W. W. Hansen Experimental Physics Laboratory

STANFORD UNIVERSITY

STANFORD, CALIFORNIA 94305 - 4085

Gravity Probe B Relativity Mission

PDOC P0039

DALE K. GILL

AUTOMATIC PARTICLE COUNTING

TABLE OF CONTENTS

PURPOSE: Many components of the Relativity Gyroscope experiment require conditions of very low surface particle contamination. To help insure the quality of the various processes, the clean rooms must be monitored for airborne and surface particles regularly, such that contamination problems may be spotted, the sources determined, and then minimized or eliminated.

SCOPE: This procedure describes the methods used to monitor the particulate cleanliness of the GP-B HEPL 130,132 and MGP clean room complex on a continuous basis. The purpose of these measurements is to provide the necessary data to acertain the proper functioning of the particulate control equipment in the HVAC system. In addition, this data provides historical data on the environment to which critical program hardware is exposed. Finally, this system provides data on the impact of personnel and operations on the cleanliness of the facility. This system does not substitute for certification of the facilities where required by other procedures or by contractual obligations nor does it substitute for local real time monitoring of cleanliness levels during specific activities on critical hardware.

RESPONSIBILITIES: It is the responsibility of the clean room managers to review the particle count graphs on a weekly basis to verify that their facility is functioning properly. It is the responsibility of each user to perform their work in such a manner that they do not cause the particle counts to exceed the Class limits for the areas they are using. It is the responsibility of the Clean Room Committee Chair to oversee the particle counting processes, to review the particle count history for the facilities, and to make management aware of limitations or problems with operations and the facilities. The Clean Room Committee Chair shall also provide technical advise and guidance for the solution of particle count problems. When critical hardware is being processed, it is the responsibility of the cognizant engineers and managers to determine whether local real time particle counting is required and to implement such local real time particle counting.

EQUIPMENT:

MetOne Model 200L-1-115-1 Particle Counter s/n 90324448C
MetOne Model 231 Indexing Manifold s/n
PC Computer 486 running DOS 3.30 (Must be this version of DOS)
- 16 MB memory
- 1.44 MB floppy drive as B: drive
- VGA video card and color monitor

SPECIFIX real time process control software, version 2.4
Program pcntxfr.exe (Turbo Pascal program to automaticlally copy files from harddisk to floppy while data collection is running)
PC Computer, 386 or better.(for data analysis and plotting)
- Windows 3.1
- Excel 4.0 (Must be compatible with MACRO's written in 4.0)
- Network connection to Laser Printer.
- Excel MACRO file pcount.xlm
- Dos batch file PARTANAL.BAT
- SPECIFIX program files

OPERATING INSTRUCTIONS

OPERATING THE DISPLAY

The operator display consists of 3 views which can be accessed sequentially on the MetOne particle count computer located in MGP-2, the clean room anteroom. To switch between display views, press the PgUp or PgDn keys.

The primary display, STAN1, is a layout drawing of the HEPL 130, 132, and MGP facility with the approximate locations of the sampling ports numbered. When port samples a high particle count the region around the port number changes to orange if the count exceeds 75% of the Class Rating for that area, if the count exceeds 100% of the Class Rating, the region blinks orange.

There are 2 secondary displays, STAN2 the current value screen, and STAN3 the alarm status screen. From the primary display, pressing the PAGE DOWN key ,PgDn, will switch to the current value screen. The current value screen displays the most recent count for all 16 ports and for the sizes 0.5, 1.0 and 5.0 micron particles. Note, the ports are sampled on a sequential basis and it can take up to 20 minutes for a new value to be posted for a specific port. Pressing the ESC key will acknowledge the alarms and return to the primary display. It may take up to 2 minutes for the display to reflect the acknowledged alarms. If the port samples are still in excess of the alarm levels, the alarms will continue to be indicated on the display.

The third display, the Alarm Status Screen gives a history of alarms and other system messages. It can be accessed from the primary display by pressing the PgUp key, or from the Current Values Screen by pressing the PgDn key.

BASIC SYSTEM OPERATION

STARTUP----------Startup from power off.

In order to start up the MetOne system from the power off condition, you must first start the the MetOne Model 200L particle counter, then turn on the Model 231 Manifold controller, next start the manifold vacuum pump, and finally start the data acquisition computer. The steps to perform these tasks are listed below.

MetOne Model 200L & Model 231 startup.

Press the Model 200L POWER OFF key; connect both the Model 200L power cord and Model 231 power cord to 115 VAC outlets.
Press the Model 200L POWER ON key. The Model 200L and Model 231 will power up.
Press CALIB, and verify a green light is on.
Press OPER, adjust AIR FLOW control until center green light is on.
Press STOP.
Establish the Model 200L parameters.
Set sample time for 1.00 minute
Set hold time for 0 minutes 15 seconds
Set Printer Mode to 0 to disable the printer
Set communication mode and baud rate
Press MODE REMOTE/LOCAL key until LOCAL light is on.
Press OPTION key
Press "6" to set serial communication mode
Press PROG key then enter 2 to set mode to no parity, 8 data bits, 1 stop bit.
Press the ENTER key.
Press OPTION key
Press "7" to set baud rate
Press PROG key then enter 6 to set rate at 1200 baud.
Press the ENTER key.
Press MODE REMOTE/LOCAL key until REMOTE light is on.
Press COUNT then press up or down air until PARTICLE SIZE reads 0.5.
Press COUNT MODE until CUM light is on.
Press MODE AUTO/MANUAL until AUTO is on.
Press OPER key to start Model 200L internal air pump.
Program SKIP function on the Model 231 for those ports not being used for sampling.
Verify the Model 200L is in the STOP and LOCAL modes. Press Model 231 MODE key to select MANUAL (LED off). Press STEP key to advance to the desired station. The station is programmed to skip if the LED is on. To disable the skip for that station, press SKIP key again (LED will go out). Step to the next desired station and program skip. At least one station must be enabled for sampling.
Press the Model 200L OPER key.

Manifold Vacuum Pump startup.

Check to see that circuit breaker, Panel AA, #19,21,23 is off.
Plug pump into 208 V 3 phase outlet P AA 19
Turn on breaker, #19,21,23.

Data Acquisition Startup.

Turn on the computer, after a few moments you will see the C: prompt.
At the C: prompt, type RUNFIX
After a few moments the system should show a map of the facility, this indicates that the program is running and data collection has begun. Verify that the time and date shown are correct.

SYSTEM IS NOW IN FULL OPERATION

SHUTDOWN

Data Acquisition Shutdown

From the FACILITY MAP VIEW, Press ALT U
The message ENTER PASSWORD will show up in the lower left corner: Type <u>metone</u> and hit return.
The message ENTER DATA will show up in the lower left corner: Press F10

The screen changes to THE MASTER MENU, which looks as follows:

FOREGROUND FUNCTIONS	BACKGROUND FUNCTIONS
PVIEW	* HTC
PDDRAW	* ALM

DBB	* SCHED
HTA	
HDD	
DBC	
KME	
TGE	
REP	
SME	
DOS	
	HELP
	EXIT

The * indicates that this module is running in the background. The SAC module is also running in the background, and cannot be turned off.

Type exit and press enter.
The message ENTER CONFIRMATION CODE will show up in the lower left corner: Press ALT Y.
After a moment, the C: prompt should be displayed. If not, the shutdown was unsuccessful, and it is necessary to reset the computer by pressing the RESET button, or the key combination Ctrl Alt Delete to reboot the computer.

Manifold Vacuum Pump Shutdown

Turn OFF breaker, #19,21,23 Panel AA, located in the service isle between 132 and the MGP Class 10 room.

Model 231 Manifold Controller Shutdown--This is linked to the Model 200L Particle Counter and is not seperately shutdown.

MetOne Model 200L Particle Counter Shutdown

Verify that the Manifold Vacuum Pump has been shutdown. Never run the vacuum pump without the Model 200L running, particles could be drawn from the Model 200 pump into the sensor.

Press the POWER OFF button on the front panel.

DATA TRANSFER

The data gathered by the particle counter is automatically transfered from the MetOne 200L to the particle count computer for display and logging, but in order to provide printed records and historical trend graphs, it is necessary to transfer the data from the particle count computer to the analysis computer for analysis and chart preparation. The particle count computer stores its data as binary files covering one days worth of data. The files have filenames in the following pattern yymmdd00.h24.

For analysis the binary files need to be transfered from the particle count computer harddisk to the analysis computer. This is done by copying the files onto a floppy disk. There are two procedures for copying the files. The primary procedure uses a short program, written in Turbo Pascal, pcntxfr.exe, which is run by the main SPECIFIX program as a scheduled activity.

The pcntxfr.exe program every morning at about 12:30 am and transfers the previous days file to a floppy disk in the B: drive. In order for this to happen a floppy disk with at least 100 KB of free space must be properly inserted in the B: drive and the SPECIFIX scheduling routine SCHED must be running. When the data on the floppy disk is needed for analysis, the disk is removed from the B: drive and a new disk installed in the B: drive.

The secondary procedure required exiting the SPECIFIX program and utilizing DOS to copy the necessary files.

Perform a Data Acquisition Shutdown as described above.

From the C: prompt change directories to c:\metone\htr, where the *.h24 files reside. Use the DOS copy command to copy the desired files onto a floppy disk.

Change directories to the C:\metone directory. From the C:\metone\htr directory, this can be done by typing the CD.. command.

If shutdown performed above was successful, then from the C:\metone directory type GO and press enter. The program should start running and in a few moments the FACILITY MAP VIEW should be displayed on the monitor. If the shutdown performed above was not successful, then it will be necessary to perform a complete Data Acquisition Startup as described above in the START UP procedure.

PARTICLE COUNT PLOTTING

This procedure documents the process of plotting the particle counts taken by the MetOne automatic particle counter. In order for this procedure to be used, the appropiate binary data files need to be down loaded from the MetOne computer and processed by the batch file PARTANAL.BAT. The particle count analysis computer must be set up with directories C:\METONE and C:\GRAPH. The C:\METONE directory should contain the SPECIFIX program files, the DOS batch file PARTANAL.BAT and the port definition files PORT1HDG, PORT2.HDG,...PORT15.HDG.

Binary File Processing

Copy the binary files for the previous 10 days from the floppy disk into the C:\METONE directory.
Note a binary file with valid data must be available for 9th and 10th days prior to the date in the system clock on the system analyzing the data.
Run the batch file PARTANAL.BAT by typing PARTANAL <enter> at the C:\METONE prompt.
The batch file calls up the SPECIFIX HDR, Historical Data Report routine which converts the binary data into an ASCII file for loading into EXCEL. A useful trick to get the plots to line up the day axis with midnight is to reset the computer system clock to just after midnight, e.g. 00:10 am, when you run the PARTANAL batch file.

The ASCII files created by the batch file are stored in the C:\GRAPH directory with file names P?mmdd.asc or P??mmdd.asc where mm is the current month and dd is the current day on the system clock.
The batch file runs the HDR routine for all 14 ports sequentially. After all files have been converted, the alarm information, if any, is reported to the screen, press any key to scroll through this list. When all the alarm information has been reported to the screen, the batch file ends and returns you to the c: prompt.

Copy the files P1????.asc through P14????.asc to the directory M:\dale\pcounts\old\19yy for archiving.

Data Plotting

1. Start WINDOWS.
2. Start MICROSOFT EXCEL ver 4.0.
3. Open Macro Library file, PCOUNT.XLM
4. MAXIMIZE the window containing Excel.
5. Open the data file, e.g. P1????.asc, that is to be plotted. Located in directory c:\graph.
6. On the Excel Tool Bar, click on the MACRO command.
7. From the pull down menu, click on RUN.
8. From the displayed list of Macros, click on PCOUNT.XLM!PCOUNT1.
9. Then click OK. The macro will start running, after several seconds, the graph should appear, wait until the hourglass symbol disappears.
10. On the Excel Tool Bar, click on theFILE command.
11. From the pull down menu, click on PRINT.
12. Then click OK. The graph file should now print out.
13. On the Excel Tool Bar, click on the FILE command.
14. From the pull down menu, click on CLOSE.
15. At the SAVE changes message box, select NO, to close the graph file without saving.
16. On the Excel Tool Bar, click on the FILE command.
17. From the pull down menu, click on CLOSE.
18. At the SAVE changes message box, select NO, to close the modified data file without saving.
19. Repeat steps 5 through 18 for each of the data files to be plotted.
20. Verify that all the plots have been correctly printed by the printer.
21. Delete the P1mmdd.asc to P14mmdd.asc files from the C:\GRAPH directory.
22. Make a two sided copy set of the 14 plots for filing in the PARTICLE COUNT LOG BOOK.
23. Post the original 14 plots on the bulletin board outside the entrance to HEPL 130, 132, MGP clean room complex.

PROGRAMMING

There are a large number of programs and program pieces associated with the automatic particle counting procedure, because many of these are general purpose programs which have been adapted to perform the automatic particle counting, there are many features which can or must be programmed for the procedures to operate. Normally no programming changes should be needed, but to address requirements or equipment changes it may be necessary to modify the existing programs. This section is not intended to be detailed instructions on how to program the various pieces of equipment nor how to set all of the options for the software, but rather a set of notes to allow simple modifications or to elaborate on the equipment or software manuals where the instructions are not clear.

Particle Count Plotting

Binary Data Processing

The batch file which performs this task can be edited to change the number of days worth of data which is plotted for each port. To do this, open the batch file with a text editor (I typically use the Turbo Pascal editor.) and modify the lines which look as follows:

HDR - G:PORT1 T:09:00:00:00 I:600 ASP1 *

This line is the command to invoke the SPECIFIX routine HDR (Historical Data Report). G:PORT1 tells the routine which tag group PORT1.HDR to use, T:09:00:00:00 tells the routine to extract data from the binary files beginning 9 days before the current time in the computer system clock, format is T:DD:HH:MM:SS. I:600 tells the routine to extract data at 600 second interval (every 10 minutes). While ASP1 * indicates that the output should be an ASCII file with the name P1mmdd.asc.

To plot 7 days worth of data use HDR - G:PORT1 T:07:00:00:00 I:600 ASP1 *
To plot 3 days worth of data use HDR - G:PORT1 T:03:00:00:00 I:600 ASP1 *

THE DISPLAY

The displays are programmed using the PDRAW routine in the main program SPECIFIX. They can be edited using the same routine and following the instructions in the SPECIFIX manual. Mostly the manuals instructions can be followed. There are some places where it is not clear what needs to be done.

Under the Modify a display routine, there are a number of commands. In trying to use the MODLNK command, it was unclear how to access the various links that could be modified. In the lower left corner there is a region that displays the link that is currently available for modification. When first invoked, the link that is displayed is the PASSWORD link. To move to other links, press the (down arrow) ↓ key. Use the ↓ key and the ↑ key to move up and down the link list. Only one link is displayed at a time.

THE DATABASE

The database contains the settings which makes the general SPECIFIX scan, alarm and control routine operate the MetOne as an automatic particle counting system. For this application there are 48 ANALOG input blocks used, each block is identified by its TAG. The TAGs are assigned according to the pattern shown in the appendix, beginning with P00A through P0CR. Only half of the 96 TAGs are actually SCANNED by the SPECIFIX SAC routine. These cover the 0.5, 1.0 and 5.0 Micron particle size bins for the 16 available ports on the MetOne Model 231 port indexer.

Within each ANALOG BLOCK there are 24 settings which can be made. Most of these settings are identical for all 48 blocks. A sample block definition for TAG P0AA is shown in the appendix. The EXCEL file BBASEDEF.XLS contains the specific information for each of the 48 blocks used.

Note that when a BLOCK definition is edited, the block is taken off SCAN in the SAC routine. In order to start scanning of that block, you need to exit the program and reboot the system, then perform the Data Acquisition Startup as described above.

THEORY OF OPERATION

This section gives a quick overview of how the automatic particle counting works, and why the alarm values are set where they are.

The heart of this system is the MetOne Model 200L laser light scattering particle counter. This uses a laser illuminate a small region through which the sampled air flows at a rate of 1 cubic foot per minute. Particulates in this air sample cause the light to scatter from the beam path and this scattered light is detected. Each pulse of scattered light indicates a single particle or multiple particles very close together. The amplitude of the light pulse correlates to the size of the particle which scattered the light. The physics of this light scattering is quite complex, and the light scattering size does not exactly correspond to the physical dimensions of the particle. The particle counter counts these pulses and records the number of particles in each of 6 size bins. This accumulation period lasts for 60 seconds and therefore the count represents the number of particles per cubic foot of sampled air. The size bins used are 0.3, 0.5, 1, 3, 5 and 10 micron. This data

can be reported in two ways, either the number of particles in each bin, or as the sum of the number of particles for that size bin and larger. We use the second method, so that a count of the number of particles reported for 0.5 Micron represents the sum of the counts for 0.5, 1, 3, 5 and 10 micron particles.

The next major component is the indexer. This is a mechanical multiport "valve" which allows the particle counter to sequentially sample air streams from up to 16 seperate locations. Tubes run from the 16 inputs to various locations in the clean room where isokinetic inlets are located. A large vacuum pump pulls approximately 2 cfm through each of the inputs, except that input which is currently connected to the particle counter. This continuous flow helps to keep the full of freshly sampled air so that the samples delivered to the particle counter are current. A stepper motor indexes the sampling port sequentially to the 16 inputs. While a particular input is being sampled the flow in that port is reduced to the 1 cfm which passes through the particle counter. This sequential sampling means that an individual port is sampled only about 3 to 4 times an hour. It is possible to program the sampling to skip inputs in the sequence, but all enabled ports must be sampled in order and at the same frequency.

After each port has been sampled by the particle counter and the counts binned according to size, this information is transfered to the particle count computer running the SPECIFIX program. The program records this data in its database as the data is reported by the MetOne computer. This information is transfered from the particle counter as an integer number(ASCII codes) between 0 and 32767 over an RS232 link. The details of this transfer are controlled by the MetOne driver for the SPECIFIX program. I believe that the particle count computer requests data from the MetOne 200L at the a rate determined by the MetOne driver. The SAC routine examines all blocks on scan sequentially, but processes them at the rate determined by the scan time defined in each block. The blocks are scanned once every 18 tics, approximately once each second. When a block is scanned it looks at the appropiate value in the database and performs the defined alarm checking etc.

From the standpoint of particle count historical data and the particle count plots, the important values are the BASE COLLECTION RATE defined in the HDC (Historical Data Collect) routine. This rate determines how often the HDC routine examines the database and the SCAN PERIOD which determines how often each TAGs value is recorded in the historical data file. Since the particle counter only updates each port at about a 16 minute intervals, we have used a 60 second period for all three times, the SCAN TIME, BASE COLLECTION RATE, and the SCAN PERIOD.

ALARM LEVELS

The setting of the alarm levels are based on the Class of the Clean Room for each port location. They are based on the definitions for each class as defined in Fed. Std. 209. The inital alarm, the AH-HI ALARM, is set at 75% of the Class limit while the HH-HIHI ALARM is set at 100% of the Class limit for each of the monitored particle size.

APPENDICES

METONE SOFTWARE SETUP.

EXAMPLE ANALOG INPUT BLOCK DEFINITION

TAG	**P0AA**	DESC.....	**PORT 5, 1.0 u**
DV-DEVICE	**MET**	LL-LO LO ALARM	**0**
HT-H/W OPTIONS	**----------**	AL-LO ALARM	**0**
IO-ADDR	**00:00:04:02**	AH-HI ALARM	**1838**
SC-SIG COND	**NONE**	HH-HIHI ALARM	**2450**
EL-LO EGU	**0**	RC-ROC ALARM	**0**
EH-HI EGU	**32767**	DB DEAD BAND	**245**
ET-EGU TAG	**1.0 u**	AP ALM PRI	**L**
		AD-ALM DEST	**HF**
ST-SCAN TIME	**60**	AE-ALM ENABLE	**ENABLE**
SM-SMOOTHING	**0**	CC-ALM CONTACT	
IS-INIT SCAN	**ON**	CM ALM MODE	**ANY**

See the DataBase listing, EXCEL file BBasedef.xls for the Analog Input Block Definitions actually used for the MetOne. Each Block has a unique tag. A total of 96 tags are assigned, but only 48 tags are used. Tags are assigned according to the following table. The tags printed in **BOLD** are the ones actually used.

PORT #	0.3 MICRON	0.5 MICRON	1.0 MICRON	3.0 MICRON	5.0 MICRON	10 MICRON
1	P00A	**P00B**	**P00C**	P00D	**P00E**	P00F
2	P00G	**P00H**	**P00I**	P00J	**P00K**	P00L
3	P00M	**P00N**	**P00O**	P00P	**P00Q**	P00R
4	P00S	**P00T**	**P00U**	P00V	**P00W**	P00X
5	P00Y	**P00Z**	**P0AA**	P0AB	**P0AC**	P0AD
6	P0AE	**P0AF**	**P0AG**	P0AH	**P0AI**	P0AJ
7	P0AK	**P0AL**	**P0AM**	P0AN	**P0AO**	P0AP
8	P0AQ	**P0AR**	**P0AS**	P0AT	**P0AU**	P0AV
9	P0AW	**P0AX**	**P0AY**	P0AZ	**P0BA**	P0BB
10	P0BC	**P0BD**	**P0BE**	P0BF	**P0BG**	P0BH
11	P0BI	**P0BJ**	**P0BK**	P0BL	**P0BM**	P0BN
12	P0BO	**P0BP**	**P0BQ**	P0BR	**P0BS**	P0BT
13	P0BU	**P0BV**	**P0BW**	P0BX	**P0BY**	P0BZ
14	P0CA	**P0CB**	**P0CC**	P0CD	**P0CE**	POCF
15	P0CG	**P0CH**	**P0CI**	P0CJ	**P0CK**	P0CL
16	P0CM	**P0CN**	**P0CO**	P0CP	**P0CQ**	P0CR

```
program pcntxfr;
{This program is intended to transfer METONE *.h24 files from
the harddisk to floppy unattended.  It is intended to operate
as a scheduled task under the METONE one software, THE FIX.}

uses
  TpDos,TpDate;
const
  FromHead='c:\metone\htr\';
  ToHead='b:';
  suffix='00.h24';
var
  FromF,ToF:file;
  NumRead,NumWritten:word;
  buf:array[1..2048] of char;
  ThisDate:string[6];
  DriveBReady:boolean;
  FromFexist:boolean;
  BytesPerCluster,DisCapacity,FreeSpace:LongInt;
  ClustersAvailable,TotalClusters,BytesPerSector,SectorsPerCluster:Word;

procedure Bdisk;
begin
 DriveBReady:=FALSE;
 if GetDiskInfo(2,ClustersAvailable,TotalClusters,BytesPerSector,
    SectorsPerCluster) then
    begin
     BytesPerCluster:=LongInt(SectorsPerCluster)*LongInt(BytesPerSector);
     FreeSpace:=LongInt(ClustersAvailable)*BytesPerCluster;
     IF Freespace>100000 then DriveBReady:=TRUE;
    end;
end;

begin
 ThisDate:=DateToDateString('yymmdd',(Today-1));
 Bdisk;
 If DriveBReady AND ExistFile(FromHead+ThisDate+suffix) then
 begin
   Assign(FromF,FromHead+ThisDate+suffix);
   Reset(FromF,1);
   Assign(ToF,ToHead+ThisDate+suffix);
   Rewrite(ToF,1);
   repeat
    BlockRead(FromF,buf,Sizeof(buf),NumRead);
    BlockWrite(ToF,Buf,NumRead,NumWritten);
   until (NumRead = 0) or (NumWritten <> NumRead);
  Close(FromF);
  Close(ToF);
  end;{IF}
end.→
```

TAG #	Location	Part. Size	Class Limit	AH-HI	HH-HI	DEADBAN	EGU Tag	IO-Address
P00B	1	0.5	10000	7500	10000	1000	0.5 u	00:00:00:01
P00C	1	1	2450	1838	2450	245	1.0 u	00:00:00:02
P00E	1	5	70	53	70	7	5.0 u	00:00:00:04
P00H	2	0.5	10000	7500	10000	1000	0.5 u	00:00:01:01
P00I	2	1	2450	1838	2450	245	1.0 u	00:00:01:02
P00K	2	5	70	53	70	7	5.0 u	00:00:01:04
P00N	3	0.5	10000	7500	10000	1000	0.5 u	00:00:02:01
P00O	3	1	2450	1838	2450	245	1.0 u	00:00:02:02
P00Q	3	5	70	53	70	7	5.0 u	00:00:02:04
P00T	4	0.5	1000	750	1000	100	0.5 u	00:00:03:01
P00U	4	1	245	184	245	25	1.0 u	00:00:03:02
P00W	4	5	7	5	7	1	5.0 u	00:00:03:04
P00Z	5	0.5	10000	7500	10000	1000	0.5 u	00:00:04:01
P0AA	5	1	2450	1838	2450	245	1.0 u	00:00:04:02
P0AC	5	5	70	53	70	7	5.0 u	00:00:04:04
P0AF	6	0.5	10000	7500	10000	1000	0.5 u	00:00:05:01
P0AG	6	1	2450	1838	2450	245	1.0 u	00:00:05:02
P0AI	6	5	70	53	70	7	5.0 u	00:00:05:04
P0AL	7	0.5	10000	7500	10000	1000	0.5 u	00:00:06:01
P0AM	7	1	2450	1838	2450	245	1.0 u	00:00:06:02
P0AO	7	5	70	53	70	7	5.0 u	00:00:06:04
P0AR	8	0.5	10000	7500	10000	1000	0.5 u	00:00:07:01
P0AS	8	1	2450	1838	2450	245	1.0 u	00:00:07:02
P0AU	8	5	70	53	70	7	5.0 u	00:00:07:04
P0AX	9	0.5	1000	750	1000	100	0.5 u	00:00:08:01
P0AY	9	1	245	184	245	25	1.0 u	00:00:08:02
P0BA	9	5	7	5	7	1	5.0 u	00:00:08:04
P0BD	10	0.5	1000	750	1000	100	0.5 u	00:00:09:01
P0BE	10	1	245	184	245	25	1.0 u	00:00:09:02
P0BG	10	5	7	5	7	1	5.0 u	00:00:09:04
P0BJ	11	0.5	1000	750	1000	100	0.5 u	00:00:10:01
P0BK	11	1	245	184	245	25	1.0 u	00:00:10:02
P0BM	11	5	7	5	7	1	5.0 u	00:00:10:04
P0BP	12	0.5	1000	750	1000	100	0.5 u	00:00:11:01
P0BQ	12	1	245	184	245	25	1.0 u	00:00:11:02
P0BS	12	5	7	5	7	1	5.0 u	00:00:11:04
P0BV	13	0.5	10	8	10	1	0.5 u	00:00:12:01
P0BW	13	1	2	2	2	0	1.0 u	00:00:12:02
P0BY	13	5	0	1	1	0	5.0 u	00:00:12:04
P0CB	14	0.5	10	8	10	1	0.5 u	00:00:13:01
P0CC	14	1	2	2	2	0	1.0 u	00:00:13:02
P0CE	14	5	0	1	1	0	5.0 u	00:00:13:04
P0CH	15	0.5	10	8	10	1	0.5 u	00:00:14:01
P0CI	15	1	2	2	2	0	1.0 u	00:00:14:02
P0CK	15	5	0	0	0	0	5.0 u	00:00:14:04
P0CN	16	0.5	10	8	10	1	0.5 u	00:00:15:01
P0CO	16	1	2	2	2	0	1.0 u	00:00:15:02
P0CQ	16	5	0	0	0	0	5.0 u	00:00:15:04