Commentary on FY2011-FTL-FTE-yrs.xls
Peter H. Garbincius - 4nov2011

FY2011 Fermilab Personnel Deployment in FTE-yrs
FY2011-FTL-FTE-yrs.xls/Commentary

Introduction and Purpose

This study, and the resultant EXCEL spreadsheet and pivot tables contained herein, was done to understand how the Fermilab staff was deployed in FY2011.
This was in anticipation for the upcoming OHAP Survey of personnel needs for the period FY 2012-2021.
The information was gathered from the Kronos FTL system along with subsidiary information from PeopleSoft and OHAP.
The main spread sheet (named All FY11 Data) contains the FTL records of any Fermilab employee who charged time against any Fermilab account.
Using this, one can view information employee by employee, or sum by Activity (OHAP & FLAG), Expenditure Type, OHAP Organizational Role, etc.
The data is integrated over these categories for the one year FTL reporting period (late Sept 2010 - late Sept 2011) which is assumed to be "close enuf" to FY2011.
This data set (17,955 lines) does not contain the month-by-month history throughout FY 2011.
Most of the complications and real work had to do with tracking down incomplete or inconsistent data and understanding and correcting for the complications of how overtime and differing methods of showing compensation for shift work, organization by organization, were treating in terms of defining Full-Time Equivalent-years.
Some "canned" pivot tables, corresponding to projections useful to OHAP, have been produced and are included in this EXCEL workbook.
Users are encouraged to download this EXCEL workbook and to use the quantities in sheet: ALL FY11 Data, either by using the filters or forming pivot tables for their own studies.

If you have any questions or suggestions, please be sure to contact Peter Garbincius at x3693 or at peterg@fnal.gov

Thank you, and Good Luck,

Peter

What is a "Full-Time Equivalent"?

The correct notation is really Full-Time Equivalent (rate) * Year (time)
That is, one can have a person working for you full time for 1 month, but that doesn't sum up to a full time person working for you for an entire year, the quantity in which we are interested.
The notation is FTE-yr, which is customarily shortened to FTE.

How many hours of work are in an FTE? If one takes 52 weeks * 40 hrs/week, one gets 2,080 hours per year if someone worked regular hours without any time off.
At Fermilab, we used to keep track of the "time worked" fraction separately for every organization and for monthly and weekly separately. This is no longer done.
We now assume an average "time worked" fraction of 85% which covers holidays, vacations, sick leave, etc. for all employees.
So the average number of worked hours per year (which appear on everyone's FTL timecard) is 2,080*85% = 1,768 hours.

Bridgette Fricks and I worked with WDRS and Accounting to get a spreadsheet (ALL FY11 Data)for the FY2011 actual time reporting experience from FTL/Kronos and PeopleSoft.
The task was to transform these reports of hours into FTEs (FTE-yrs)
We had to carefully define what we meant by a FTE.

In general, the following types of time charges are NOT included as FTEs:
On Call Employee Flag (column R):
Summer Employee Flag (column S): Y
Expenditure Type (column I): Y
Expenditure Type (column I): SUMMER/TEMP EMP. WEEKLY
Difference between Monthly Actual Hours - Units OVERTIME

Expenditure Type (column I): TIME WORKED -MONTHLY:

In general, the following types of time charges ARE included as FTEs: Hours SUM (col L) - Quantity SUM (col M)
Weekly Regular Hours: Expenditure Type (column I): TIME WORKED -WEEKLY
Monthly "Units" (norm to 40 hours/week): Expenditure Type (column I): TIME WORKED -MONTHLY: Quantity SUM (col M)

I said "in general" since there are additional complications for weekly personnel who are on assigned shift work. These are				Global correction	see sheet "corrections"
Accelerator Operators	correction for shift differential which is added to	TIME WORKED -WEEKLY		-14	FTEs
Communications/Dispatcher	correction for shift differential which is added to	TIME WORKED -WEEKLY		-9	FTEs
Firefighters	correction for shift differential which is added to	TIME WORKED -WEEKLY		-26	FTEs
Central Helium Liquifier	12 hour shifts (3,3,4 per week cycle) where > 8 hours per shift shows as	OVERTIME	plus	3.7	FTEs
PPD-Mechanical Techs - CDF	12 hour shifts (3,3,4 per week cycle) where > 8 hours per shift shows as	OVERTIME	plus	1.5	FTEs
PPD-Mechanical Techs - DZero	12 hour shifts (3,3,4 per week cycle) where > 8 hours per shift shows as	OVERTIME	plus	1.5	FTEs
Duty Electrician/Duty Mechanic	correction for shift differential which is added to	TIME WORKED -WEEKLY		-6.3	FTEs
		net correction		-48.6	FTEs

Since we were interested in the correlation of time (translated into FTE-yrs) with OHAP Functional Roles (column B) and OHAP Activities (column D), a lot of time was spent finding and filling in these quantities. However, since Summer and On-Call categories were not included in FTEs, very little effort was invested in completing the OHAP Functional Roles for Summer and On-Call personnel.

Similarly, there was no OHAP Activity listed for Accounts Receivable (AR), so I entered Accounts Receivable for the OHAP Activity (column D)

The FTL statistics include some F.R.A. Staff which are not considered part of Fermilab FTE.
For these, I filled FRA... for Organization (col A), Fnc. Role (col B), and Activity (col D)
I have not removed these from compilation for total FTE, so one has to remove them (total of 6.1 FTE-yrs)
(note that on FTE charged 0.2 FTE to Activity: Financial Management - forget the inconsistency at this level)

Statistics

Before Correction in FTE for Shift Work Differential		col L Hours SUM	col M Quantity SUM	col N Munits-Wreghr	col O FTE	
Time Worked - Monthly		2,359,569	2,254,752	2,254,752	1,275.3	
Time Worked - Weekly (not OT, On Call, Summer, Student)		1,278,792	1,278,792	1,278,144	722.9	**NOT** Expenditure Type = SUMMER/TEMP EMP. WEEKLY
Overtime for Weekly		72,574	72,574			contains no On Call, no Summer
Overtime for On Call		76	76			Expenditure Type = SUMMER/TEMP EMP. WEEKLY
On Call (On Call/Summer = Y/N)		42,383	42,383			Expenditure Type = SUMMER/TEMP EMP. WEEKLY
Summer (On Call/Summer = N/Y)		59,514	59,514			Expenditure Type = SUMMER/TEMP EMP. WEEKLY
Other Students (On Call/Summer = N/N)	inconsistent=>	5,771	5,795	ID = 15293		Expenditure Type = SUMMER/TEMP EMP. WEEKLY
for completeness: Null Set (On Call/Summer = Y/Y)		0	0			
Total hours		3,818,678	3,713,884	3,532,895	1,998.2	
Correction in FTE for Shift Work Differential					-48.6	
After Correction in FTE for Shift Work Differential					1,949.6	

Although a few additions of missing information and correction for shift work differentials have been applied, the class of hand-written journal entry corrections has NOT been applied to this timesheet data. Only the information digitally available from the Kronos FTL, PeopleSoft, and OHAP data bases were used in this compilation/study.

For reference, the Fermilab WDRS (Human Resources) compilation (see sheet: FY11-staffing-WDRS) listed a total of 1,916 FTE-yrs for FY2011
which did NOT include: OverTime, Monthly hours worked above normalized units, FRA employees, On-Call employees or Summer employees
This exercise based on Kronos FTL records gives 1,950 which after removing FRA staff 6 gives 1,944 FTE-yrs in FY2011
a difference of 1.4% greater than WDRS, which has to be well within the accuracy of these compilations and corrections => good enuf!

Navigating

sheet: Commentary (this sheet)

sheet: All FY11 Data - the raw FTL data with OHAP categories and activities, with corrections for shift work
this is listed for each employee, but activity and charge code, summed over the entire yearly period (not listed month-by-month or week-by-week)

col A	Organizational Name (D/S/C - Department)
col B	Functional Role (OHAP)
col C	Div Sec
col D	Activity (OHAP & FLAG)
col E	Service Type Code
col F	Service Type Description
col G	Lifecycle (FLAG)
col H	Group (FLAG)
col I	Expenditure Type (monthly, weekly, OT, Summer, etc.)
col J	Task Number
col K	Task Name
col L	Hours SUM (Monthly = actual hours worked, Weekly = either regular hours or OT use col I to choose
col M	Quantity SUM (Monthly = units = normalized to 40 hours/week (incl PTO), Weekly = same as Hours SUM = col L)
col N	Munits + Wregh = Monthly units + Weekly regular hours for FTE-yr calculation
col O	FTE-yr = Full Time Equivalents-years = col N/1768 = (Munits+Wregh)/(1768 hrs/FTE-yr)
col P	Empolyee Number = ID #
col Q	Full Name
col R	On Call Employee Flag = Y/N
col S	Summer Employee Flag = S/N where S = Summer or Student

sheet: Pivot-Activities x Role

Matrix of FTE-yrs by OHAP-FLAG Activity (horizontal) vs. OHAP Functional Role (job description) (vertical
projective Roles summed over Activities is on right side, projective Activities (summed over Roles) is on bottom, Grand Total is at bottom right
at upper left corner, one can select all or individual Division Section, Organization Name, or Expenditure Type

sheet: Pivot-B&R x Role

Matrix of FTE-yrs by B&R or Overhead type (horizontal) vs. OHAP Functional Role (job description) (vertical)
projective Roles summed over B&R is on right side, projective B&R (summed over Roles) is on bottom, Grand Total is at bottom right
at upper left corner, one can select all or individual Division Section, Organization Name, or Expenditure Type

sheet: Pivot-B&R + OH

Light version of pivot table above which sums over all activities, just showing # FTE-yrs per B&R and OH categories

sheet: Pivot-DSC x Activity

This will also allow one to pick the Lab Support/Management by Div/Sec/Center in the OHAP Activities Matrix by selecting the categories - otherwise, select ALL

sheet: FY11-staffing-WDRS from HR averaged month-by-month, and summed over FY2011

sheets: just to document and to see how the sausage was made

fixes
corrections
CHL Operations
Accel Ops
FES-OPS
pivot=FTE per person
hours by Role

Surprises in this Study:

1. Differen not by employee-by-employee in calculating FTE-yrs, and trying to optimize shift work and overtime strategies

2. Relatively large fraction of Accounts Receivable (undifferentiated with regard to activities) 19.7/1956 = 1.0%
3. Comunication / Education/ Public Outreach = 37.8/1956 = 1.9% - who are these people? (check the Task Name = col L) Is this a healthy or unhealthy fraction?
4. Transportation, Distribution, Fleet = 29.16/1956 = 1.5% (vehicle maint, shipping/receiving, mail, transportation, material handling, etc.)
5. Must un

Cosmic Frontier General	FTE-yrs out of	1956
Energy Frontier General	1.2	0.1%
GPP - Genral Plant Projects	0.15	0.0%
Intensity Frontier General	5.38	0.3%
New Initiative Not Otherwise Categorized	13.12	0.7%
Other Astrophysics Surveys	3.68	0.2%
Work for Others Not Categorized	0.55	0.0%
	4.56	0.2%
	28.64	1.5%

This spreadsheet All FY11 Data will allow one to view who charged and against what Task Number/Task Name to study such questions