within SaLT, FM Auto-creates a TFR-specific MSProject Schedule and then an EPR from MSProject
 - FM copies the TFR-specific MSProject Schedule into the Facility Master MSProject Schedule
 - FM copies completed EPR into the on line TFRS system
- BC Auto-transfers TFR and Schedule data into the BLT

Monthly

- FM updates Test Facility Master Schedule as needed
- Updated project dates auto transferred to BLT
- BC updates labor in BLT
- Updated labor auto transferred to Test Facility Master Schedule
- Monthly deliverables developed from updated Test Facility Master Schedule
- Labor reports can be generated from TFRS On-Line Database (i.e. Dashboard)