CSAR Service - Management Report

April 2000

This report documents the quality of the CSAR service during the month of April 2000.

A more comprehensive report is provided quarterly, which additionally covers wider aspects of the Service such as information on Training, Application Support and Value-Added services.

This and other such reports are made available through the Web to staff within EPSRC and the other Research Councils, to CfS staff and CSAR Service users. The reports are indexed in a similar way to that which other useful information and news are listed for selection.

1. Introduction

April has seen the T3E workload running at consistently above baseline, 42% over at the end of the month. The hardware reliability has improved with there being only two failures this month.

The workload has shifted to an emphasis on larger jobs this month with 71% being >33 Pes in size.

This document gives information on Service Quality and on actual usage of the CSAR Service during the reporting period of April 2000. The information, in particular, covers the availability and usage of the following two main CSAR Service High Performance Computing (HPC) systems:

- Cray T3E-1200E/576 (Turing)
- SGI Origin2000/16 (Fermat).

The information is provided in both textual and graphical form, so that it is easier to see trends and variances.

2. Service Quality

This section covers overall Customer Performance Assessment Ratings (CPARS), HPC System availability and usage, Service Quality Tokens and other information concerning issues, progress and plans for the CSAR Service.

2.1 CPARS

Table 1 gives the measure by which the quality of the CSAR Service is judged. It identifies the metrics and performance targets, with colour coding so that different levels of achievement against targets can be readily identified. Unsatisfactory actual performance will trigger corrective action.

CSAR Service - Service Quality Report - Performance Targets

Service Quality Measure	Performance Targets: White	Blue	Green	Yellow	Orange	Red
HPC Services Availability						
Availability in Core Time (% of time)	> 99.9%	> 99.5%	> 99.2%	> 98.5%	> 95%	95% or less
Availability out of Core Time (% of time)	> 99.8%	> 99.5%	> 99.2%	> 98.5%	> 95%	95% or less
Number of Failures in month	0	1	2 to 3	4	5	> 5
Mean Time between failures in 52 week rolling period (hours)	>750	>500	>300	>200	>150	otherwise
Fujitsu Service Availability						
Availability in Core Time (% of time)	> 99.9%	> 99.5%	> 99.2%	> 98.5%	> 95%	95% or less
Availability out of Core Time (% of time)	> 99.8%	> 99.5%	> 99.2%	> 98.5%	> 95%	95% or less
Help Desk						
Non In-depth Queries - Max Time to resolve 50% of all queries (working days)	< 1/4	< 1/2	< 1	< 2	< 4	4 or more
Non In-depth Queries - Max Time to resolve 95% of all queries (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
Administrative Queries - Max Time to resolve 95% of all queries (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
Help Desk Telephone - % of calls answered within 2 minutes	>98%	> 95%	> 90%	> 85%	> 80%	80% or less
Others						
Normal Media Exchange Requests - average response time (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
New User Registration Time (working days)	< 1/2	< 1	< 2	< 3	< 4	otherwise
Management Report Delivery Times (working days)	< 1	< 5	< 10	< 12	< 15	otherwise
System Maintenance - no. of scheduled sessions taken per system in the month	0	1	2	3	4	otherwise

Table 1

Table 2 gives actual performance information for the period of April 1st to 30th inclusive.
Overall, the CPARS Performance Achievement was satisfactory (see Table 3); i.e. Green measured against the CPARS performance targets.
The Fujitsu availability figures are included in Table 2 but not Table 3 as they have zero weighting in CPARS terms.

CSAR Service - Service Quality Report - Actual Performance Achievement

Service Quality Measure	May	June	July	Aug	Sept	Oct	Nov	Dec	2000: Jan	Feb	March
HPC Services Availability											
Availability in Core Time (% of time)	98.50	99.70	99.70%	100.00%	100%	100%	100%	100%	96.11%	95.00%	99.70%
Availability out of Core Time (% of time)	99.71	99.40	99.40	99.40	99.50%	100%	100%	99.70%	98.52%	100%	99.50%
Number of Failures in month	3	2	2	1	1	0	0	1	4	1	2
Mean Time between failures in 52 week rolling period (hours)	453	395	391	416	437	486	534	563	230	515	486
Fujitsu Service Availability											
Availability in Core Time (% of time)	N/A	N/A	N/A	N/A	N/A	N/A	98.30%	100%	100%	100%	100%
Availability out of Core Time (% of time)	N/A	N/A	N/A	N/A	N/A	N/A	100%	100%	100%	100%	100%
Help Desk											
Non In-depth Queries - Max Time to resolve 50% of all queries	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Non In-depth Queries - Max Time to resolve 95% of all queries	<3	<3	<2	<2	<1	<3	<2	<1	<1	<1	<2
Administrative Queries - Max Time to resolve 95% of all queries	<2	<1	<1	<1	<1	<2	<1	<0.5	<0.5	<1	<2
Help Desk Telephone - % of calls answered within 2 minutes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Others											
Normal Media Exchange Requests - average response time	0.5	0.5	0	0	0	0	0	0	0	0	0
New User Registration Time (working days)	0	0	0	0	0	0	0	0	0	0	0
Management Report Delivery Times (working days)	10	10	10	10	10	10	10	10	10	10	10
System Maintenance - no. of sessions taken per system in the month	1	2	2	2	1	2	2	2	2	2	2

Table 2

Notes:

1. HPC Services Availability has been calculated using the following formulae, based on the relative NPB performance of Turing and Fermat:

   [Turing availability x 122 / (122 + 3.5)] + [Fermat availability x 3.5 / (122 + 3.5)]

2 Mean Time between failures for Service Credits is formally calculated from Go-Live Date.

Table 3 gives Service Credit values for the month of April. These will be accounted on a quarterly basis, formally from the Go-Live Date. The values are calculated according to agreed Service Credit Ratings and Weightings.

CSAR Service - Service Quality Report - Service Credits

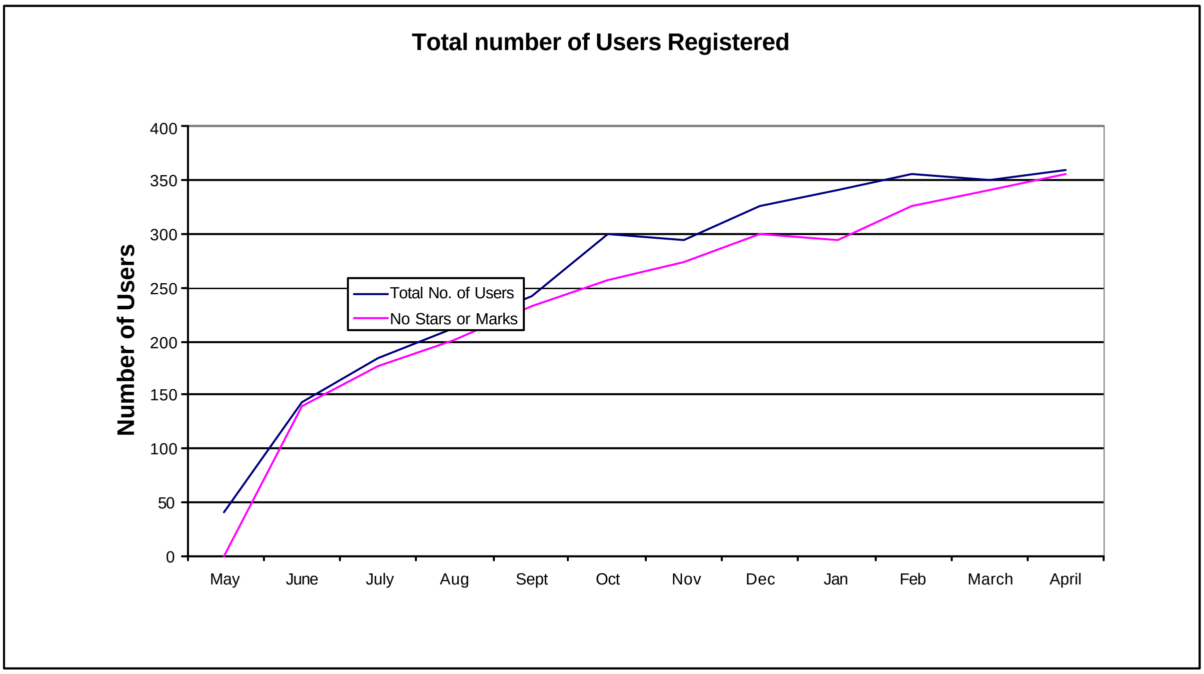
								2000		
Service Quality Measure	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**March**
HPC Services Availability											
Availability in Core Time (% of time)	0.039	-0.039	-0.039	-0.058	-0.058	-0.058	-0.058	-0.058	0.195	0.195	-0.039
Availability out of Core Time (% of time)	-0.039	0	0	0	-0.039	-0.047	-0.047	-0.039	0	-0.047	-0.039
Number of Failures in month	0	0	0	-0.008	-0.008	-0.009	-0.009	-0.008	0.008	-0.008	0
Mean Time between failures in 52 week rolling period (hours)	0	0	0	0	0	0	-0.008	-0.008	0.008	-0.008	0
Help Desk											
Non In-depth Queries - Max Time to resolve 50% of all queries	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019
Non In-depth Queries - Max Time to resolve 95% of all queries	0.016	0.016	0	0	-0.016	0.016	0	-0.016	-0.016	-0.016	0
Administrative Queries - Max Time to resolve 95% of all queries	0	-0.016	-0.016	-0.016	-0.016	0	-0.016	-0.019	-0.019	-0.016	0
Help Desk Telephone - % of calls answered within 2 minutes	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
Others											
Normal Media Exchange Requests - average response time	-0.002	-0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New User Registration Time (working days)	0	0	0	0	0	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019
Management Report Delivery Times (working days)	0	0	0	0	0	0	0	0	0	0	0
System Maintenance - no. of sessions taken per system in the month	-0.003	0	0	0	-0.003	0	0	0	0	0	0
Monthly Total & overall Service Quality Rating for each period:	-0.01	-0.03	-0.04	-0.05	-0.08	-0.07	-0.09	-0.09	0.07	0.03	-0.06

Table 3

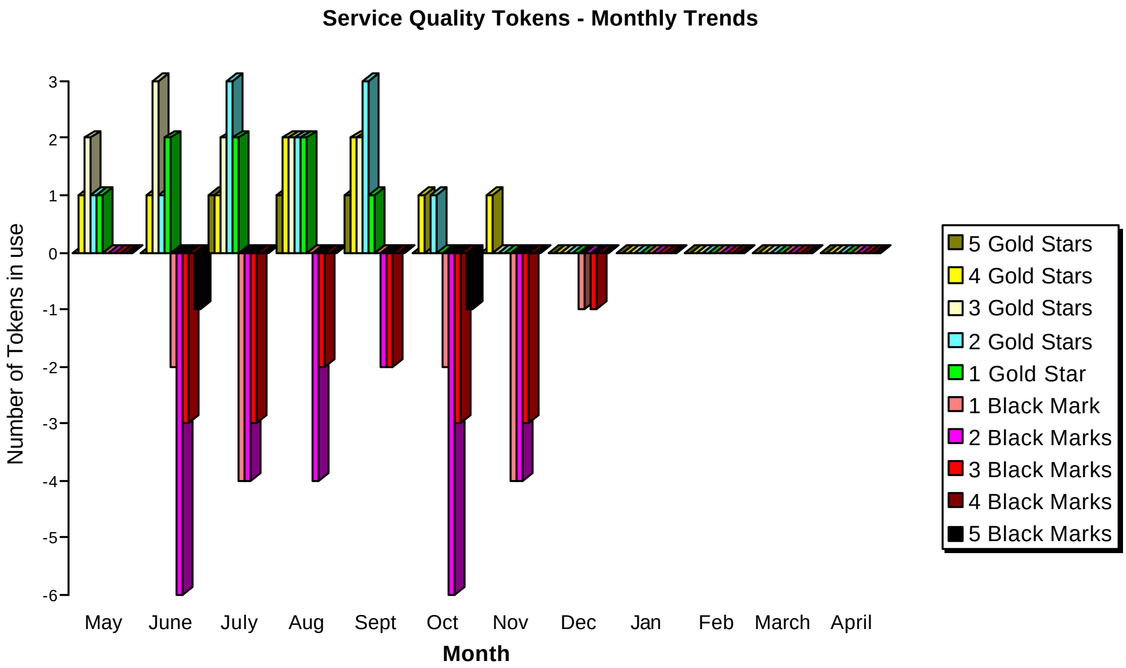
2.2 Service Quality Tokens

The current position at the end of April 2000 is that none of the 427 registered users of the CSAR Service had used Service Quality Tokens.

The graph below shows the total number of registered users on the CSAR Service and the number of users holding a neutral view of the service.



The graph below illustrates the monthly usage trend of quality tokens:



The current status of no black or gold service tokens outstanding is due in part to the action agreed from a previous User Steering group, which gave tokens a two-month expiry period.
No Gold Stars or Black Marks have therefore been added in the last month.

2.3 Throughput Target against Baseline

The Baseline Target for throughput was fully achieved this month due to plenty of work over the period. The actual usage figure was 142.73% of Baseline capacity.

Throughput Against Baseline CSAR Service Provision

Period: 1st to 30th April 2000

	Baseline Capacity for Period (T3E PE Hours)	**Actual Usage in Period (T3E PE Hours)**	**Actual % Utilisation c/w Baseline during Period**
1. Has CfS failed to deliver Baseline MPP Computing Capacity for EPSRC?	350,132	499,761	**142.73%**
	Baseline Capacity for Period (T3E PE Hours)	**Job Time Demands in Period**	**Job Demand above 110% of Baseline during Period (Yes/No)?**
2. Have Users submitted work demanding > 110% of the Baseline during period?	350,132	467,693	Yes
		Number of Jobs at least 4 days old at end Period	**Number of Jobs at least 4 days old at end Period is not zero (Yes/No)?**
3. Are there User Jobs oustanding at the end of the period over 4 days old?		0	No
		Minimum Job Time Demands as % of Baseline during Period	**Minimum Job Time Demand above 90% of Baseline during Period (Yes/No)?**
4. Have Users submitted work demands above 90% of the Baseline during period?		125%	Yes
	Number of standard Job Queues (ignoring priorities)	**Average % of time each queue contained jobs in the Period**	**Average % of time each queue contained jobs in the Period is > 97%?**
5. Majority of Job Queues contained jobs from Users for more than 97% during period?	4	92.0%	No

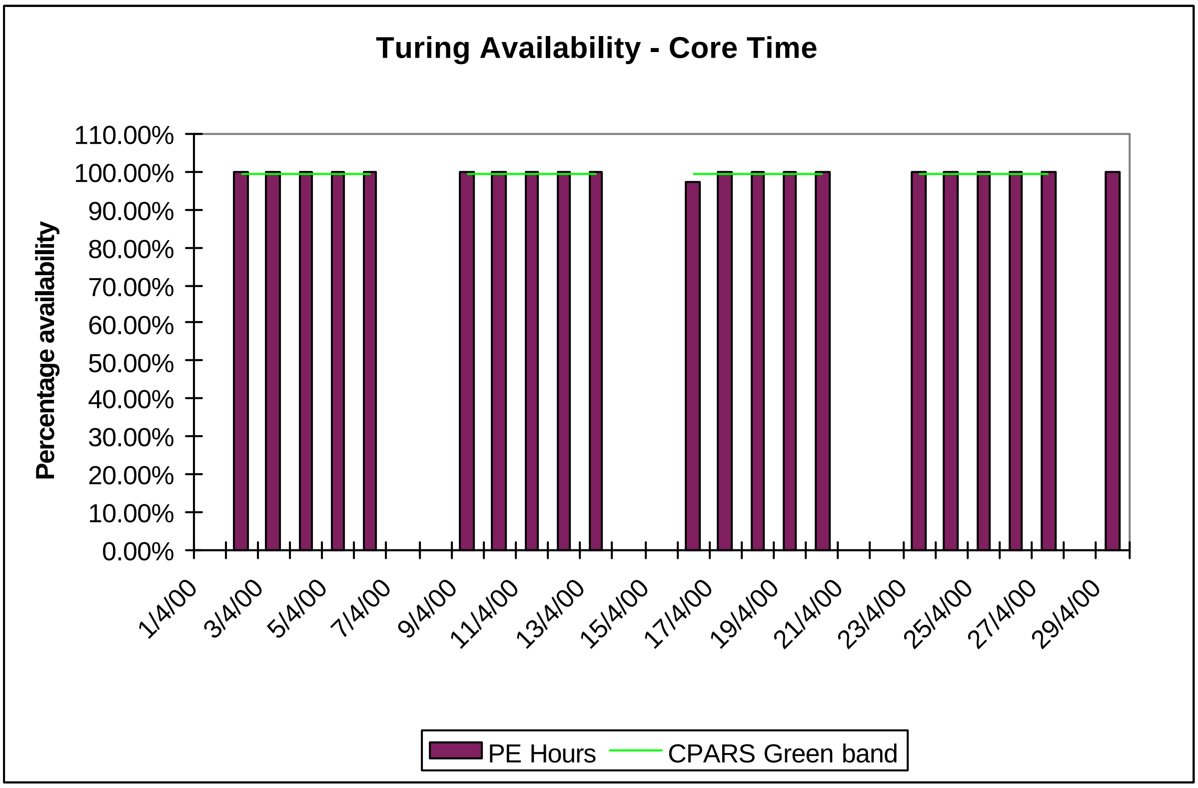
3. System Availability

Service availability each reporting period is calculated as a percentage of actual availability time over theoretical maximum time, after accounting for planned breaks in service for preventative maintenance.

3.1 Cray T3E-1200E System (Turing)

The following graphs show the availability of Turing both in core time and out of core time respectively during the period of 1st to 30th April.

Turing availability for April:



Availability of Turing in core time during April was good with the exception of one system level event on the 16th of the month.

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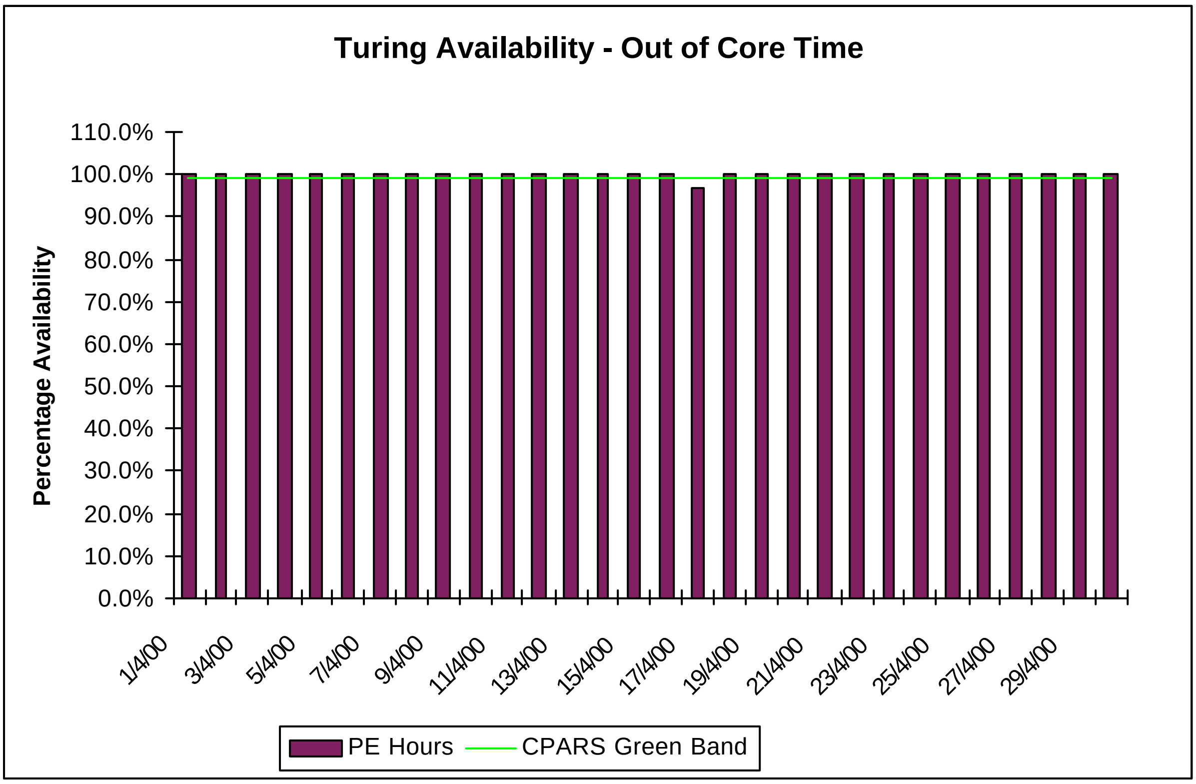
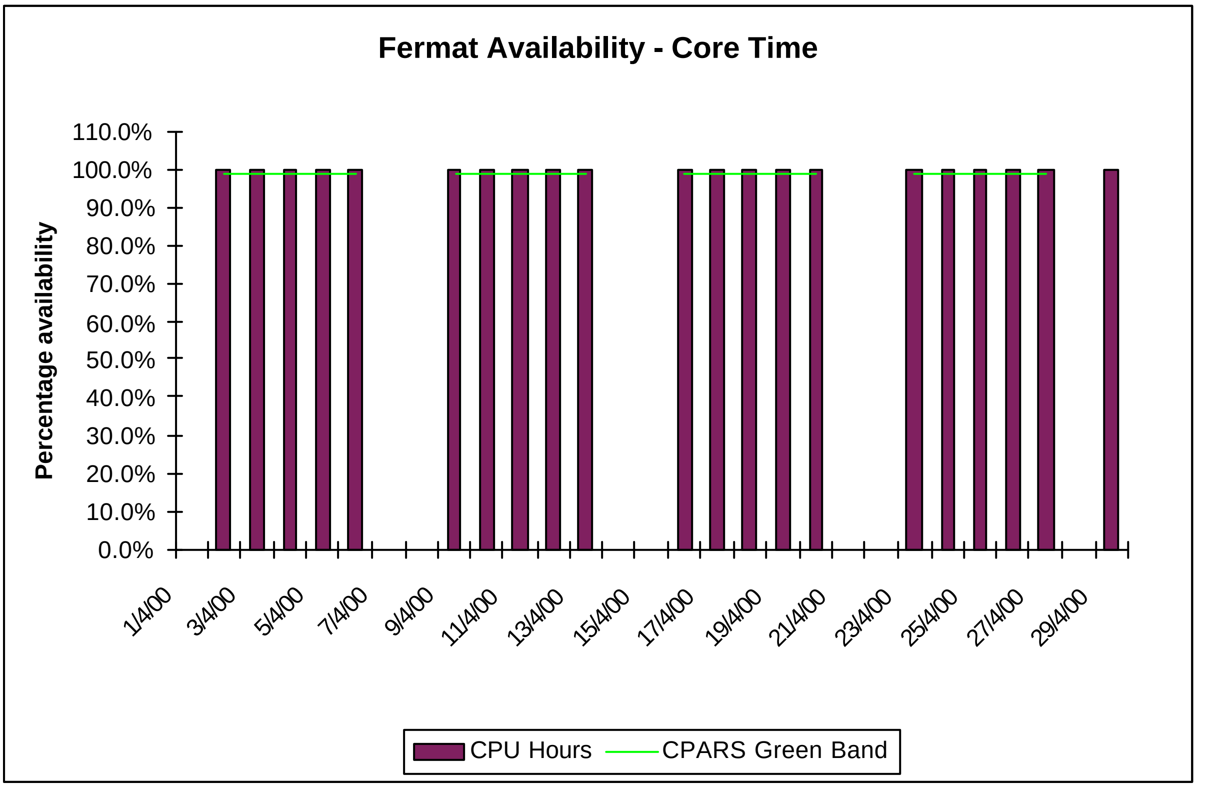


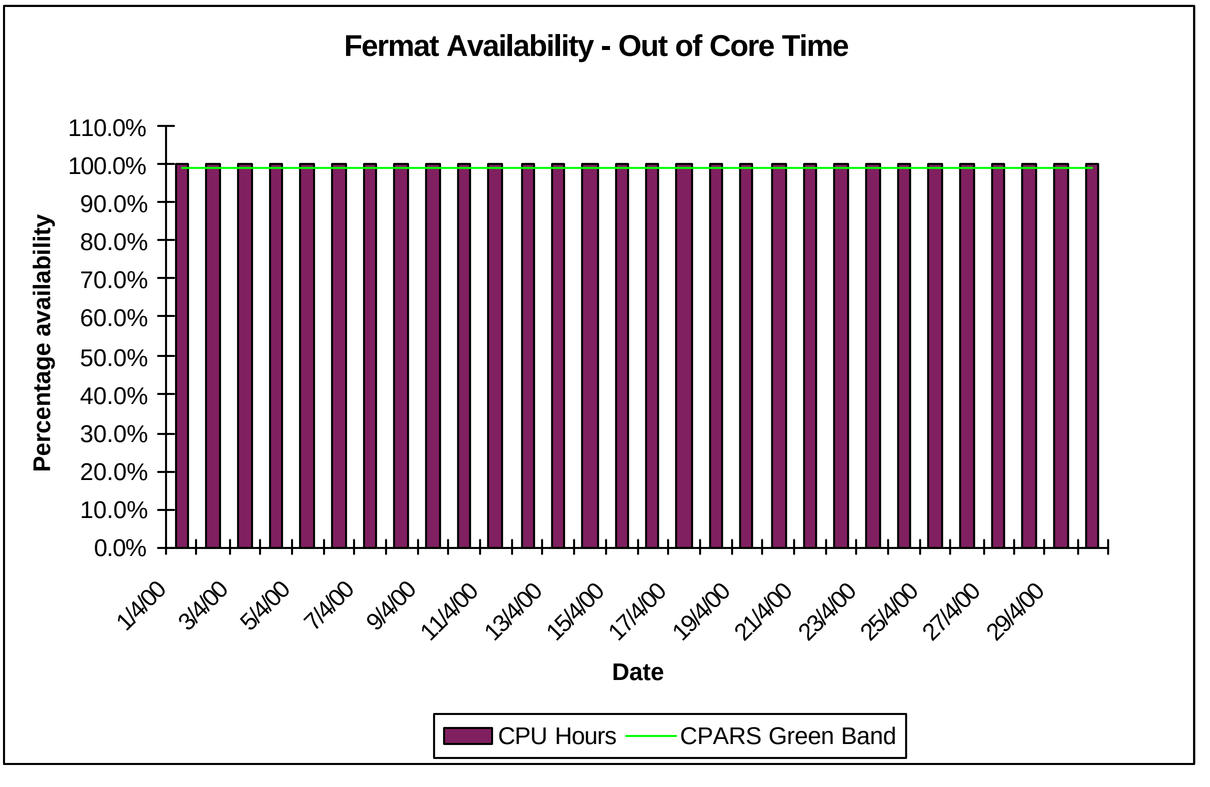
Availability of Turing out of core time during April was good with the exception of one system level event on the 17th of the month..

3.2 SGI Origin2000 System (Fermat)

The following graphs show the availability of Fermat both in core time and out of core time respectively.



Availability of Fermat in core time during April was excellent.



Availability of Fermat out of core time during April was excellent.

4. HPC Services Usage

Usage information is given in tabular form, in Appendices, and in graphical format. The system usage information for the period of April 1st to 30th is provided by Project/User Group, totalled by Research Council and overall. This covers:

- CPU usage — Turing: 499,761 PE Hours Fermat: 3,710.75 CPU Hours
- User Disk allocation — Turing: 42.47 GB Years Fermat: 15.93 GB Years
- HSM/tape usage — 703.73 GB Years

In addition, the following graphs are provided to illustrate usage per month, historically:

a) MPP (T3E) Usage by month, showing usage each month of CPU (T3E PE Elapsed Hours), split by Research Council and giving the equivalent GFLOP-Years as per NPB. The Baseline is shown by an overlaid horizontal line.

b) SMP (Origin) Usage by month, showing usage each month in CPU Hours, split by Research Council and giving the equivalent GFLOP-Years as per NPB. The Baseline Capacity is shown by an overlaid horizontal line.

c) High Performance Disk (T3E) allocated for User Data by month, showing the allocated space each month in GBytes, split by Research Council. The Baseline Capacity (1 Terabyte) is shown by an overlaid horizontal line.

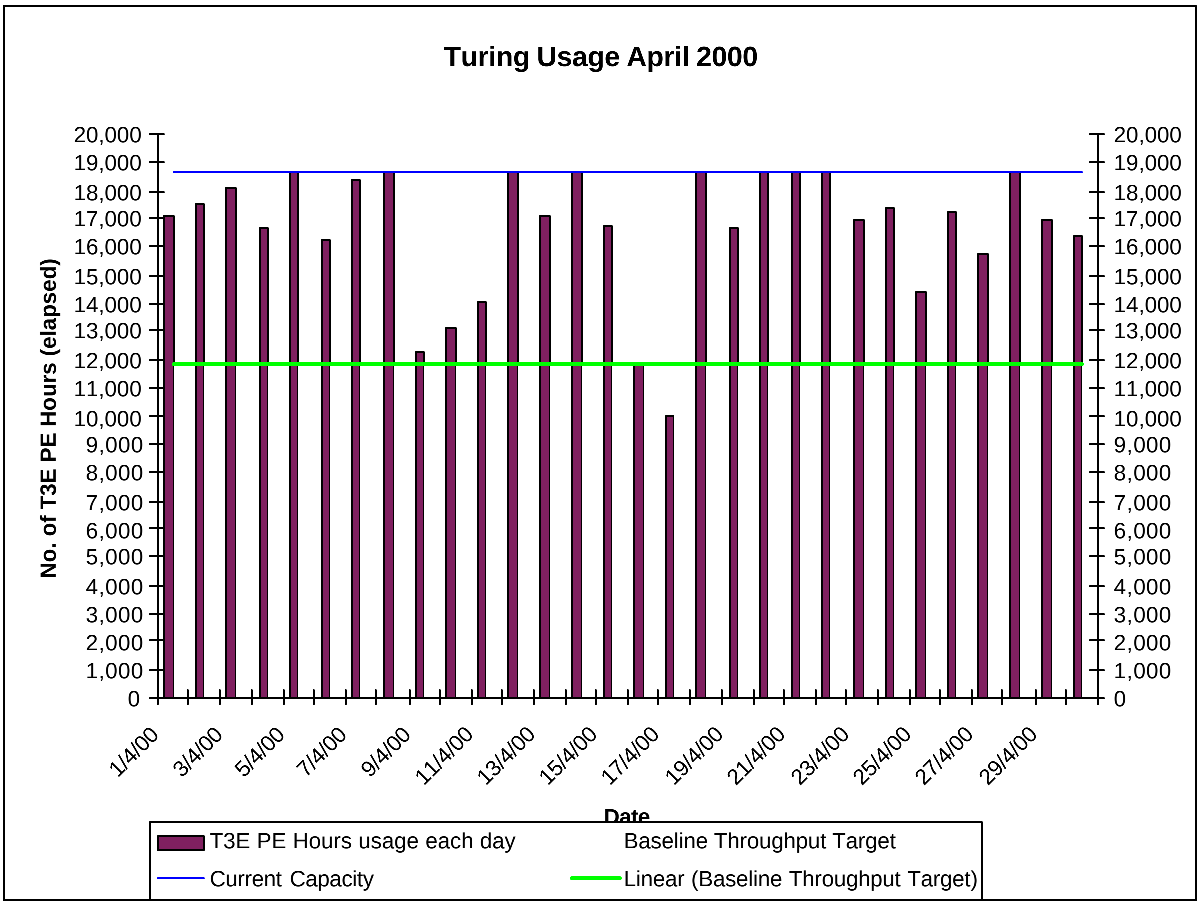
d) Medium Performance Disk (Origin) allocated for User Data by month, showing the allocated space each month in GBytes, split by Research Council. The Baseline Capacity (1.5 Terabytes) is shown by an overlaid horizontal line.

e) HSM/Tape Usage (T3E) by month, showing the volumes held each in GBytes, split by Research Council. The Baseline Capacity (16 Terabytes) available will be shown by an overlaid horizontal line.

4.1 Cray T3E-1200E System (Turing)

The following graph shows the usage of Turing during each day of April 2000. Note that there is some variance on a day-to-day basis as the accounts record job times, and thus CPU usage figures, at the time of job completion which could be the second actual day for large jobs. At present, there is a 12 hour limit on jobs, so that they are check-pointed, and computational time lost due to any failure is well managed.

Turing usage for April:



The above usage graph for the Turing system shows that the overall workload was variable, though as can be seen from the graph there were fewer periods with low work volumes.

The above graph also indicates the workload after the upgrade again virtually saturating the machine at times.

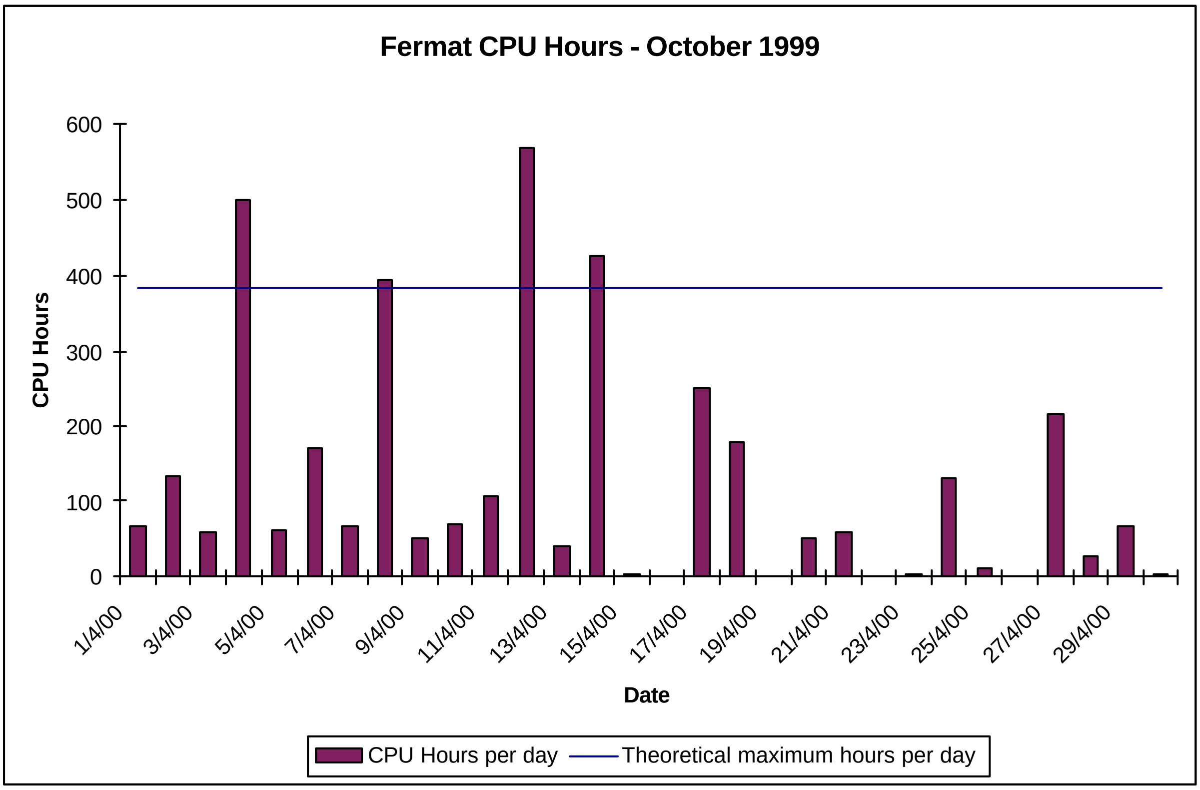
The workload at times reached 100% of maximum theoretical capacity.

Fine tuning of the CfS scheduling system will continue to ensure minimal wasting of PE resource, in order to fit in a number of different sized jobs (e.g. 32, 64, 128, 256) thus facilitating maximised job throughput.

In particular, Turing will continue to start large jobs above 256 PEs, including 512 PEs, every night they are queued.

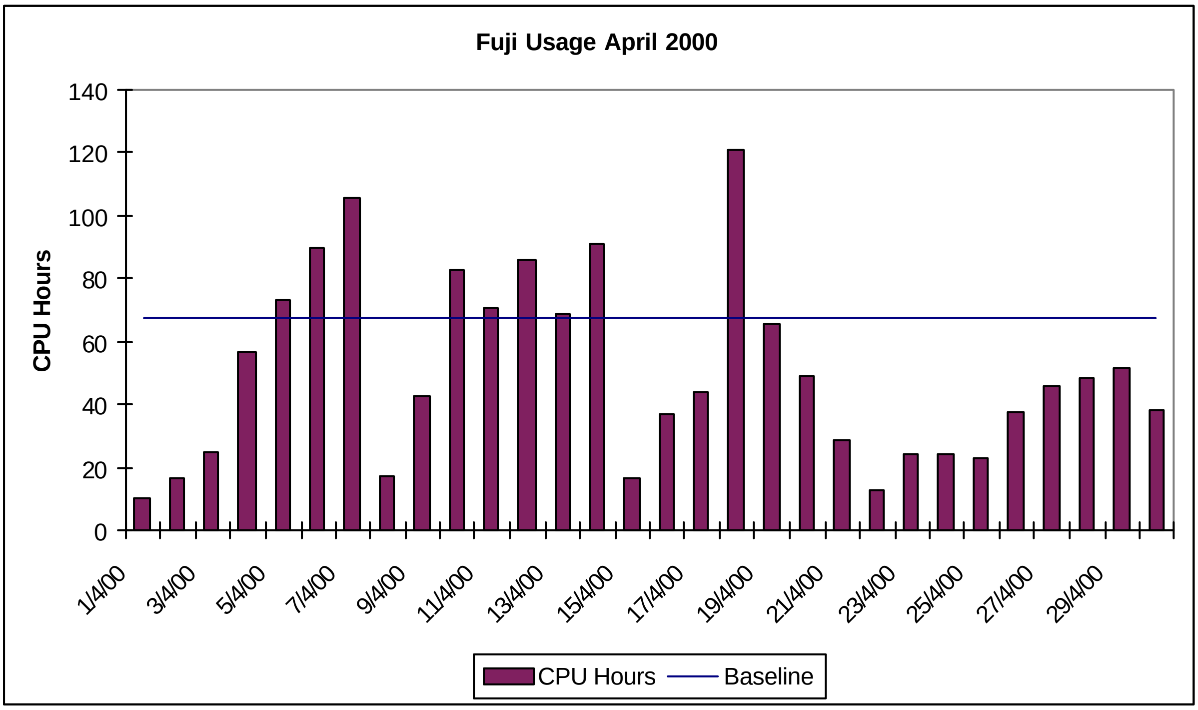
4.2 SGI Origin2000 System (Fermat)

The usage of the Origin system was low for the month with the daily usage of the system averaging only 32% of theoretical maximum. This figure does not show that in some periods CPU time is running at 99.9% of the total available CPU time. The groups most heavily using the Fermat system are CSE009 (Catlow), CSN001 (Webb) and CSE003 (O'Neill).



The next graph shows the utilisation of the, now fully integrated Fujitsu system.

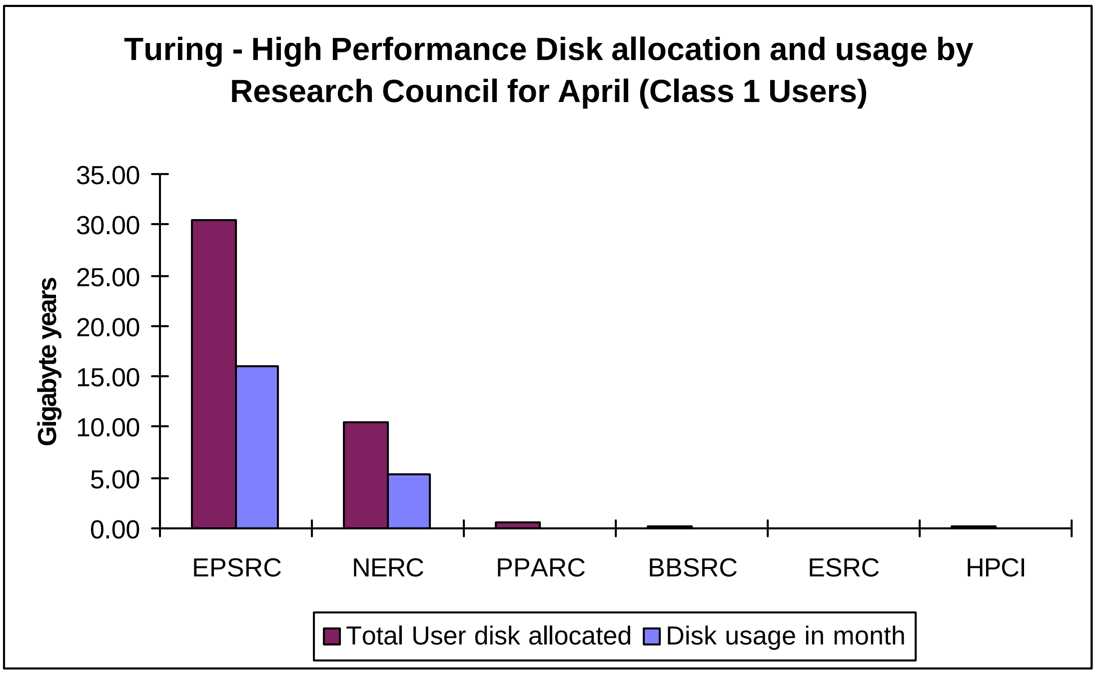
4.2.1 Fujitsu VPP 300/8 System (Fuji)



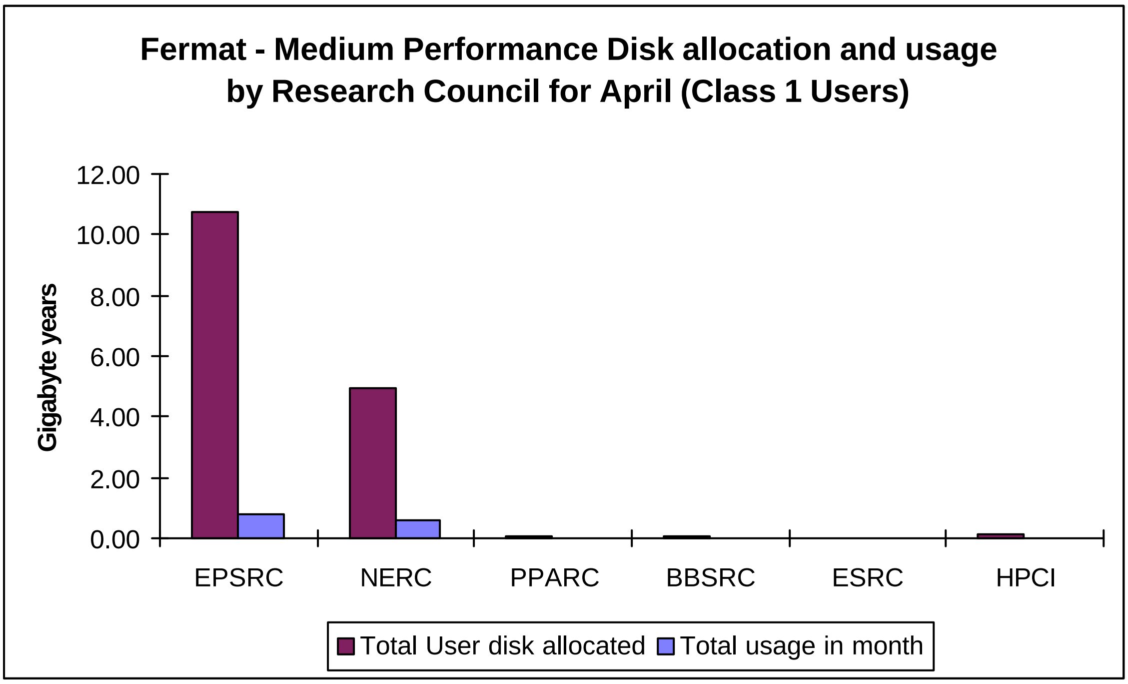
Utilisation of the Fujitsu system was variable this month.

4.3 Disk/HSM Usage Charts

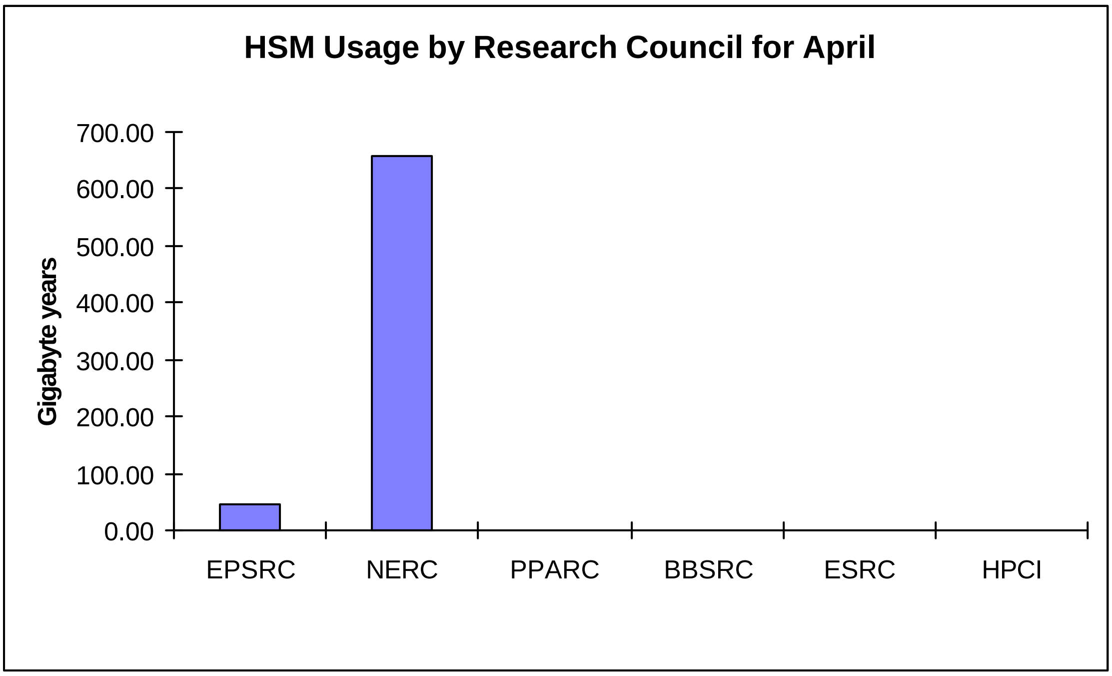
The graphs below show current disk and HSM allocations and usage.



The preceding graph shows actual usage on average against the current allocation of disk on the Turing system.

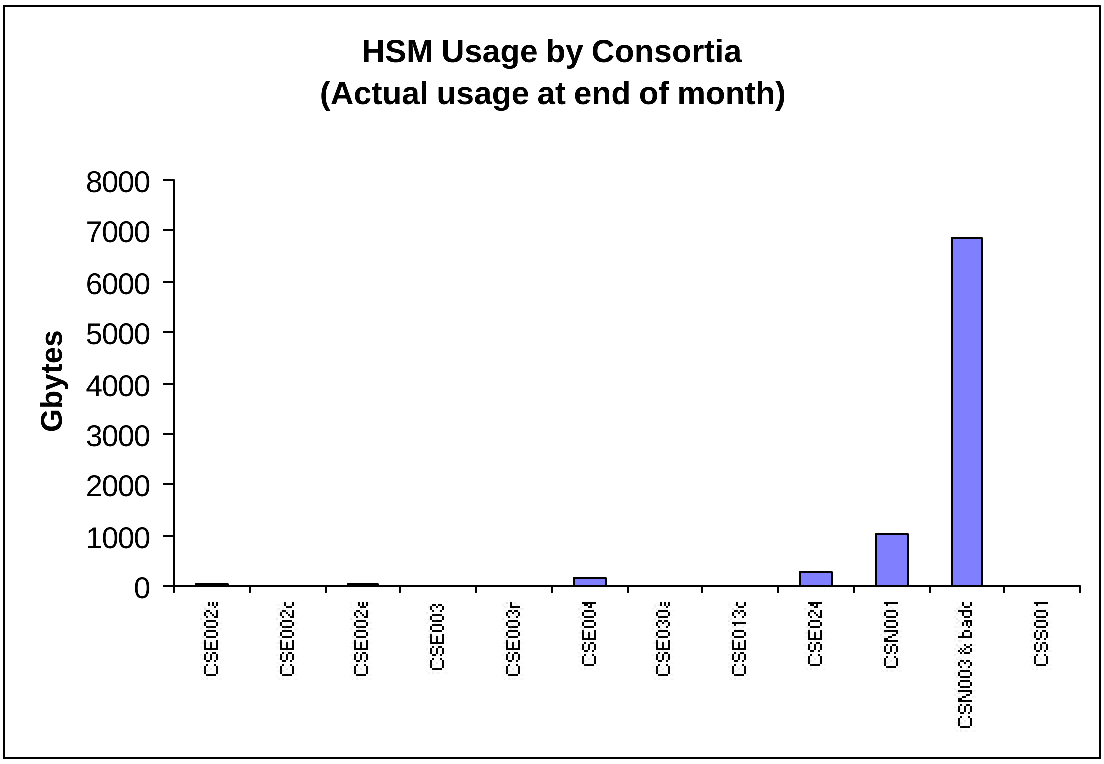


The above graph shows the disk allocations against usage on average of the disk on Fermat.

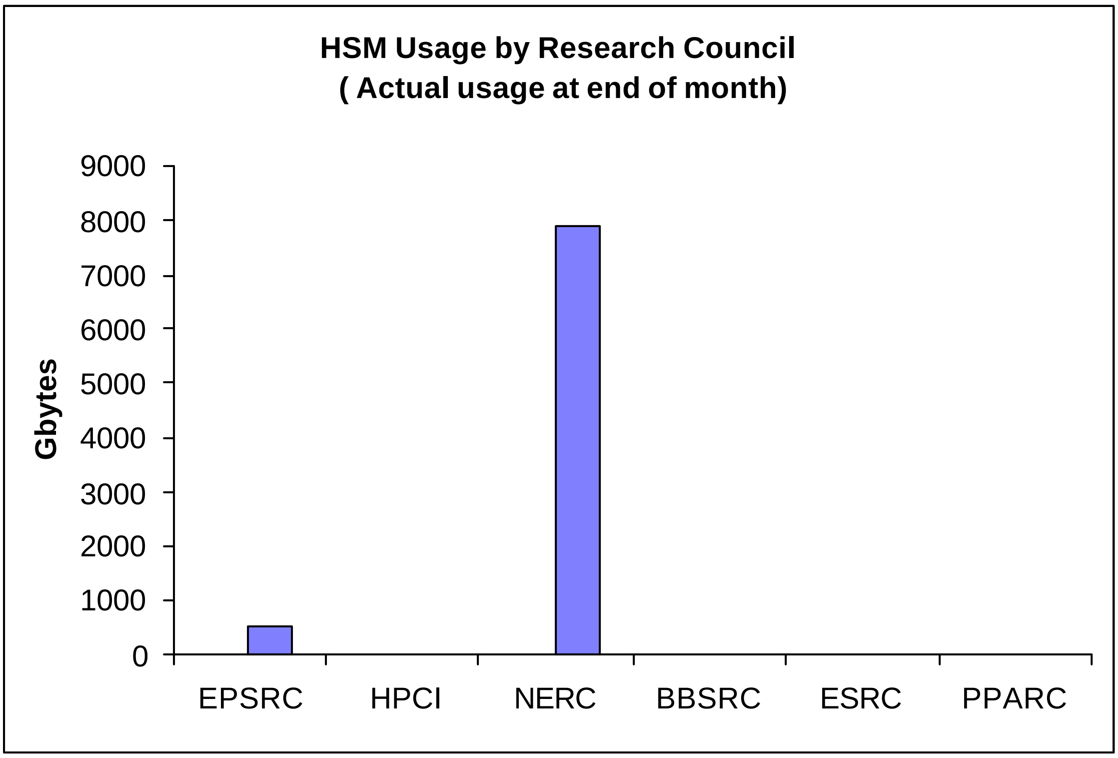


The above graph shows the total usage of the HSM facility by Research Council.

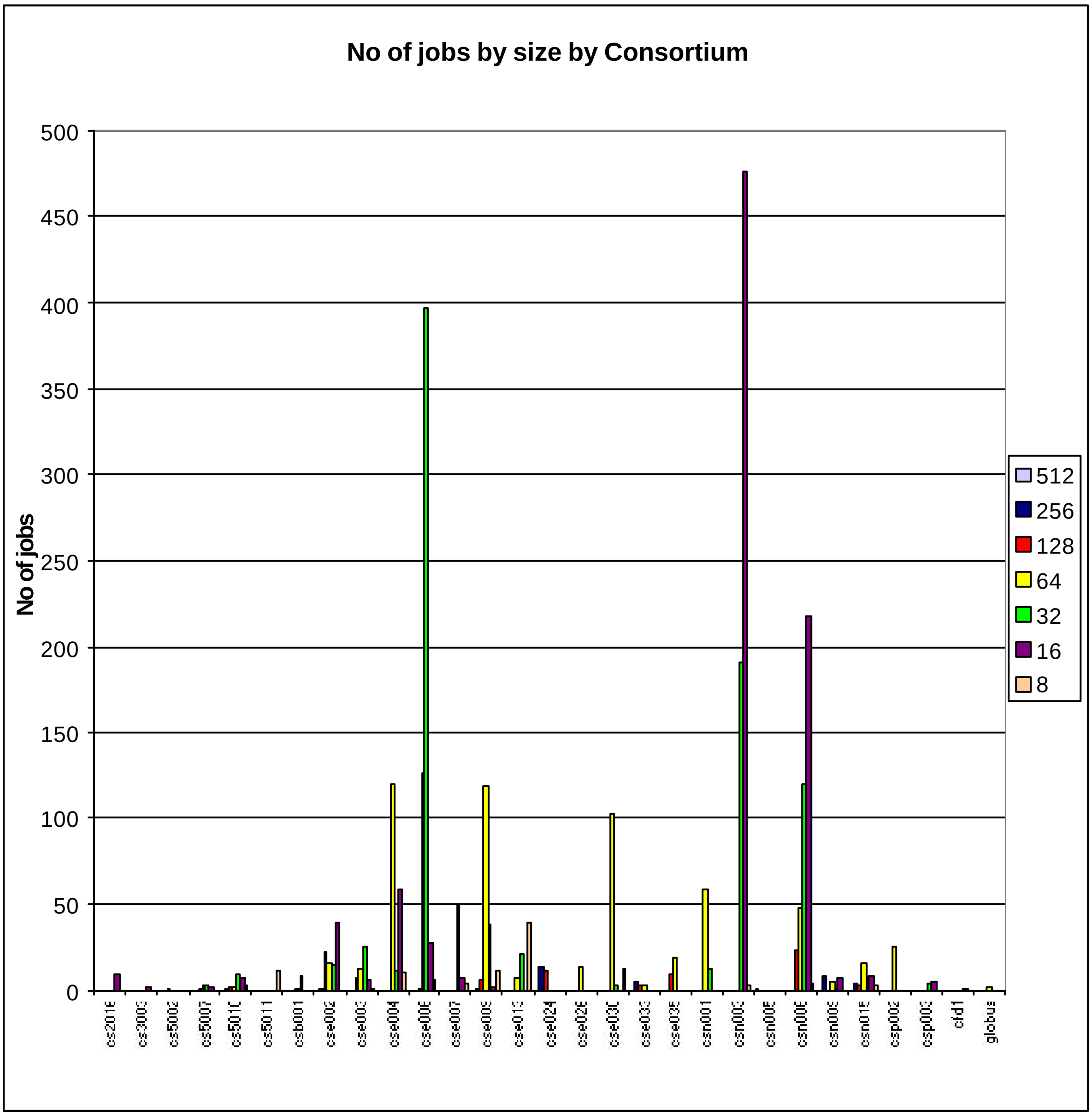
The next two graphs give actual usage of HSM by Research Council and by Consortium.



CSE002 (Gillan), CSE004 (Sandham), CSE024 (Tennyson), CSN001 (Webb) & CSN003 (O'Neill)**.**

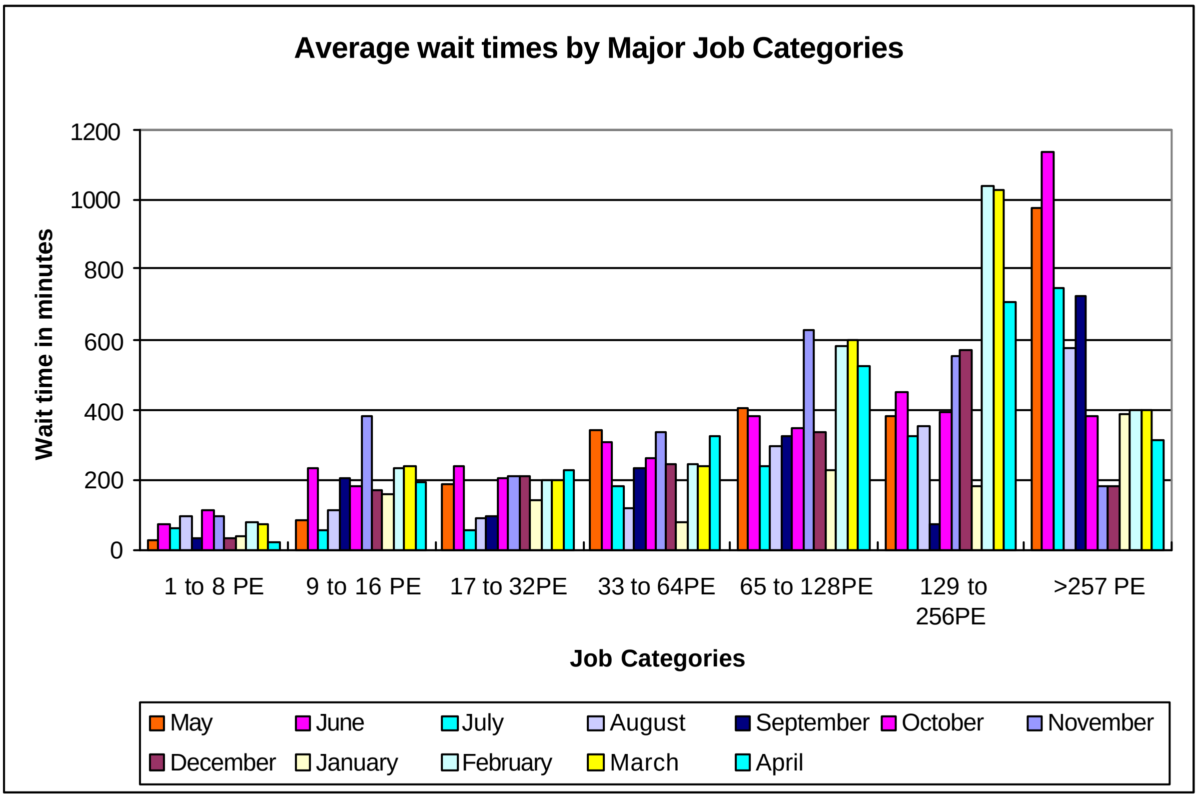


Job statistics for Turing:

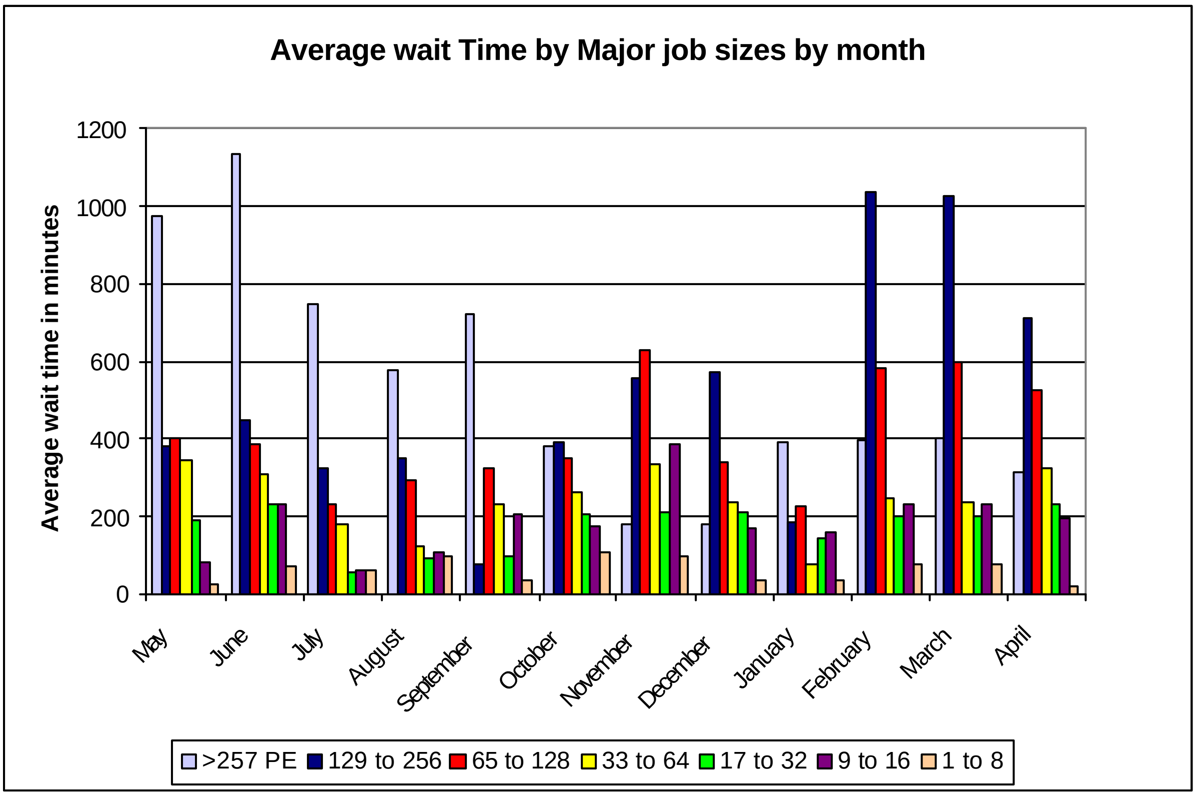


The above graph shows the number of jobs of the major sizes run in the period 1st to 30th April 2000.

The next graph shows the wait times in minutes for the major categories of jobs.

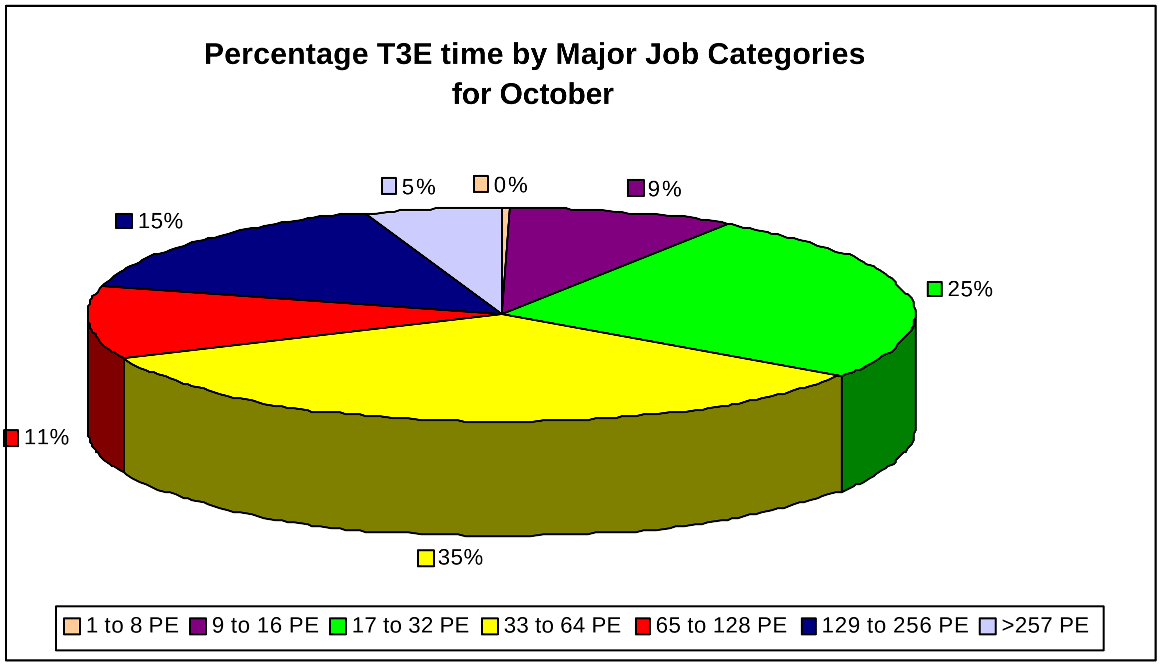


The above chart shows the average wait time trend over the months from April to date.

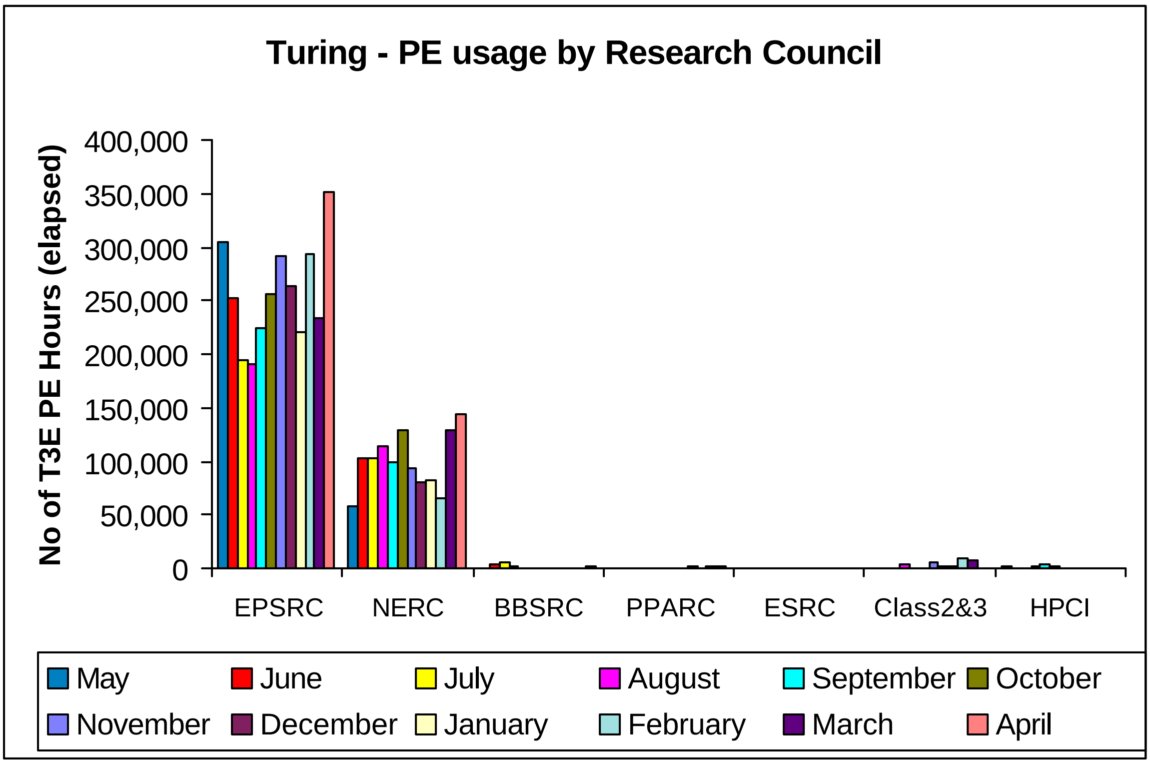


It can be seen from the above graph that enhancements to the scheduling on Turing have reduced the average wait times however attention must be paid to ensure sufficient head room exists in the system to prevent wait times from rising overall.

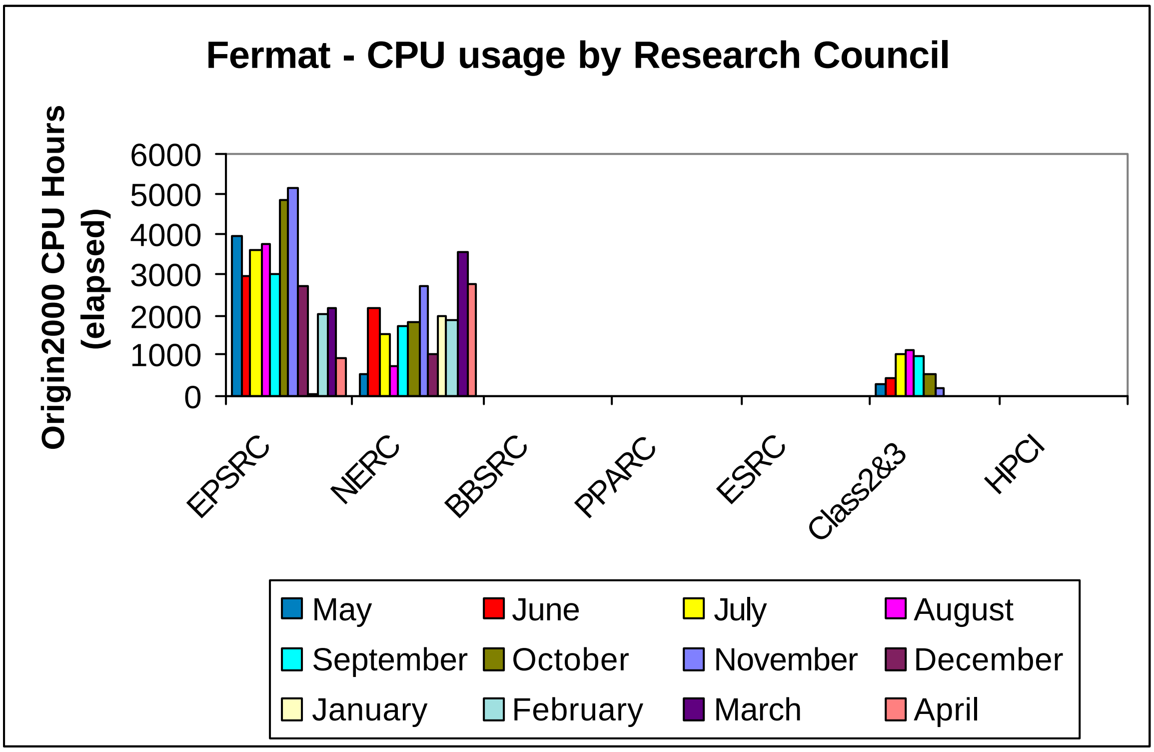
The next graph shows the percentage Turing time utilised by the major job categories for the month.



The average job size in the month of April showed a wide spread, with the bulk of the jobs (71%) being greater than 33 Pes in size.



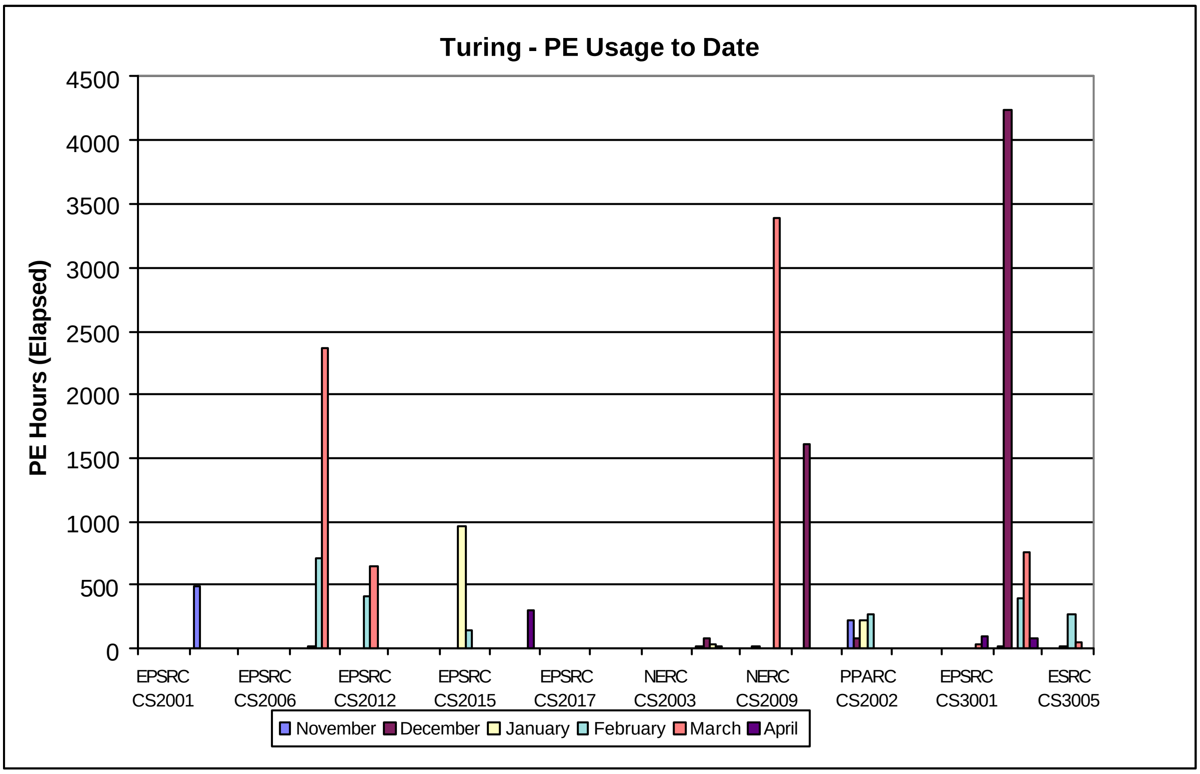
Turing PE usage is shown by Research Council during the past 12 months of service in the above chart.



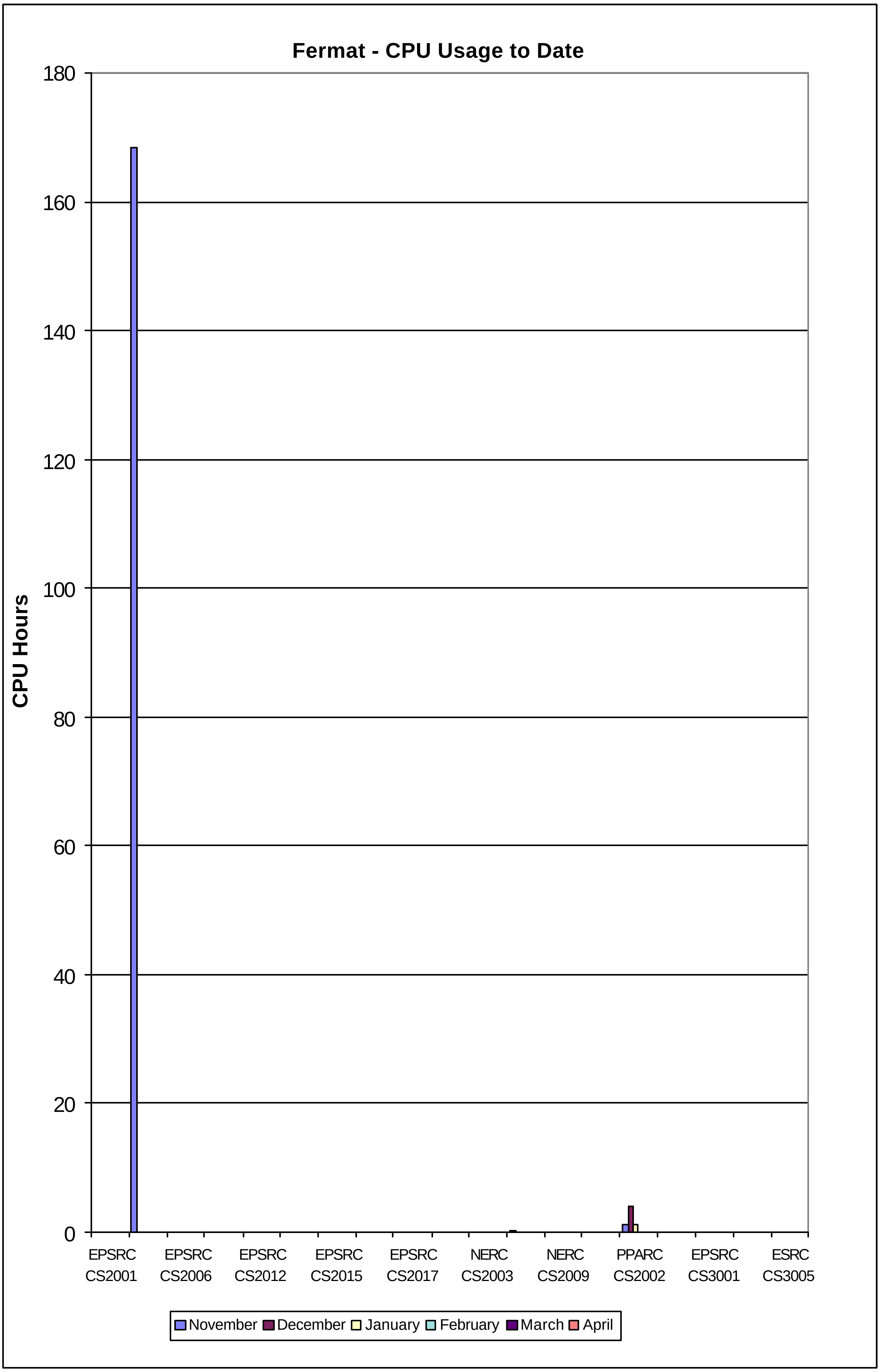
Origin 2000 CPU usage is shown by Research Council during the past 12 months of service in the above chart.

4.4 Class 2 & 3 Usage Charts

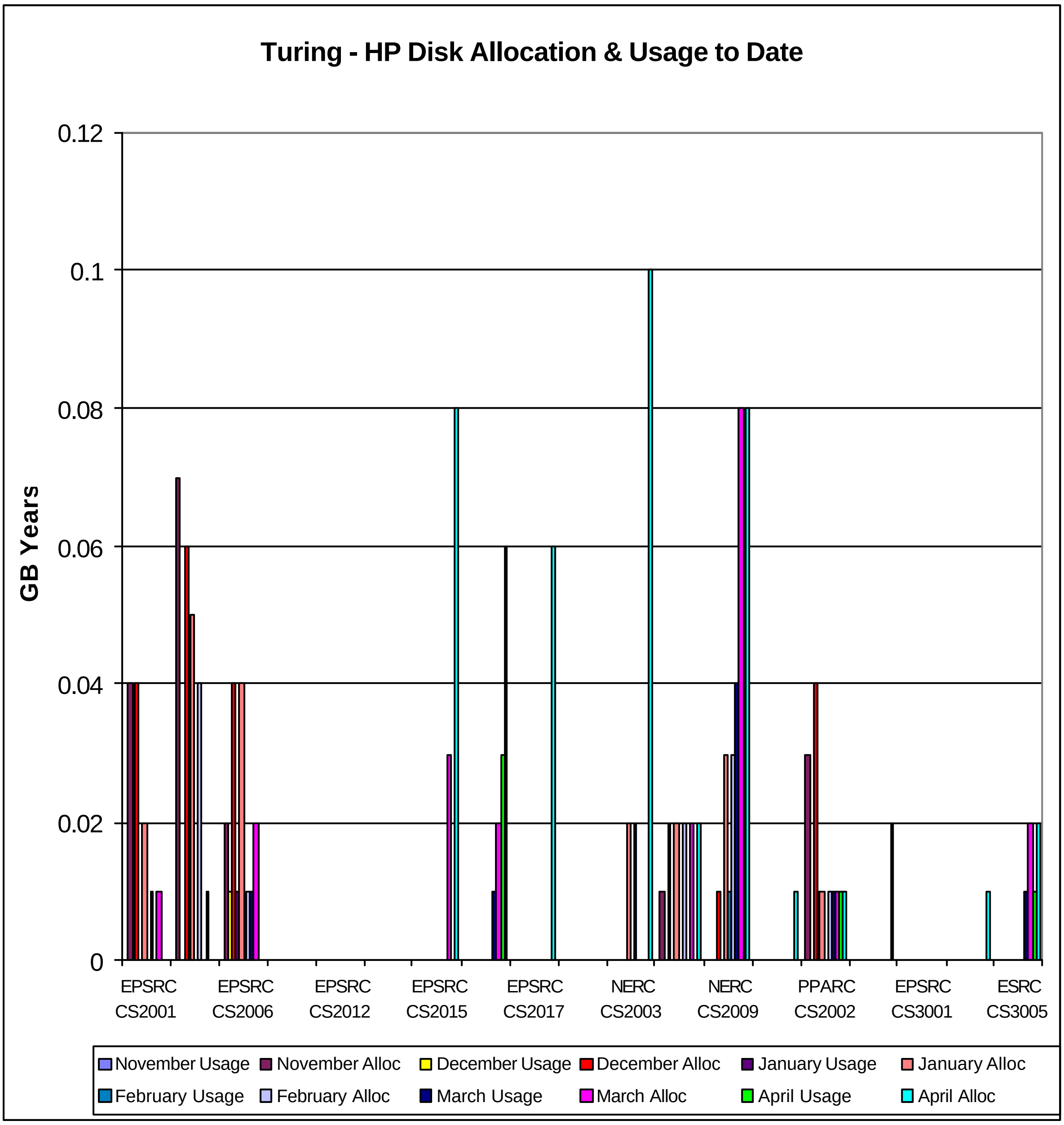
The next series of charts show the usage of the system by the class 2 & class 3 users. The usage is shown by project and identifies the Research Council of the individual projects.



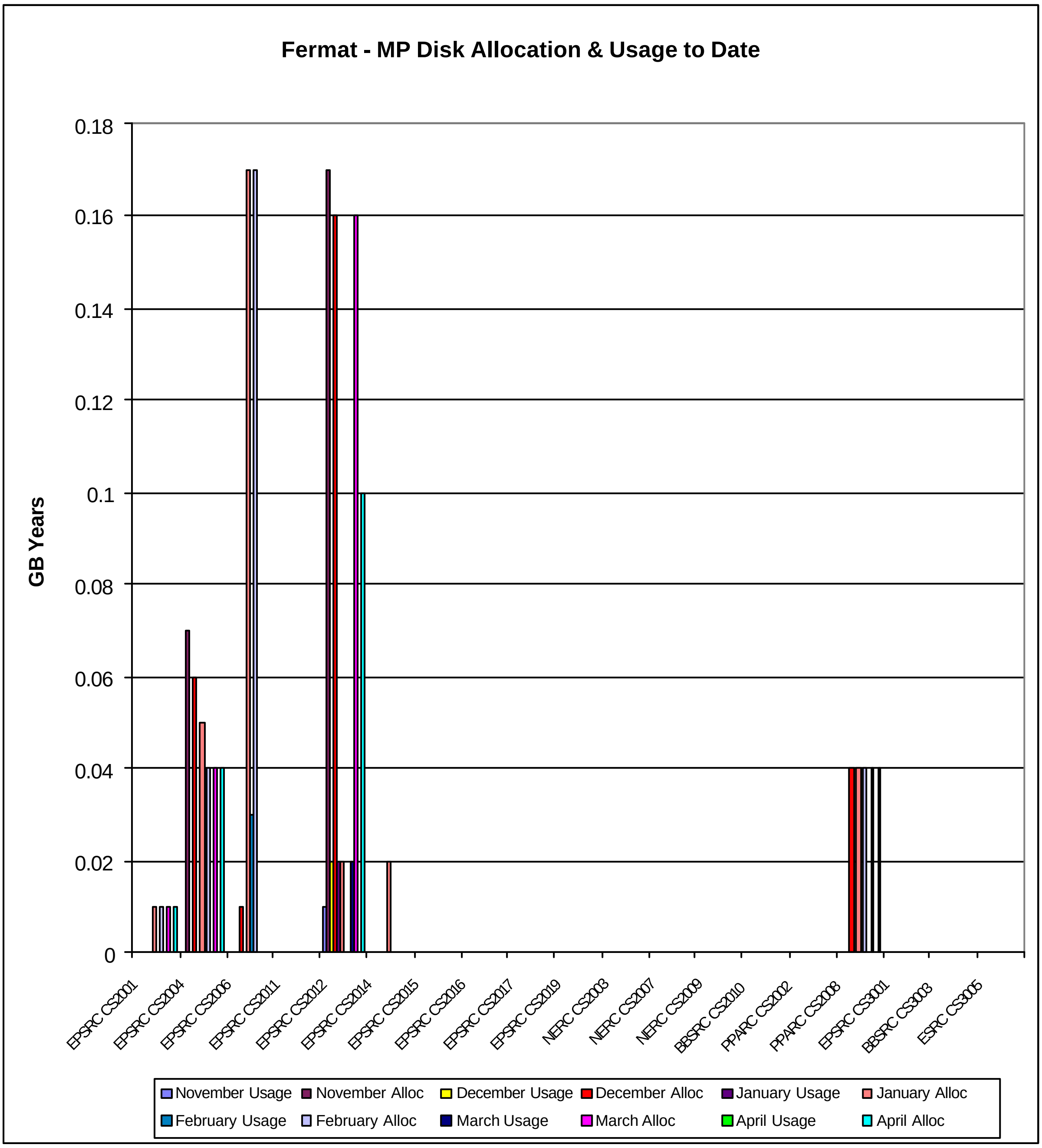
The above chart shows the most significant PE usage of the Turing system by class 2 and class 3 users.



The above chart shows the CPU usage of the Fermat system by class 2 and class 3 users.



The above chart shows the most significant disk allocations on the Turing system for class 2 and class 3 users.



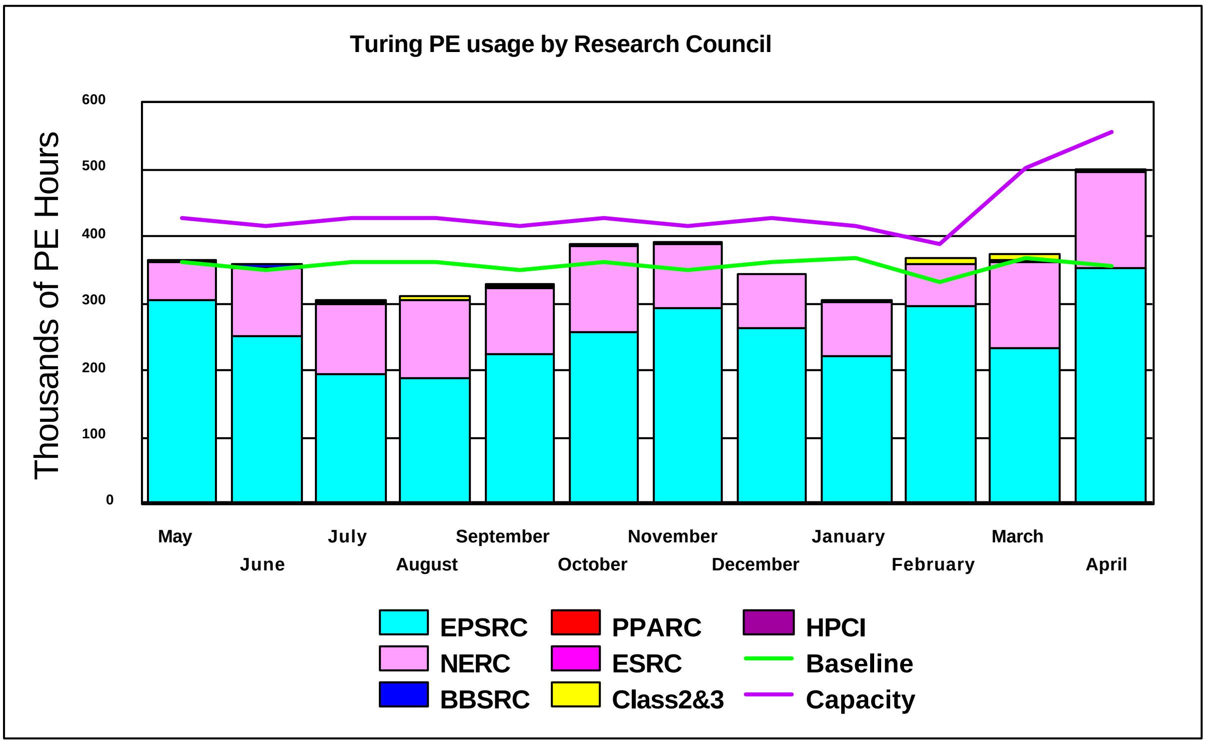
The above chart shows the most significant disk allocations on the Fermat system for class 2 and class 3 users.

There is currently no HSM usage by class 2 and class 3 users.

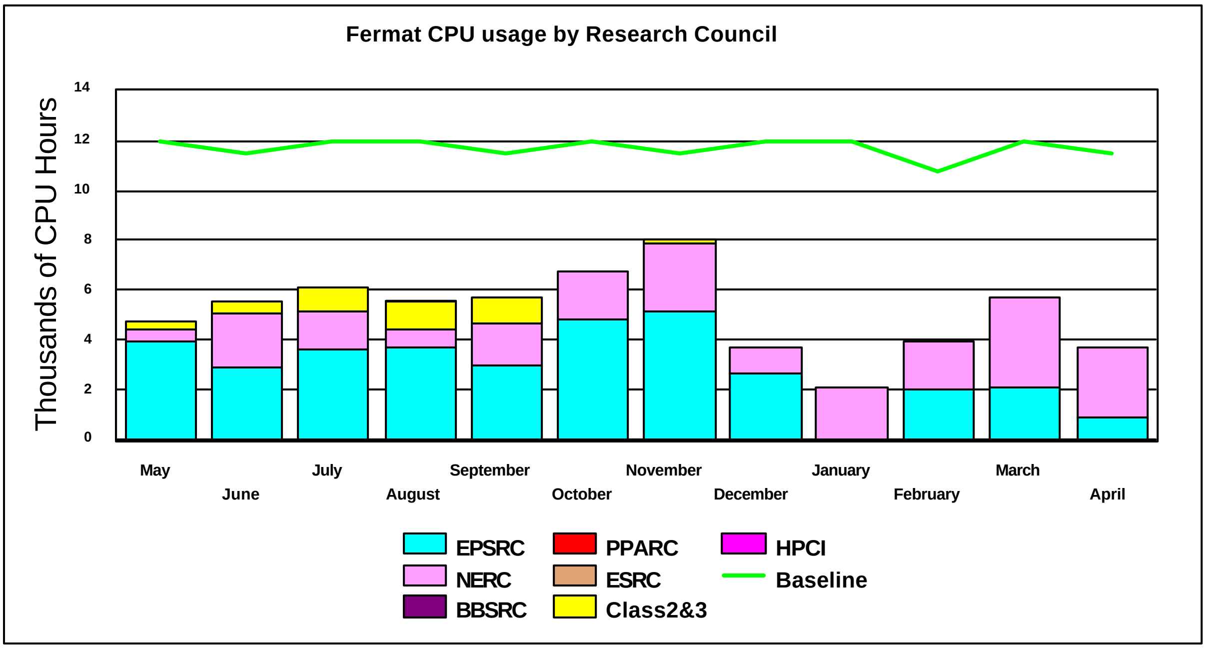
4.5 Charts of Historical Usage

In all the Usage Charts, the baseline varies dependant on the number of days in each month, within a 365-day year.

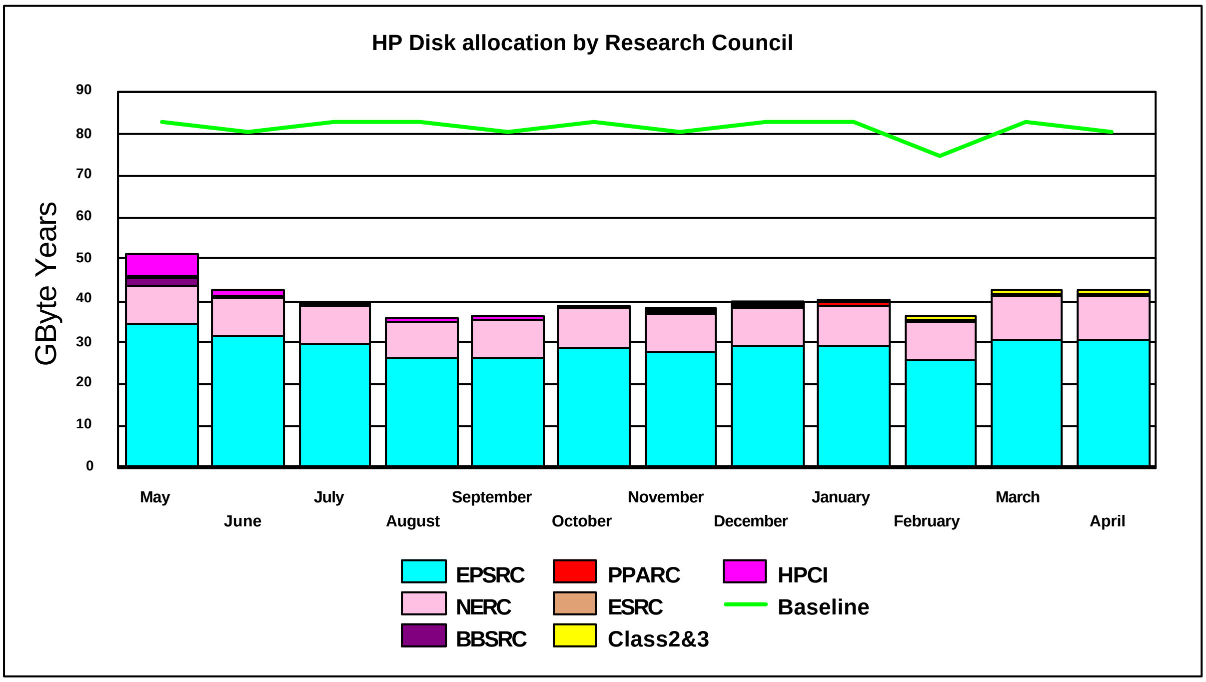
The graph below shows the PE hour's utilisation on Turing by Research Council for the previous 12 months.



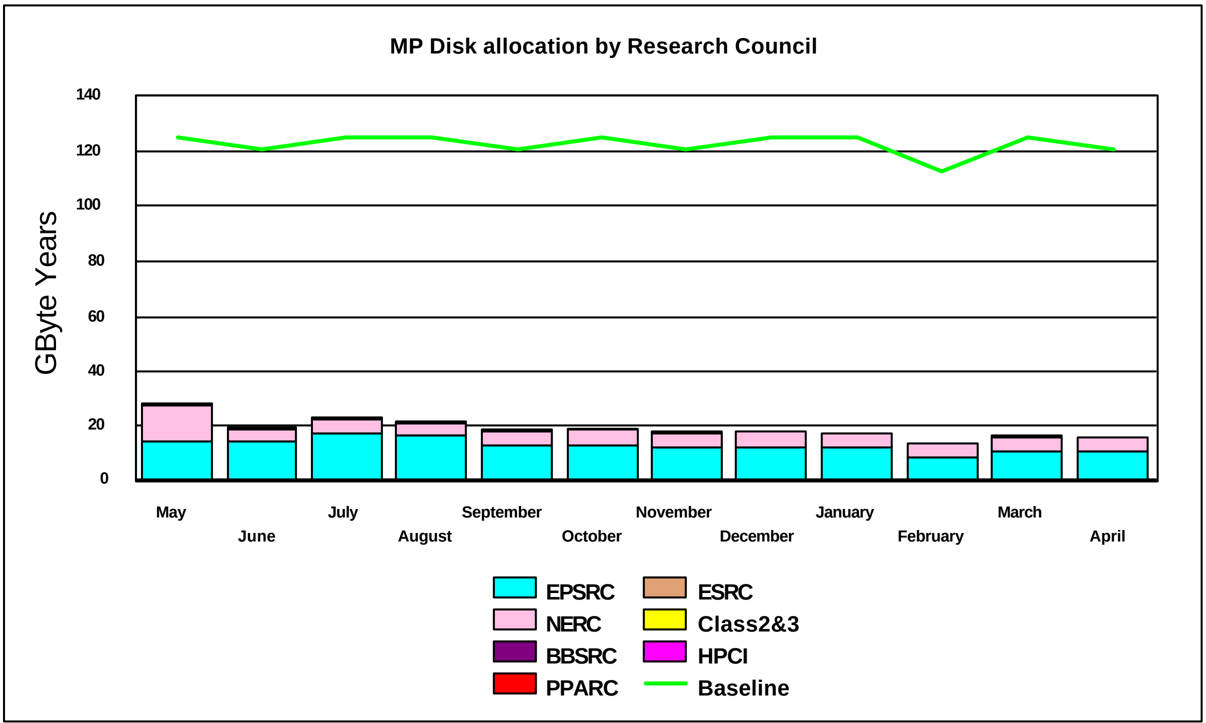
The graph below shows the historic CPU usage on Fermat by Research Council for the previous 12 months.



The next series of graphs illustrates the usage of the disk and HSM resources of the system.

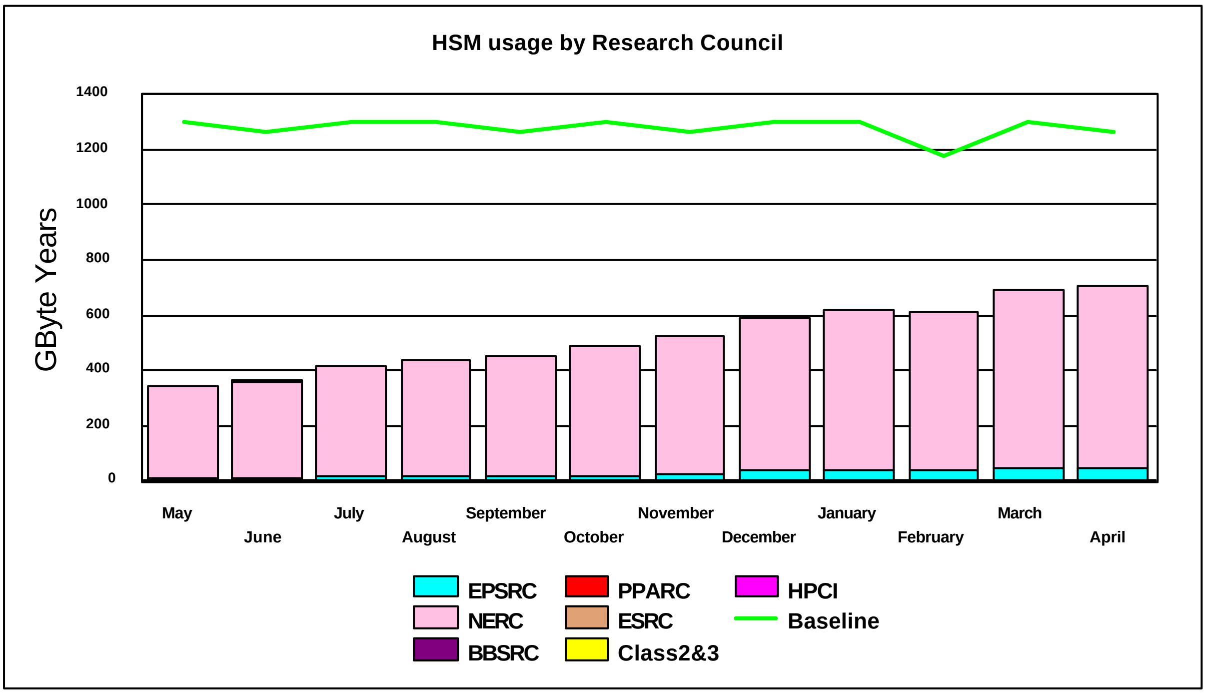


The preceding graph illustrates the historic allocation of the High Performance Disk on Turing.

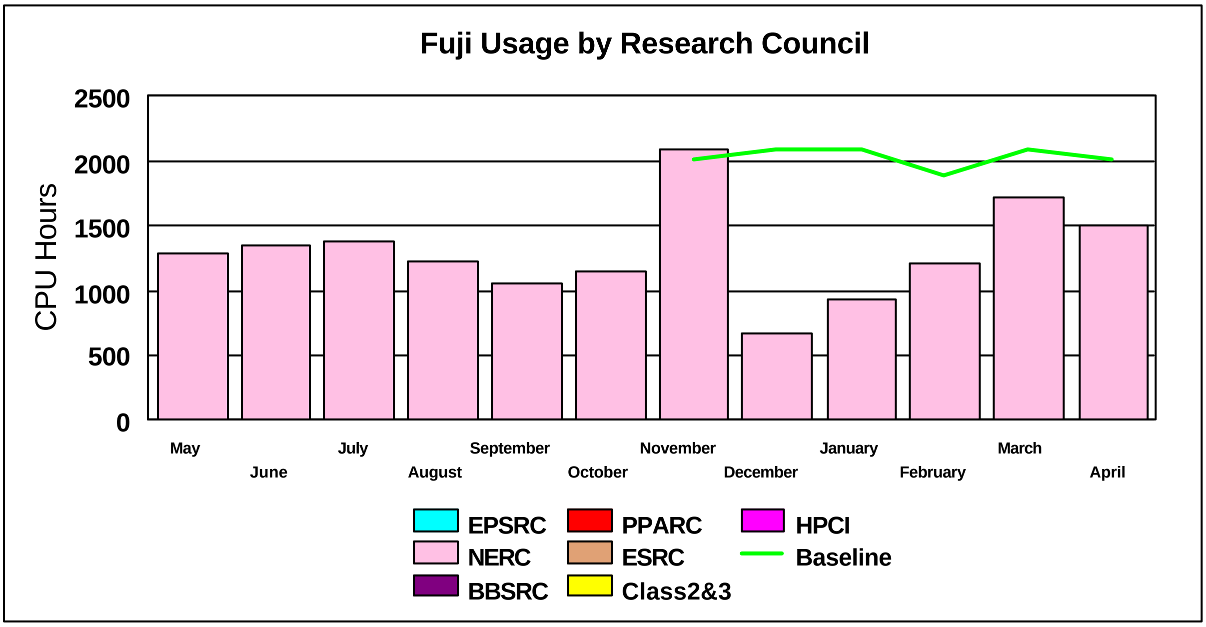


The graph above illustrates the historic allocation of the Medium Performance Disk on Fermat.

The graph below shows the historic HSM usage by Research Council funded projects. The primary usage is for NERC.



The next chart shows the historic usage of the Fuji system.



4.5 Guest System Usage Charts

There are currently no guest machines available to the CSAR Service.

5. Service Status, Issues and Plans

5.1 Status

The Service is currently running well with the additional capacity now available being well used.

5.2 Issues

There are currently no outstanding issues.

5.3 Plans

The integration of the new tape drives continues with the new silo configuration to be in place by the end of June.

6. Conclusion

April 2000 saw the overall CPARS rating at green.
The baseline was exceeded by over 42% with the largest proportion of the workload being the larger job sizes.

Continued management attention will be given to maximise the throughput of the Service, whilst balancing as fairly as practicable the shares between Projects and jobs of the varying sizes.

Appendix 1 contains the accounts for April 2000

Appendix 2 contains the Percentage shares by Consortium for April 2000

Appendix 3 contains the Percentage shares by Research Council for April 2000

Appendix 4 contains the Training and support figures to the end of April 2000

Appendix 5 contains a reference table of the consortia name, the subject area and the PI name.

Appendix 1

The summary accounts for the month of April 2000 can be found at the URL below

http://www.csar.cfs.ac.uk/admin/accounts/summary.shtml

Appendix 2

Percentage PE time per consortia for Turing in April 2000

Consortia	% Machine Time
CSE002	2.98
CSE003	1.07
CSE007	1.30
CSE021	0.06
CSE023	0.00
CSE025	0.00
CSE030	1.48
CSE006	25.66
CSE026	0.42
CSE004	10.22
CSE010	0.00
CSE011	0.00
CSE013	0.61
CSE014	0.00
CSE016	0.00
CSE018	0.00
CSE022	0.00
CSE029	0.00
CSE040	0.00
CSE008	0.00
CSE009	4.46
CSE024	14.72
CSE033	1.16
CSE035	6.13
CSE019	0.00
CSE020	0.01
CSE034	0.00
CSE036	0.00
HPCI Southampton	0.00
HPCI Daresbury	0.14
HPCI Edinburgh	0.00
CSN001	1.31
CSN002	0.00
BADC	0.00
CSN003	10.72
CSN005	0.00
CSN006	10.73
CSN007	0.00
CSN009	3.76
CSN010	0.00
CSN011	0.02
CSN012	0.00
CSN015	2.17
CSN017	0.00
CSB001	0.25
CSB002	0.00
CSB003	0.00
CSP002	0.44
CSP003	0.00
CSS001	0.00
CSS002	0.00
CS2001	0.00
CS2002	0.00
CS2003	0.00
CS2004	0.00
CS2006	0.00
CS2007	0.00
CS2008	0.00
CS2009	0.00
CS2010	0.00
CS2011	0.00
CS2012	0.00
CS2014	0.00
CS2015	0.00
CS2016	0.06
CS2017	0.00
CS2019	0.00
CS3001	0.02
CS3002	0.00
CS3003	0.02
CS3004	0.00
CS3005	0.00

Percentage CPU time per consortia for Fermat in April 2000

Consortia	% Machine Time
CSE002	0.15
CSE003	0.00
CSE007	0.00
CSE021	0.00
CSE023	0.00
CSE025	0.00
CSE030	0.20
CSE006	0.00
CSE026	0.00
CSE004	0.00
CSE010	0.00
CSE011	0.00
CSE013	0.00
CSE014	0.00
CSE016	0.00
CSE018	0.00
CSE022	0.00
CSE029	0.00
CSE040	0.00
CSE008	0.00
CSE009	17.43
CSE024	0.07
CSE033	0.00
CSE035	0.00
CSE019	0.00
CSE020	0.00
CSE034	0.00
CSE036	0.02
HPCI Southampton	0.00
HPCI Daresbury	0.00
HPCI Edinburgh	0.00
CSN001	56.79
CSN002	0.48
BADC	0.00
CSN003	18.17
CSN005	0.00
CSN006	0.00
CSN007	0.00
CSN009	0.00
CSN010	0.00
CSN011	0.00
CSN012	0.00
CSN015	0.01
CSN017	0.00
CSB001	0.00
CSB002	0.00
CSB003	0.00
CSP002	0.00
CSP003	0.00
CSS001	0.00
CSS002	0.00
CS2001	0.00
CS2002	0.00
CS2003	0.00
CS2004	0.00
CS2006	0.00
CS2007	0.00
CS2008	0.00
CS2009	0.00
CS2010	0.00
CS2011	0.00
CS2012	0.00
CS2014	0.00
CS2015	0.00
CS2016	0.00
CS2017	0.00
CS2019	0.00
CS3001	0.00
CS3002	0.00
CS3003	0.00
CS3004	0.00
CS3005	0.00

Appendix 2

Percentage disc allocation by Consortia for Turing in April 2000		Percentage disc allocation by Consortia for Fermat in April 2000	
Consortia	%Allocation	Consortia	%Allocation
CSE002	30.47	CSE002	27.62
CSE003	10.43	CSE003	1.26
CSE007	1.37	CSE007	0.00
CSE021	0.19	CSE021	0.50
CSE023	0.00	CSE023	0.00
CSE025	0.09	CSE025	0.00
CSE030	9.70	CSE030	25.80
CSE006	1.15	CSE006	0.06
CSE026	0.09	CSE026	0.00
CSE004	8.01	CSE004	7.72
CSE010	0.02	CSE010	0.00
CSE011	1.27	CSE011	0.00
CSE013	0.31	CSE013	0.56
CSE014	0.00	CSE014	0.00
CSE016	0.80	CSE016	0.00
CSE018	0.80	CSE018	0.00
CSE022	0.12	CSE022	0.00
CSE029	0.97	CSE029	0.00
CSE040	0.00	CSE040	0.00
CSE008	0.00	CSE008	0.00
CSE009	3.86	CSE009	0.50
CSE024	0.68	CSE024	0.19
CSE033	0.52	CSE033	0.00
CSE035	1.06	CSE035	0.00
CSE019	0.19	CSE019	0.50
CSE020	0.00	CSE020	0.00
CSE034	0.00	CSE034	0.00
CSE036	0.02	CSE036	0.06
HPCI Southampton	0.00	HPCI Southampton	0.00
HPCI Daresbury	0.19	HPCI Daresbury	0.13
HPCI Edinburgh	0.19	HPCI Edinburgh	0.50
CSN001	10.97	CSN001	25.80
CSN002	0.00	CSN002	0.00
BADC	0.00	BADC	0.00
CSN003	3.86	CSN003	5.15
CSN005	3.30	CSN005	0.00
CSN006	5.82	CSN006	0.00
CSN007	0.00	CSN007	0.00
CSN009	0.14	CSN009	0.00
CSN010	0.00	CSN010	0.00
CSN011	0.38	CSN011	0.00
CSN012	0.00	CSN012	0.00
CSN015	0.19	CSN015	0.00
CSN017	0.00	CSN017	0.00
CSB001	0.09	CSB001	0.00
CSB002	0.19	CSB002	0.50
CSB003	0.07	CSB003	0.00
CSP002	1.15	CSP002	0.00
CSP003	0.12	CSP003	0.38
CSS001	0.00	CSS001	0.00
CSS002	0.00	CSS002	0.00
CS2001	0.00	CS2001	0.00
CS2002	0.00	CS2002	0.00
CS2003	0.00	CS2003	0.00
CS2004	0.00	CS2004	0.00
CS2006	0.02	CS2006	0.00
CS2007	0.00	CS2007	0.00
CS2008	0.00	CS2008	0.00
CS2009	0.19	CS2009	0.00
CS2010	0.02	CS2010	0.00
CS2011	0.07	CS2011	0.00
CS2012	0.09	CS2012	0.00
CS2014	0.00	CS2014	0.00
CS2015	0.19	CS2015	0.00
CS2016	0.19	CS2016	0.00
CS2017	0.14	CS2017	0.00
CS2019	0.00	CS2019	0.00
CS3001	0.00	CS3001	0.00
CS3002	0.19	CS3002	0.00
CS3003	0.19	CS3003	0.00

Appendix 2

Percentage usage of HSM by Consortium for April 2000

Consortium	% Usage
CSE002	0.84
CSE003	0.09
CSE030	0.22
CSE004	1.81
CSE013	0.07
CSE024	3.35
CSN001	12.13
BADC	12.54
CSN003	68.70
CSS001	0.01

Appendix 3

Percentage PE usage on Turing by Reserch Council for April 2000		
Research Council	**% Usage**	
EPSRC	70.35	
HPCI	0.14	
NERC	28.71	
BBSRC	0.25	
ESRC	0.00	
PPARC	0.54	

Percentage CPU usage on Fermat by Reserch Council for April 2000		
Research Council	**% Usage**	
EPSRC	25.03	
HPCI	0.00	
NERC	74.97	
BBSRC	0	
ESRC	0	
PPARC	0	

Percentage Disc allocated on Turing by Research Council for April 2000		
Research Council	**% Allocated**	
EPSRC	72.62	
HPCI	0.38	
NERC	24.68	
BBSRC	0.59	
ESRC	0.38	
PPARC	1.30	

Percentage Disc allocated on Fermat by Research Council for April2000		
Research Council	**% Allocated**	
EPSRC	67.40	
HPCI	0.69	
NERC	30.91	
BBSRC	0.50	
ESRC	0.00	
PPARC	0.38	

Percentage HSM usage by Research Council for April 2000		
Research Council	**% usage**	
EPSRC	6.37	
HPCI	0	
NERC	93.37	
BBSRC	0	
ESRC	0.01	
PPARC	0	

Appendix 4

The following tables show the training and support resource usage by the consortias in person days to the cuurent month.

Training Used to end of April

Project	Used
cse009 GR/M07441 Catlow	0
csn001 SOC Core Strategic Webb	0
cse013 Complex Flows Leschziner	**1**
cse017 GR/L58699 Luo	0
cse021 Magnetism Staunton	**1**
cse024 GR/M44453 Tennyson	0
cse025 Nuclear Theory Bishop	**1.5**
cse002 gr/m01753 Gillan	0
cse007 gr/m05348 Foulkes	**2**
cse003 gr/m01784 Taylor	**5**
cse004 UK Turbulence Sandham	**2**
cs2001 CompApps3D Jain	0
csb003 117/SO9645 Williams	0
cse011 GR/K52317 Williams	0
cse010 GR/L04108 Williams	0
csn003 UGAMP O'Neill	**4**
cse030 GR/M56234 Cates	**7**
cs2002 PTMP Lyne	0
csp002 NPSSAP Chapman	**4**
cs3001 - Staveley	**3**
cs3002 Novik Simulations of DNA	**2**
cs3005 Zarei	**2**
cs3007 Finch 3D Crystal lattice	0
cs2005 ISAAG Walsh	0
cs2007 SNOW Choularton	**1**
csb001 27/B07117 Goodfellow	0
cs2012 Large Eddy Sims Qin	**1.5**
cs2014 - Karlin	**2**
cs2015 Tejera-Cuesta	**1.5**

Support Used to end of April

Project	Used
cse009 GR/M07441 Catlow	0
cse006 gr/m05201 Briddon	0
cse002 gr/m01753 Gillan	**102**
cse011 GR/K52317 Williams	**2.18**
csn001 SOC Core Strategic Webb	**1**
cse007 gr/m05348 Foulkes	0
cse017 GR/L58699 Luo	0
cse008 GR/M07624 Hillier	0
cse024 GR/M44453 Tennyson	0
cse021 GR/L95427 Staunton	0
cse010 GR/L04108 Williams	**15.95**
cse030 GR/M56234 Cates	**22**
cs2002 PTMP Lyne	**0.25**
cs2008 ET Genge	**7.91**
csn005 GR9/2909 Davies	**12**
cs2005 ISAAG Walsh	0
cse003 gr/m01784 Taylor	0

Appendix 5

Code	PI	Subject	Subject Area
Cse002	Dr Nicolas Harrison (Gillan)	Support for the UKCP	Physics
Cse003	Prof. Ken Taylor	HPC Consortiums 98- 2000	Physics
Cse004	Dr Neil Sandham	UK Turbulence	Engineering
Cse006	Dr Patrick Briddon	Covalently Bonded Materials	Materials
Cse007	Dr Matthew Foulkes	Quantum Many Body Theory	Physics
Cse008	Dr Mark Vincent (Hillier)	Model Chemical Reactivity	Chemistry
Cse009	Dr Ben Slater (Catlow)	HPC in Materials Chemistry	Chemistry
Cse010	Dr John Williams	Free Surface Flows	Engineering
Cse011	Dr John Williams	Open Channel Flood Plains	Engineering
Cse013	Dr David Aspley (Leschziner)	Complex Engineering Flows	Engineering
Cse014	Dr Cassiano de Oliverira (Goddard)	Probs in Nuclear Safety	Engineering
Cse016	Dr Stewart Cant	Turbulent Combustion	Engineering
Cse018	Dr Stewart Cant	Turbulent Flames	Engineering
Cse019	Dr Jason Lander (Berzins)	ROPA	Information Technology
Cse020	Dr Marek Szularz	Symmetric Eigenproblem	Information Technology
Cse021	Dr Julie Staunton	Magentisim	Physics
Cse022	Mr Niall Branley (Jones)	Turbulent Flames	Engineering
Cse023	Allen	Liquid Crystalline Materials	Robin Pinning
Cse024	Dr Robert Allan (Tennyson)	ChemReact 98-2000	Chemistry
Cse025	Dr Niels Rene Walet (Bishop)	Nuclear Theory Progamme	Physics
Cse026	Dr Maureen Neal	J90 move	
Cse027	Dr M Imregun	J90 move	
Cse028	Prof. P.W. Bearman	J90 move	
Cse029	Dr David Aspley (Leschziner)	J90 move	Engineering
Cse030	Prof M Cates	HPC for Complex Fluids	Physics
Cse031	Brebbia	J90 move	
Cse033	Dr M Imregun	Tubomachinery core compressor	Chemistry
Cse034	Dr Paul Durham	R&D of liner/non-linear systems	Mathematics
Csn001	Mrs Beverly de Cuevas (Webb)	HPCI Global Ocean Consortium	
Csn002	Dr Mark Vincent (Hillier)	Pollutant Sorption on Mineral Surf	
Csn003	Dr Lois Steenman-Clark (O'Neill)	UGAMP	
Csn005	Dr Huw Davies	Constraining Earth Mantle	
Csn006	Dr John Brodholt (Price)	Density Functional Methods	
Csn007	Dr John Brodholt (Price)	Density Functional Methods	
Csn008	Hulton	Sub-Glacial Process	
Csn009	Dr Roger Proctor		
Csn010	Dr Jason Lander (Mobbs)	Flow over Complex terrain	
Csn011	Dr Ed Dicks (Thorpe)	J90 move	
Csb001	Dr David Houldershaw (Goodfellow)	Macromolecular Interactions	
Csb002	Dr Adrian Mulholland (Danson)	Stability of Enzymes at high temp	
Csb003	Dr John Carling (Williams)	J90 move	
Css001	Dr Stan Openhaw	Human Systems Modelling	
Css002	Dr Robert Crouchley	Dropout in panel surveys	
Hpcid	Dr Robert Allan		
Hpcie	Dr David Henty		
Hpcis	Dr Denis Nicole		
Cs2001	Dr Sudhir Jain	3D Ising Spin Glass	
Cs2002	Dr Ingrid Stairs (Lyne)	Millisecond Pulsars	
Cs2003	Mr Tom Coulthard	Holocene Sediment Fluxes	
Cs2004	Dr A. Paul Watkins	Internal Combustion Engine	
Cs2005	Mr Sean Walsh	Arabidopsis Genome	
Cs2006	Prof. Walter Temmerman	Superconductivity & Magmetisim	
Cs2007	Choularton	Precipitation in the Mountains	
Cs2008	Dr Matthew Genge	Extraterrestrial Mineral Surfaces	
Cs3001	Mr John Andrew Staveley	Helical Coherent Structures	