PROCESS MONITORING ON AFPT PILOT PLANT BY USING STATISTICAL PROCESS CONTROL

MOHAMED AFIZAL BIN MOHAMED AMIN

UNIVERSITI MALAYSIA PAHANG

UNIVERSITI MALAYSIA PAHANG

PSZ 19:16 (Pind. 1/97)

BORANG PENGESAHAN STATUS TESIS♦

JUDUL : PROCESS MONITORING ON AFPT PILOT PLANT BY USING STATISTICAL PROCESS CONTROL

SESI PENGAJIAN : 2008/2009

Saya **MOHAMED AFIZAL BIN MOHAMED AMIN**

(HURUF BESAR)

mengaku membenarkan tesis (PSM/~~Sarjana~~/~~Doktor Falsafah~~)* ini disimpan di Perpustakaan Universiti Malaysia Pahang dengan syarat-syarat kegunaan seperti berikut :

1. Tesis adalah hakmilik Universiti Malaysia Pahang.
2. Perpustakaan Universiti Malaysia Pahang dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. **Sila tandakan (√)

☐	SULIT	(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)
☐	TERHAD	(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)
√	TIDAK TERHAD	

Disahkan oleh

(TANDATANGAN PENULIS) (TANDATANGAN PENYELIA)

Alamat Tetap: **241, Kampung Siol Kandis**
93050, Petra Jaya,
Kuching, Sarawak

Miss Fathie Bt. Ahmad Zakil
Nama Penyelia

Tarikh : **20 MARCH 2009** Tarikh: **20 MARCH 2009**

CATATAN :
* Potong yang tidak berkenaan.
** Jika tesis ini **SULIT** atau **TERHAD**, sila lampirkan surat daripada pihak berkuasa/organisasiberkenaan dengan menyatakan sekali sebab dan tempoh tesis ini perlu dikelaskan sebagai **SULIT** atau **TERHAD**.
♦ Tesis dimaksudkan sebagai tesis bagi Ijazah Doktor Falsafah dan Sarjana secara penyelidikan, atau disertasi bagi pengajian secara kerja kursus dan penyelidikan, atau Laporan Projek Sarjana Muda (PSM).

"I/we hereby declare that I/we have read this thesis and in my/our opinion this thesis has fulfilled the qualities and requirements for the award of Bachelor Degree of Chemical Engineering"

Signature : …….……

Name of Supervisor I : Miss Fathie Bt. Ahmad Zakil

Date : .....……

BAHAGIAN A – Pengesahan Kerjasama*

Adalah disahkan bahawa projek penyelidikan tesis ini telah dilaksanakan melalui kerjasama antara _____dengan_____

Disahkan oleh:

Tandatangan : _____ Tarikh : _____

Nama : _____

Jawatan : _____

(Cop Rasmi)

* Jika penyediaan tesis/projek melibatkan kerjasama

BAHAGIAN B – Untuk Kegunaan Pejabat Sekolah Pengajian Siswazah

Tesis ini telah diperiksa dan diakui oleh:

Nama dan Alamat Pemeriksa Luar : _____

_____

_____

_____

Nama dan Alamat Pemeriksa Dalam : _____

_____

_____

_____

Nama Penyelia Lain (jika ada) : _____

_____

_____

_____

Disahkan oleh Penolong Pendaftar di SPS:

Tandatangan : _____ Tarikh : _____

Nama : _____

PROCESS MONITORING ON AFPT PILOT PLANT BY USING STATISTICAL PROCESS CONTROL

MOHAMED AFIZAL BIN MOHAMED AMIN

A report submitted in partial fulfillment of
the requirements for the award of the degree of
Bachelor of Chemical Engineering

Faculty of Chemical Engineering and Natural, Resources
Universiti Malaysia Pahang

MAY 2009

"I declare that this thesis entitled *"Process Monitoring On AFPT Pilot Plant by Using Statistical Process Control"* is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree"

Signature : …….
Name : Mohamed Afizal Bin Mohamed Amin
Date : 2 May 2009

In The Name of Allah, Most Gracious, Most Merciful

I dedicate to:
my beloved family members,
my friends,
those who has lend their effort

ACKNOLEDGMENT

First and foremost, I would like to take this opportunity to thank my respectful supervisor Miss Fathie Bt. Ahmad Zakil who has given his guidance, constructive idea, valuables advice and extended support throughout my research. Special thank to my former supervisor En Noor Asma Fazli B. Abdul Samad, the one who has blaze the idea about this research. My special thank also to the lecturer from other faculties especially lecturer from Faculty of Electric and Electronic Engineering and Faculty of Science and Technology Industry who has give magnificent effort as well as their precious time to share their knowledge during this time. I am really impressed for what they have done.

I also would like to thank my co-supervisor Miss Syahida who has given a lot of idea and guidance. Without his idea, maybe the path to achieve the objective of this research will become harder. I am really appreciated for his effort. My appreciation also extended to my fellow friend for their encouragement and positives influence.

To my family, especially my parents, who has give an extended effort and encouragement throughout my education these several years. I am very grateful and only Allah can repay their efforts and kindness. May Allah bless all of you and me.

ABSTRACT

Statistical Process Control (SPC) technique has been widely develops for fault detection, diagnosis and control tool. Today, the industries have to keep sustainable production and operate as fault free as possible because faults that present in a process operation increase the operating cost due to products with undesired specifications, malfunction of plant equipment and instrumentation. Therefore, this study is conducted to introduce Statistical Process Control method for detecting fault early enough, so that the corrective action can be taken before the process is upset or out of control. For this research, the historical data at normal operating condition is collected by using Air Flow Pressure Temperature (AFPT) Pilot Plant. The generate data then will be ensure distribute normally before further analysis is carried out. Shewhart individual chart and Shewhart range chart are use to facilitate the fault detected. Based on the result, the Shewhart individual capabilities is more precise estimate of the process standard deviation compare to Shewhart range because it has a smaller uncertainty. Besides that, the computation of Shewhart individual involves all the measurements in each sample, while the computation of Shewhart range involves only two measurements (the largest and the smallest). Based on the result obtained, it shows that both Shewhart range and Shewhart individual chart, can detect fault for both process variables (Temperature and Pressure) and quality variables (Density). After the correlation coefficient is determined it show that the gap between UCL and LCL with CL become wider and make the usage of this technique in Shewhart chart for fault detection gives the best for it has the highest fault detection efficiency.

ABSTRAK

Kaedah Proses Kawalan Statistik (SPC) digunakan secara meluas untuk membangunkan satu sistem yang diguna pakai untuk mengesan dan mengenalpasti punca kesilapan. Kebanyakan industri berlumba-lumba untuk mengekalkan kualiti hasil keluaran dan pada masa yang sama mengelakkan kesilapan dalam proses daripada berlaku. Kesilapan yang berlaku boleh menyebabkan peningakatan dari segi kos operasi disebabkan terhasilnya produk yang tidak melepasi piawaian yang dikehendaki. Oleh itu, kajian ini dijalankan untuk memperkenalkan kaedah Proses Kawalan Statistik bagi mengesan kesilapan lebih awal supaya punca kesilapan yang berlaku boleh diperbetulkan sebelum proses berada diluar kawalan. Untuk kajian ini, data daripada proses yang lalu dihasilkan pada keadaan operasi yang normal. Selepas itu, data yang tertabur secara normal dipilih daripada data yang dihasilkan sebelum carta kawalan dihasilkan. Skop kajian ini meggunakan carta individu Shewhart (Shewhart Individual) dan carta julat Shewhart (Shewhart Range) untuk mengesan kesilapan. Daripada hasil kajian, didapati setiap carta mempunyai kemampuan yang berlainan. Carta Individu Shewhart lebih persis dalam mentaksir proses dengan menggunakan deviasi piawaian berbanding dengan carta julat Shewhart kerana mempunyai nilai ketidakpastian yang rendah. Selain daripada itu, pengiraan dalam carta Individu Shewhart melibatkan semua sukatan dalam setiap sampel, manakala carta Julat Shewhart hanya melibatkan dua sukatan dalam setiap sampel (data maksimum dan data minimum). Hasil daripada kajian, didapati carta Individu Shewhart dan carta Julat Shewhart boleh mengenalpasti kesilapan yang berlaku dalam pembolehubah proses iaitu tekanan dan suhu dan pembolehubah kualiti iaitu densiti. Selepas pekali korelasi ditentukan, didapati juga selang diantara UCL dan LCL dengan CL menjadi lebih besar. Carta kawalan yang baru ini mampu untuk mengenalpasti lebih banyak kesilapan disebabkan selang yang lebih lebar. Oleh itu, penggunaan teknik ini dalam carta Shewhart untuk mengenalpasti kesilapan merupakan kaedah yang terbaik disebabkan keefektifannya.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS

μ	-	Mean
σ^2	-	Variance
σ	-	Standard Deviation
Z	-	Standard Form
P	-	Probability
B_i	-	Control Chart Constant
$\bar{s}$	-	Mean of the subgroup Standard Deviation
n	-	Number of Data
$\bar{\bar{x}}$	-	Average of the subgroup mean
c_{ij}	-	Correlation Coefficient

LIST OF ABBREVIATIONS

AFPT	-	Air Flow Pressure Temperature
CL	-	Center Line
FDD	-	Fault Detected and Diagnosis
LCL	-	Lower Control Limit
NOC	-	Normal Operating Condition
OC	-	Out of Control
PCA	-	Principal Component Analysis
PCorrA	-	Partial Correlation Coefficient
SPC	-	Statistical Process Control
UCL	-	Upper Control Limit

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1. Research Background

Industry technologies in chemical field are facing a lot of challenges. The industries have to keep sustainable production and at the same time increase or maintain within specified limits the quality specifications of the products. In addition, the whole production process has to operate at the minimum production of waste, minimum consumption of utilities, minimum cost of re-work and re-processing. To achieve these targets, an alternative approach in chemical process has to initiate in order to detect and diagnose fault. Chemicals plants need to operate as fault free as possible because faults that present in a chemical process operation increase the operating cost due to products with undesired specifications, malfunction of plant equipment and instrumentation. More extremely serious are a gross accident such as explosion and fire. Venkat, et al.,(2003) mentioned that the petrochemical industry annually losses approximately $20 billion due to poor management in abnormal detections events. Chen, et al., (2004) also highlighted that the US-based petrochemical industry could save up to $10 billion annually if abnormal process behavior could be detected, diagnosed and appropriate dealt with. Therefore, monitoring strategy for early fault detection and diagnosis is extremely important not only from a production cost and the quality product viewpoints, but also for the safety in a process.

Purpose of this research is to build up Statistical Process Control (SPC) using historical data of processes in order to develop fault detection, diagnosis and control

tool. Statistical Process Control (SPC) can be applied to software development processes. A process has one or more outputs, as show in Figure 1. These outputs have measurable attributes or behaviors. SPC is based on the idea that these attributes have two sources of variation which natural (also known as common) and assignable (also known as special) causes. If the observed variability of the attributes of a process is within the range of variability from natural causes, the process is said to be under statistical control. When that variability exceeds the range to be expected from natural causes, one then identifies and corrects assignable causes.

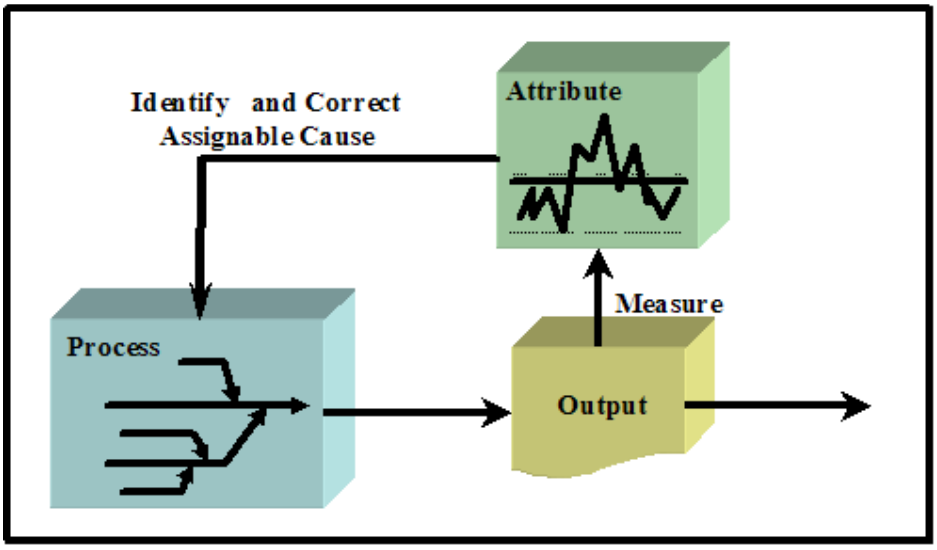


Figure 1.1 Statistical Process Control

1.2. Objective of the Research

To develop control system identification using Statistical Process Control in order to detect abnormal situations early enough so that corrective action can be taken before the process is seriously upset and out of control.

1.3. Scope of the Research

There are several scope of study highlighted in this research in order to achieve the objectives:

1. An Air Flow Pressure Temperature AFPT pilot plant is used as a case study.
2. The behavior of the process is monitoring in order to perform fault detected and diagnosis FDD for the process operation. This can be done by development of Statistical Process Control SPC based on Air Flow Pressure Temperature AFPT pilot plant dynamic behavior
3. Selection of process variables of interest and key process variables:
   - Gas temperature and pressure are chosen as the process variables of interest
   - Key quality variable selected is process variable that are highly correlated with two selected quality variables of interest. The selected key process variable is gas density.
4 The correlation coefficient is develop between the quality variable(s) and the process variable(s)
5 Developing set of data at Normal Operation Condition (NOC) and Out of Control (OC) by using AFPT Pilot Plant simulation
6 The Shewhart Individual and Shewhart Range Chart are developed
7 The faulty condition is incorporated into the process in order to see the performance of the control chart to detect fault(s) .

1.4. Rationale and Significance

SPC chart is the most technically sophisticated tool to monitor and correlate the performance of any given process. The major benefit of this approach is that there is no need for a fundamental or causal model of the system. In chemical processes, data based approaches have been widely used for process monitoring, because it is often difficult to develop detailed physical model (Kano, et al., 2000). In

manufacturing, the primary focus of control charts is to bring the process back into control. In software, the product is also a focus. When a software process exceeds the control limits, rework is typically performed on the product. In manufacturing, the cost of stopping a process is high. In software, the cost of stopping is lower, and few shutdown and startup activities are needed (Jalote and Saxena, 2002). Control chart cannot control a process parameter, but it was a powerful diagnostic tool to see if the process upset. It can be used to change the process when fault occur but not the most efficient way to control process in real time. This approach only needs a good data collected from the simulation and the models should be quickly and easily perform.

CHAPTER 2

LITERATURE REVIEW

2.1 Process Monitoring

In chemical industrial plant, production process variables must be maintained within specified limits in order to ensure the plant operate properly. Distribution of key variables beyond these limits can have significant consequences for plant safety, product quality and plant profitability. Process monitoring plays a key role in ensuring that the plant performance satisfies the operating objectives. Generally, there are three highlighted objectives in process monitoring which are:

1. Routine Monitoring.

   To ensure that process variables are within specified limits.

2. Detection and Diagnosis.

   To detect an abnormal process operation and diagnose it root cause

3. Preventive Monitoring.

   To detect an abnormal situations early enough in order to take corrective action before the process is out of control.

The traditional approach for process monitoring is used to monitor and verify that the process remains in specified limits. This limit checking technique is a standard feature of computer control systems and is widely used to validate measurements of process variables such as flow rate, temperature, pressure, and liquid level. Process variables are measured quite frequently with sampling periods that typically are much smaller than the process settling time. However, for most

industrial plants, many important quality variables cannot be measured on-line. Instead, samples of the product are taken on an infrequent basis (e.g., hourly or daily) and sent to the quality control laboratory for analysis. (Seborg *et. al.,* 2004).

2.2 Statistical Process Control, SPC

Statistical Process Control (SPC) is an effective method of monitoring a process through the use of control charts. Kourti and MacGregor, (1996) mentioned that the objective of performing Statistical Process Control is to monitor the process over time in order to detect any unusual events allowing quality and process improvement and it is essential to be able to track the cause of an Out of Control (OC) signal. In order to ensure that process is operating at normal operating condition as required, faults must be detected, diagnosed and removed. These activities, and their management, are called as Statistical Process Control, SPC (Miletic *et al*., 2004). The major objective in SPC is to use process data and statistical techniques to determine whether the process operation is normal or abnormal. The SPC methodology is based on the fundamental assumption that normal process operation can be characterized by random variations about a mean value. If this situation exists, the process is said to be in a state of statistical control (or in control), and the control chart measurements tend to be normally distributed about the mean value. By contrast, frequent control chart violations would indicate abnormal process behavior or an out-of-control situation.

Statistical process control (SPC) involves using statistical techniques to measure and analyze the attribute in processes. Most often used for manufacturing processes, the intent of SPC is to monitor product quality and maintain processes to fixed targets. By collecting data from samples at various points within the process, variations in the process that may affect the quality of the end product or service can be detected and corrected. SPC only requires a good database of normal historical data, and the models of case study are quickly and easily build from this. SPC does not control the process but rather performs a monitoring function and gives signals for corrective action in the form of identification and removal the root cause of the

process abnormal behaviors. No matter how good or bad the design, SPC can ensure that the product is being manufactured as designed and intended. Thus, SPC will not improve a poorly designed product's reliability, but can be used to maintain the consistency of how the product is made and, therefore, of the manufactured product itself and its as-designed reliability. In contrast, SPC use statistical tools to observe the performance of the production process in order to predict significant deviations that may later result in rejected product. Apart from that, SPC also indicates when no action should be taken instead of action that should be taken in a process if an abnormal event occurs. Then, a search would be initiated to attempt to identify the root cause of the abnormal behavior. The root cause is referred to as assignable cause or the special cause while the normal process variability is referred to as common cause or chance cause.

2.3 Definitions of Fault, Fault Detection and Fault Diagnosis

Generally, fault is deviations from the normal operating behavior in the process that are not due to disturbance change or set point change in the process. In other words fault in the process refers to degradation between 100% performance and complete failure. Himmelblau (1978) mentioned that the term fault is generally defined as a departure from an acceptable range of an observed variable or a calculated parameter associated with a process. This defines a fault as a process abnormality or symptom, such as high temperature in a reactor or low product quality and so on. The underlying causes of this abnormality, such as a failed coolant pump or a controller, are called the basic events or the root causes. The basic event is also referred to as a malfunction or a failure. Faults can be categorized into the following categories (Gertler, 1998):

1. Additive process faults

   Unknown inputs acting on the plant, which are normally zero. They cause a change in the plant outputs independent of the known input. Such fault can be best described as plant leaks and load.

2. Multiplicative process faults

   These are gradual or abrupt changes in some plant parameters. They cause changes in the plant outputs, which also depend on the magnitude of the known inputs. Such faults can be best described as the deterioration of plant equipment, such as surface contamination, clogging, or the partial or total loss of power.

3. Sensor faults

   These are discrepancies between the measured and actual values of individual plant variables. These faults are usually considered additive (independent of the measured magnitude), though some sensor faults (such as sticking or complete failure) may be better characterized as multiplicative.

4. Actuator faults

   These are discrepancies between the input command of an actuator and its actual output. Actuator faults are usually handled as additive though, some kind (such as sticking or complete failure) may be described as multiplicative.

Fault detection is a monitoring process to determine the occurrence of an abnormal event in a process, whereas fault diagnosis is to identify its reason or sources. The detection performance is characterized by a number of important and quantifiable benchmarks namely:

1. Fault sensitivity
   The ability of the technique to detect faults of reasonably small size.

2. Reaction speed
   The ability of the technique to detect faults with reasonably small delay after their occurrence.

3. Robustness
   The ability of the technique to operate in the presence of noise, disturbances and modeling errors, with few false alarms.

2.4 Normal Distribution

Normal distribution plays a central role in SPC. The normal distribution is also known as the Gaussian distribution. Suppose that a random variable x has a normal distribution with a mean μ and a variance σ^2 denoted by $N(\mu, \sigma^2)$. The probability that x has a value between two arbitrary constant, a and b, is given by

$$P(a < x < b) = \int_a^b f(x)dx \tag{2.1}$$

Where $f(x)$ is the probability density function for the normal distribution:

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} exp\left[-\frac{(x-\mu)^2}{2\sigma^2}\right] \tag{2.2}$$

Where,

$$Z = \frac{X-\mu}{\sigma}$$

The following probability statements are valid for the normal distribution (Montgomery & Runger, 2003),

$$P(\mu - \sigma < x < \mu + \sigma) = 0.6827$$

$$P(\mu - 2\sigma < x < \mu + 2\sigma) = 0.9545$$

$$P(\mu - 3\sigma < x < \mu + 3\sigma) = 0.9973 \tag{2.3}$$

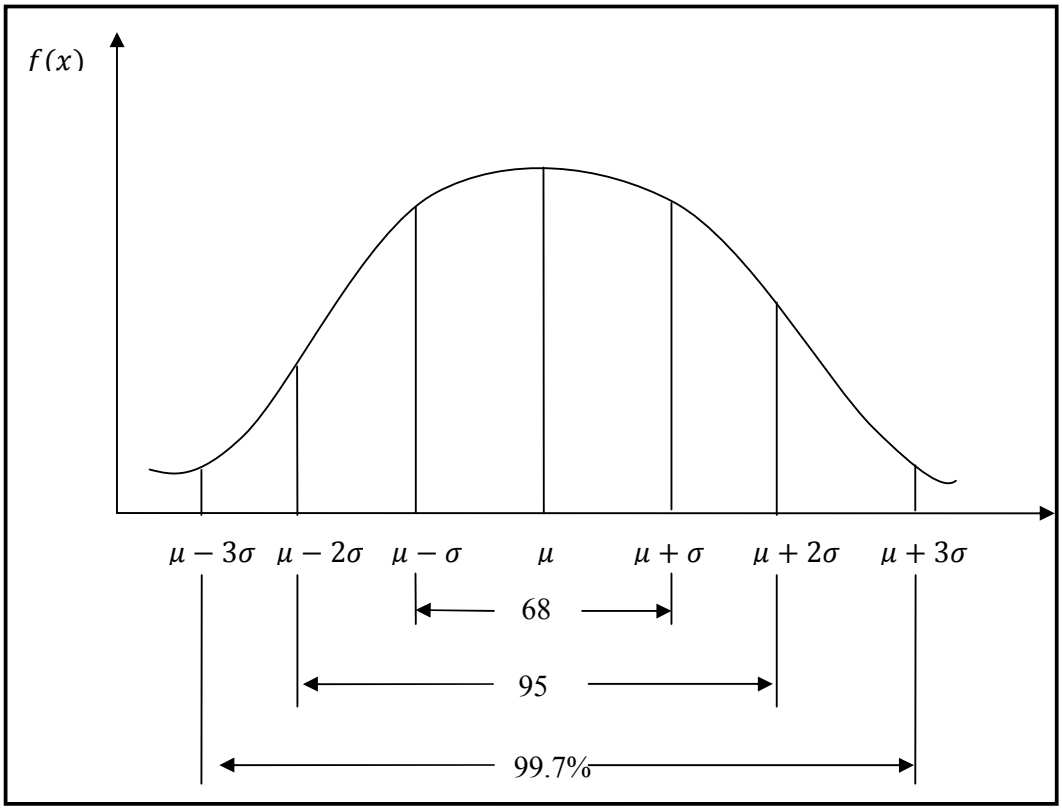


Figure 2.1 Probabilities associated with normal distribution. (Montomery & Runger ,2003)

Where P(.) denotes the probability that x lies within the indicated range. A graphical interpretation of these expressions is shown in Figure 2.1 where each probability corresponds to an area under the $f(x)$ curve. Equation 2.3 and Figure 2.1 show that if a random variable x is normally distributed there is a very high probability (0.9973) that a measurement lies within 3σ of the mean μ. This important result provides the theoretical basis for widely used SPC techniques

2.5 Control Chart

A primary tool used for SPC is the control chart, a graphical representation of certain descriptive statistics for specific quantitative measurements of the manufacturing process. These descriptive statistics are displayed in the control chart in comparison to their "in-control" sampling distributions. The comparison detects

any unusual variation in the manufacturing process, which could indicate a problem within the process. Several different descriptive statistics can be used in control charts and there are several different types of control charts that can test for different causes in order to achieve the desired specificity. Control charts are also used with product measurements to analyze process capability and for continuous process improvement efforts.

2.5.1 The S-Chart

The main purpose of s chart is to determine whether the distribution for the process characteristic is stable or not. The s chart is an alternative to the R chart. Both of it have the same purpose: to estimate the process standard deviation and to determine whether it is in control. It seems more natural to estimate the process standard deviation with the sample standard deviation s than with the range R. In fact, when the population is normal, s is more precise estimate of the process standard deviation than is R, because it has a smaller uncertainty. Besides that, the computation of s involves all the measurements in each sample, while the computation of R involves only two measurements (the largest and the smallest). It turns out that the improvement in precision obtains with s as opposed to R increase as the sample size increases. It follow that the s chart is better choice, especially for larger sample sizes (greater than 5 or so).

2.5.2 The R Chart

This chart controls the process variability since the sample range is related to the process standard deviation. The center line of the R chart is the average range. The R chart is normally used for numerical data that is captured in subgroups in some logical manner for example 3 production parts measured every hour. A special cause such as a broken tool will then show up as an abnormal pattern of points on the chart.

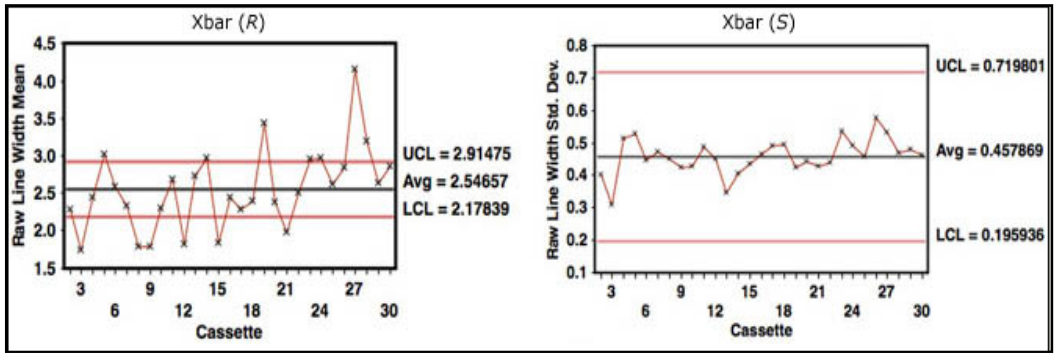


Figure 2.2 Example of Xbar (R) Chart And Xbar (S) Chart

2.5.3 The $\bar{X}$ Control Chart

There are several different kinds of control charts exist, each with its own strength such as Individual Shewhart, Cumulative Sum (CUSUM), Exponential Moving Average (EWMA), and Moving Average (MA) and Moving Range (MR). Among these chart, one of the most common is the $\bar{x}$ chart, also known as the Shewhart $\bar{x}$ Chart in honor of pioneering statistician, Walter Shewhart, who first developed it in the 1920s. The $\bar{x}$ symbol is used in statistics to indicate the mean (average) of a set of sample values (for instance, product measurements taken in a quality control sample). For control charts the sample size is often quite small, such as just four or five units chosen randomly, but the sampling is repeated periodically. In a $\bar{x}$ chart the average value of each sample is plotted and compared to averages of previous samples, as well as to expected levels of variation under a normal distribution.

The first step in build up a control chart is to select a set representative data for a period of time when the process operation is believed to be normal, mean that, when the process is in state of control. Suppose that these test data consist of N subgroups that have been collected on a regular basis (for example, hourly or daily) and that each subgroup consists of n randomly selected items. Let x_{ij} denote the jth measurement in the ith subgroup. Then, the subgroup sample means can be calculated:

$$\bar{x_i} \triangleq \frac{1}{n}\sum_{j=1}^{n} x_{ij} \ (i = 1,2, \dots, N) \tag{2.5}$$

The grand mean $\bar{\bar{x}}$ is defined to be the average of the subgroup means:

$$\bar{\bar{x}} \triangleq \frac{1}{N}\sum_{i=1}^{N} \bar{x_i} \tag{2.6}$$

All control charts has three lines:

1. A centerline that provides the average line (values) of the process
2. An upper line called upper control limit drawn at a calculated distance above the centerline. Any point above the upper control limit indicates that the process is out of control and in danger of making an off-spec product.
3. A lower line called lower control limit on drawn at a calculated distance below the centerline. Any point below the centerline indicates that the process is out of control and in danger of making an off-spec product.

The general expressions for the control limits are

$$UCL \triangleq T + c\widehat{\sigma_{\bar{x}}} \tag{2.7}$$

$$LCL \triangleq T - c\widehat{\sigma_{\bar{x}}} \tag{2.8}$$

Where $\widehat{\sigma_{\bar{x}}}$ is an estimate of the standard deviation for $\bar{x}$ and c is a positive integer; typically, $c = 3$. The choice of $c = 3$ and Equation 2.3 imply in that the measurement will lie within the control chart limits 99.73% of the time, for normal operation. The target T is usually specified to be either $\bar{\bar{x}}$ or the desired value of $\bar{x}$.

The estimated standard deviation $\widehat{\sigma_{\bar{x}}}$ can be calculated from the subgroups in the test data by two methods, first, the standard deviation approach, and second the range approach (Montgomery & Runger, 2003). By definition, the range R is the difference between maximum and minimum values. Historically, the R approach has been emphasized because R is easier to calculate then s, and advantage for hand calculations. However, the standard deviation approach is preferred because it uses all of the data, instead of only two points in each subgroup. It also has the advantage

of being less sensitive to outliers (bad data points). However for small values of n the two approaches tend to produce similar control limits (Ryan, 2000). In this research, the standard deviation approach will only consider. The average sample standard deviations $\bar{s}$ for N subgroups is:

$$\bar{s} \triangleq \frac{1}{N}\sum_{i=1}^{N} S_i \tag{2.9}$$

Where the standard deviation for the ith subgroup is

$$\bar{s} \triangleq \sqrt{\frac{1}{n-1}\sum_{j=1}^{n}\left(x_{ij} - \bar{x}_i\right)^2} \tag{2.10}$$

If the x data are normally distributed , then $\widehat{\sigma_{\bar{x}}}$ is related to $\bar{s}$ by

$$\widehat{\sigma_{\bar{x}}} = \frac{1}{c_4\sqrt{n}}\bar{s} \tag{2.11}$$

Figure 2.2 show the example of the control chart. From that chart the abnormality of the process occur at data point for sample number 13. Mean that, at that point the process in out of control condition. Apart from that, the range of the normal operating condition lies between upper control limit and lower control limit by calculate the range with the equation as mention before this.

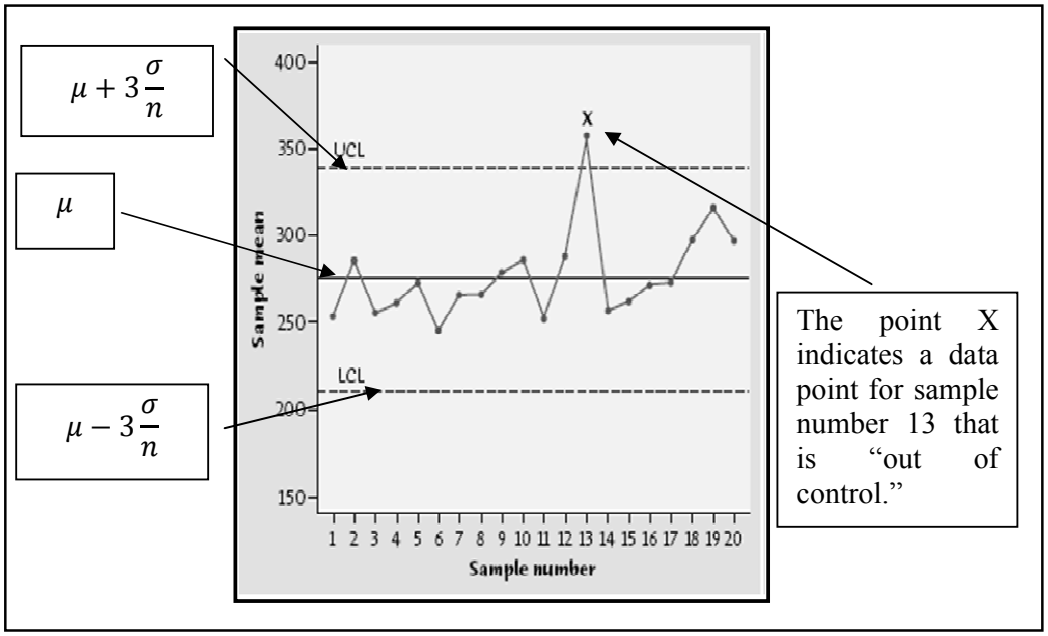


Figure 2.3 Example of Control Chart

2.6 Correlation Coefficient

In probability theory and statistics, correlation (often measured as a correlation coefficient) indicates the strength and direction of a linear relationship between two random variables. The correlation coefficient a concept from statistics is a measure of how well trends in the predicted values follow trends in past actual values. It is a measure of how well the predicted values from a forecast model "fit" with the real-life data.

The correlation coefficient is a number between 0 and 1. If there is no relationship between the predicted values and the actual values the correlation coefficient is 0 or very low (the predicted values are no better than random numbers). As the strength of the relationship between the predicted values and actual values increases so does the correlation coefficient. A perfect fit gives a coefficient of 1.0. Thus the higher the correlation coefficient the better is performance of the process.

1. Positive correlation:
   If x and y have a strong positive linear correlation, r is close to +1. An r value of exactly +1 indicates a perfect positive fit. Positive values indicate a relationship between x and y variables such that as values for x increase, values for y also increase.

2. Negative correlation
   If x and y have a strong negative linear correlation, r is close to -1. An r value of exactly -1 indicates a perfect negative fit. Negative values indicate a relationship between x and y such that as values for x increase, values for y decrease.

3. No correlation
   If there is no linear correlation or a weak linear correlation, r is close to 0. A value near zero means that there is a random, nonlinear relationship between the two variables

Note that the correlation, r is a dimensionless quantity which is does not depend on the units employed. A perfect correlation of ± 1 occurs only when the data points all lie exactly on a straight line. If r = +1, the slope of this line is positive. If r = -1, the slope of this line is negative. A correlation greater than 0.8 is generally described as strong, whereas a correlation less than 0.5 is generally described as weak. These values can vary based upon the "type" of data being examined. A study utilizing scientific data may require a stronger correlation than a study using social science data.

2.7 Outliers

Sometimes a sample may contain a few points that a much larger or smaller than the rest. Such points are called outliers. Sometimes outliers result from data entry errors; for example, a misplaced decimal point can result in a value that is an order of magnitude different from the rest. Outliers should always be scrutinized, and any outliers that are found to result from an error should be corrected or discarded. Not all outliers are errors. Sometimes a population may contain a few values that are much different from the rest, and the outliers in the sample reflect this fact. Outliers are real problem for data analysis. An outlier should not be deleting, however, unless there is reasonable certainty that is results from an error.

CHAPTER 3

METHODOLOGY

3.0 Introduction

The research work was used Air Flow Pressure Temperature Pilot Plant as a study unit operation. The monitoring purpose of this pilot plant is to run the AFPT Pilot Plant at various manipulated condition. First and foremost, the unit was run at nominal condition until it will reach steady state. At this condition, the data will be collected for further analysis of process behavior. In this chapter, the methodologies of the experiment are discussed.

3.1. Variable Selection for Process Monitoring

First part in initiate Statistical Process Control for Fault Detection and Diagnose purpose is indentifying the variables take part. Generally, SPC variable can be categorized into two which quality variables and process variables. For this research process variables consist of temperature, pressure and gas flow rate and the quality variable is density. Control gas density can be conducted by controlling pressure or temperature, because based on PVT gas correlation; gas density is a function of P and T.

Data for both quality variable and process variables were generated from the Air Flow Pressure Temperature Pilot Plant. Normal correlation coefficient is calculated to analyze these variables quantitatively. Variables which have correlation coefficient

greater than 0.05 were selected for fault analysis process. Correlation coefficient which is less than 0.05 is considered small. Changes in process variables which have small correlation coefficient do not affect quality variables significantly. Using small correlation coefficient can cause the control limits for process variables become wider.

3.2 Normal Operating Condition (NOC) Data Selection

SPC depends on formation of a statistical model based on historical process data to establish normal operating behavior. The historical data is also known as Normal Operating Condition (NOC), where data is collected when the process is in statistical control or quality variables remain close to their desired values. This is the most important step in SPC methodology since it is used to predict the future behavior of the process. The normal distribution plays an important role in the analysis of random signals for a number of reasons (Gertler, 1998):

1. Many random physical processes can be rather accurately characterized by the normal distribution.
2. The behavior of variables representing the combined effect of a large number of phenomena approaches the normal distribution.
3. The normal distribution is relatively simple to handle mathematically

The visual appearance of the normal distribution is a symmetric or bell shaped curve. A histogram plot is used to show the distribution of data values. Other parameters such as skewness and kurtosis were determined to measure the symmetry of the data around the sample mean and the outlier-prone of a distribution respectively. If skewness is negative, the data are spread out more to the left of the mean than to the right and vice versa. The skewness of the normal distribution given data (or any perfectly symmetric distribution) is zero. The kurtosis of the normal distribution is 3 for distribution having 99.73 percent of its data fall between the limits of $\pm$ 3 standard deviations from the mean. Distributions that are more outlier-prone than the normal distribution have kurtosis greater than 3 while distributions that are less outlier-prone have kurtosis less than 3. If we assume that the data exhibit

a normal distribution, these control limits will capture 99.74 percent of the normal variation.

3.3 Correlation Coefficients

The generated NOC data will be subjected to for the correlation coefficients between the selected process variables with the selected quality variable. The standardized NOC data is used to build the linear relationship between quality variable and process variables. If the model is used for monitoring, linear model is sufficient to describe process fluctuation around an operating point (MacGregor and Kourti, 1995). The correlation coefficient a concept from statistics is a measure of how well trends in the predicted values follow trends in past actual values. It is a measure of how well the predicted values from a forecast model "fit" with the real-life data.

The correlation coefficient is a number between 0 and 1. If there is no relationship between the predicted values and the actual values the correlation coefficient is 0 or very low (the predicted values are no better than random numbers). As the strength of the relationship between the predicted values and actual values increases so does the correlation coefficient. A perfect fit gives a coefficient of 1.0. Thus the higher the correlation coefficient the better is performance of the process.

$$Correlation, C_{ij} = \frac{(N\sum XY)-(\sum X)(\sum Y)}{\sqrt{(N\sum X^2-(\sum X)^2)\left((N\sum Y^2-(\sum Y)^2)\right)}} \quad (3.1)$$

Where,

N = Number of values or elements

X = First Score

Y = Second Score

ΣXY = Sum of the product of first and Second Scores

ΣX = Sum of First Scores

ΣY = Sum of Second Scores

ΣX2 = Sum of square First Scores

ΣY2 = Sum of square Second Scores

3.4 Control Limit for Control Chart

The control limits of SPC chart is determined based on the correlation between quality variables and process variable. SPC chart consists of two control limits, which are upper limits and lower limits. The upper line will be the limit for the point greater than target value and the lower line for the point less than target value. These limits are calculated based on the standardized NOC data, which represent the desired process operation. Standardized data results of all variables have zero mean and standard deviation of equal to one. The control limit is determined so that the number of samples outside the control limits is 0.27% of the entire samples. Many authors in literature used Shewhart chart with 3 standard deviation limits (Woodall, 2000; Kahn *et al*., 1996; Montgomery, 1996; Oakland, 1996). Experience shows 3 standard deviation limits to be the most effective scheme and seems to be an acceptable economic value (Woodall, 1996). The choice of size 3 standard deviation control limits gives a balance between statistical theory and practical experience (Kahn *et al*., 1996).

3.4.3 The Individual Shewhart Chart

In the s chart, the center line and the 3σ upper and lower control limits are given by

$$3\sigma\ upper\ limit = B_4\bar{s}$$
$$Center\ Line = \bar{s}$$
$$3\sigma\ lower\ limit = B_3\bar{s} \qquad (3.2)$$

Where,

$$s = Standard\ deviation$$

The values B_4 and B_3 depend on the sample size.

3.4.4 The Shewhart Range Chart

To compute the control limits we need an estimate of the true, but unknown standard deviation $w = {}^{R}/_{\sigma}$. This can be found from the distribution of $w = {}^{R}/_{\sigma}$ (assuming that the items that we measure follow a normal distribution). The standard deviation of W is d_3, and is a known function of the sample size, n. It is tabulated in many textbooks on statistical quality control.

Therefore since $R = W\sigma$, the standard deviation of R is $\sigma_R = d_3\sigma$. But since the true σ is unknown, we may estimate σ_R by

$$\hat{\sigma}_R = d_3 \frac{\bar{R}}{d_2} \tag{3.3}$$

As a result, the parameters of the R chart with the customary 3-sigma control limits are

$$\begin{aligned} UCL &= \bar{R} + 3\hat{\sigma}_R = \bar{R} + 3\hat{\sigma}_R \frac{\bar{R}}{d_2} \\ Center\ Line &= \bar{R} \\ LCL &= \bar{R} - 3\hat{\sigma}_R = \bar{R} - 3\hat{\sigma}_R \frac{\bar{R}}{d_2} \end{aligned} \tag{3.4}$$

As was the case with the control chart parameters for the subgroup averages, defining another set of factors will ease the computations, namely:

$$\begin{aligned} D_3 &= 1 - 3\frac{d_3}{d_2} \\ D_4 &= 1 + 3\frac{d_3}{d_2} \end{aligned} \tag{3.5}$$

Where,

$$\begin{aligned} UCL &= \bar{R}D_4 \\ Center\ Line &= \bar{R} \\ LCL &= \bar{R}D_3 \end{aligned} \tag{3.6}$$

The factors D_3 and D_4 depend only on n, and are tabled below.

Table 3.1: Factors for Calculating Limits for $\bar{X}$ and R Charts

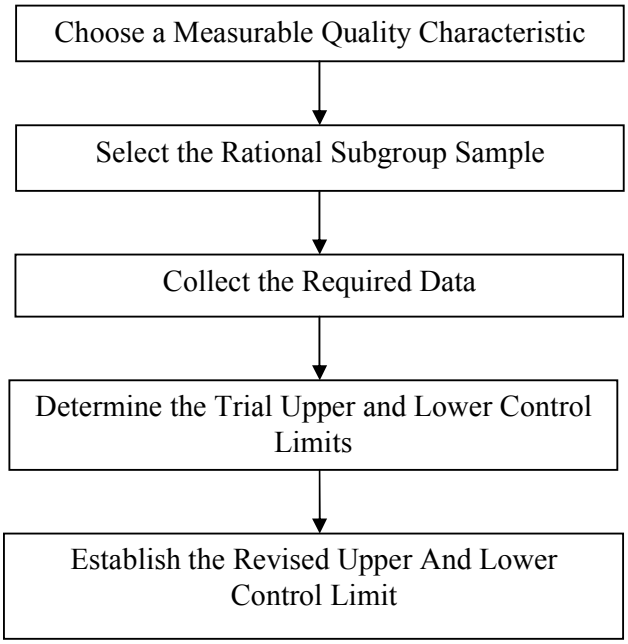
n	A_2	D_3	D_4
2	1.880	0	3.267
3	1.023	0	2.575
4	0.729	0	2.282
5	0.577	0	2.115
6	0.483	0	2.004
7	0.419	0.076	1.924
8	0.373	0.136	1.864
9	0.337	0.184	1.816
10	0.308	0.223	1.777

In general, the range approach is quite satisfactory for sample sizes up to around 10. For larger sample sizes, using subgroup standard deviations is preferable. For small sample sizes, the relative efficiency of using the range approach as opposed to using standard deviations is shown in the Table 3.1.

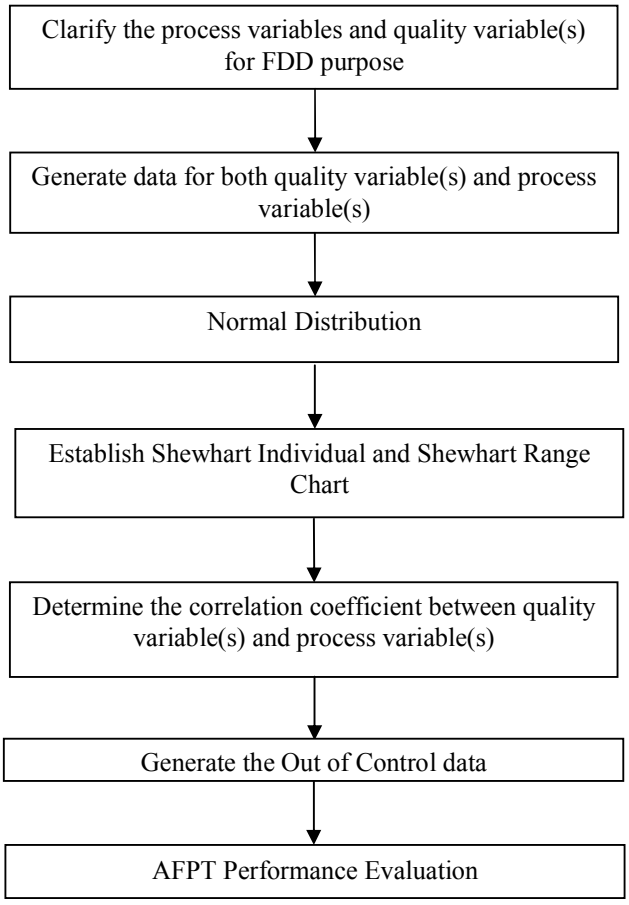
3.5 Generated Out of Control, OC data

In order to see the performance of SPC charts, some faults which were detected and diagnosed had been imbedded into simulated Air Flow Pressure Temperature Pilot Plant. The model was run at steady state condition. The faulty conditions were introduced into the process variables *(T, P, F)* in order to caused the desired quality variables (*Density*) statistics fell beyond the control limits. The Out of Control, OC data were collected during this condition and will be diagnosed and corrected. From that OC data, the fault of the process will be detected and corrected after that.

3.6 A Procedure to Establish Shewhart Individual and Shewhart Range Chart



3.7 Summary of Research Methodology



CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Normal Operating Condition

A set of historical data for both quality variables and process variables was generated from the Air Flow Pressure Temperature Pilot Plant. Each variable consist of 1166 observations during normal operating condition. Before start the process, PID controller was set at default. Then the data was generated at setting Temperature 100°C and setting Pressure 15 psia. Meanwhile the quality variable which is density will be calculated by using real gas law equation. Figure 4.1 show the process variable for pressure, temperature and density.

From the Figure 4.1, the blue pattern indicates process variable trend line meanwhile the red pattern is representing set point setting. From the pressure chart, the process was set at 15 psia and the process trend line will tries to achieve the set point. Blue trend line for this chart is approaching the set point show the process to achieve this set point. For temperature chart, the process was set at 100°C and for density chart 0.903 kg/m^3.

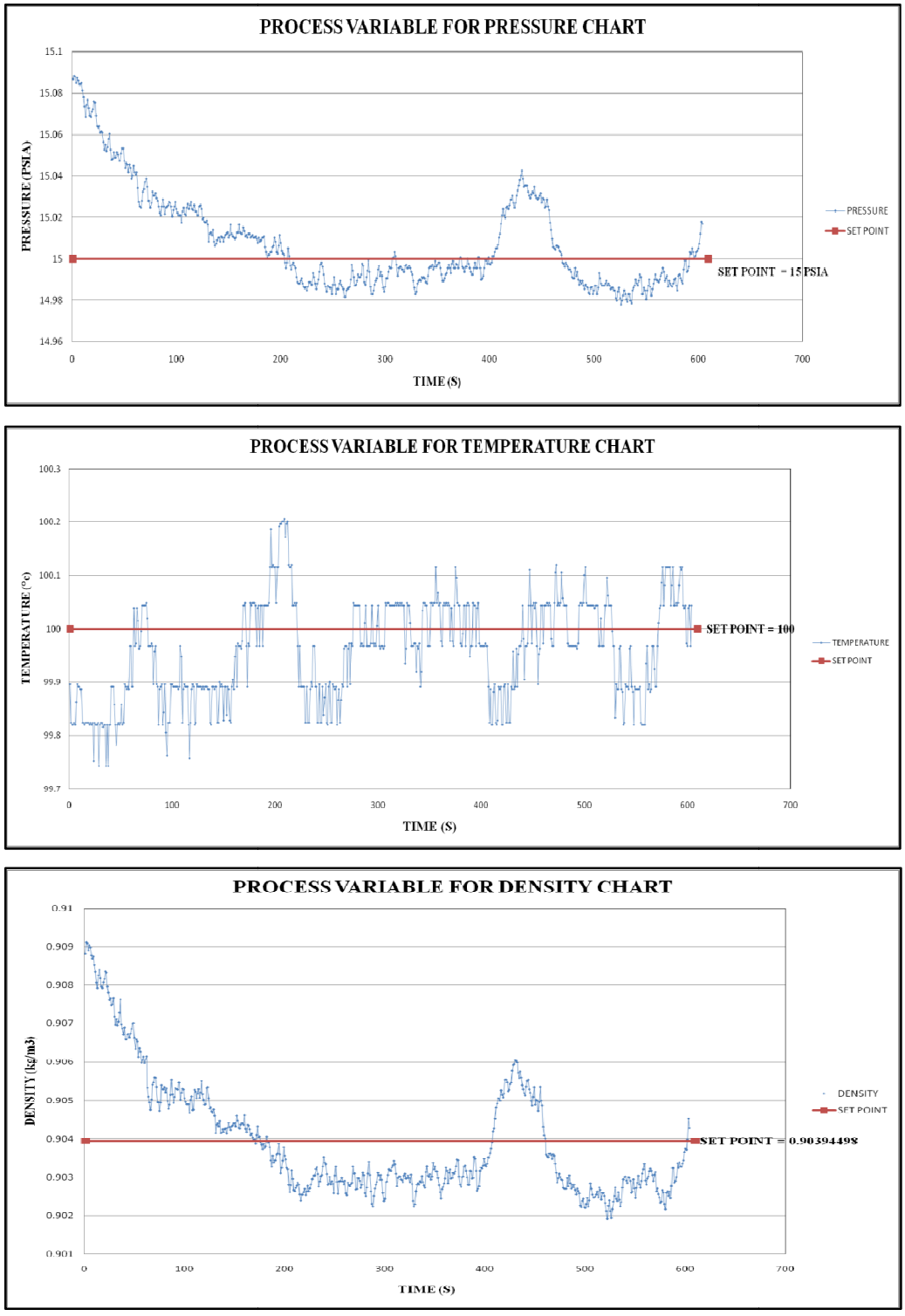
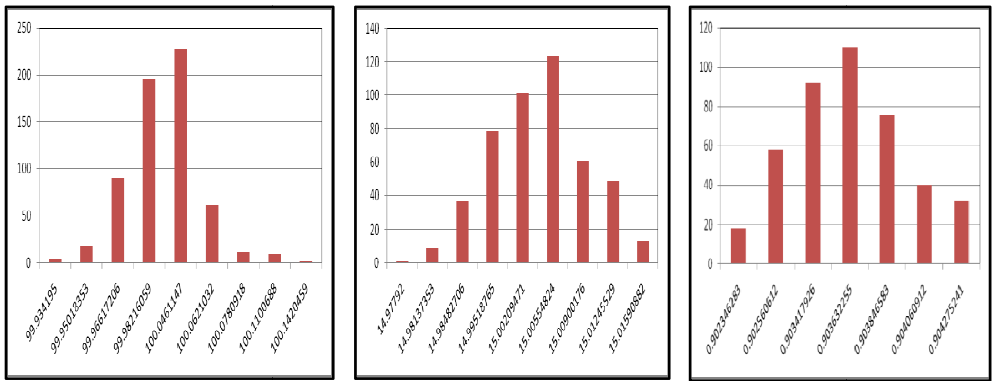


Figure 4.1: Process Variable for Pressure, Temperature and Density

4.2 Normal Distribution

Based on the Figure 4.2, the data to construct this histogram is normally distributed and acceptable for further analysis to construct the control chart. The first histogram (a) indicates the normal distribution for Temperature process data. Meanwhile, histogram (b) and (c) indicates normal distribution process data for pressure and density respectively. One of the purpose why normal distribution data should be initiate first before construct the control chart is to discarded the outlier of the data.



(a) **(b)** **(c)**

Figure 4.2 Histogram Plot of NOC Data for Temperature **(a)**, Pressure **(b)** and Density **(c)**

All of the calculation for normal distribution was carried out by using EXCEL spread sheet. The calculation also can use MATLAB programmed in order to discard the outlier within the historical data. After the normal distribution was carried out, the next step is to construct the control chart from the data selected.

4.3 Control Chart

The control chart will be constructing for each process variables and quality variable. For each variables there are two types of the control chart will be construct which is Shewhart individual chart or X bar chart when Standard deviation is used and Shewhart range chart or R chart. The performance of process on AFPT will be test on this chart at normal operating condition. At the same time, the fault will be detected by using these two charts.

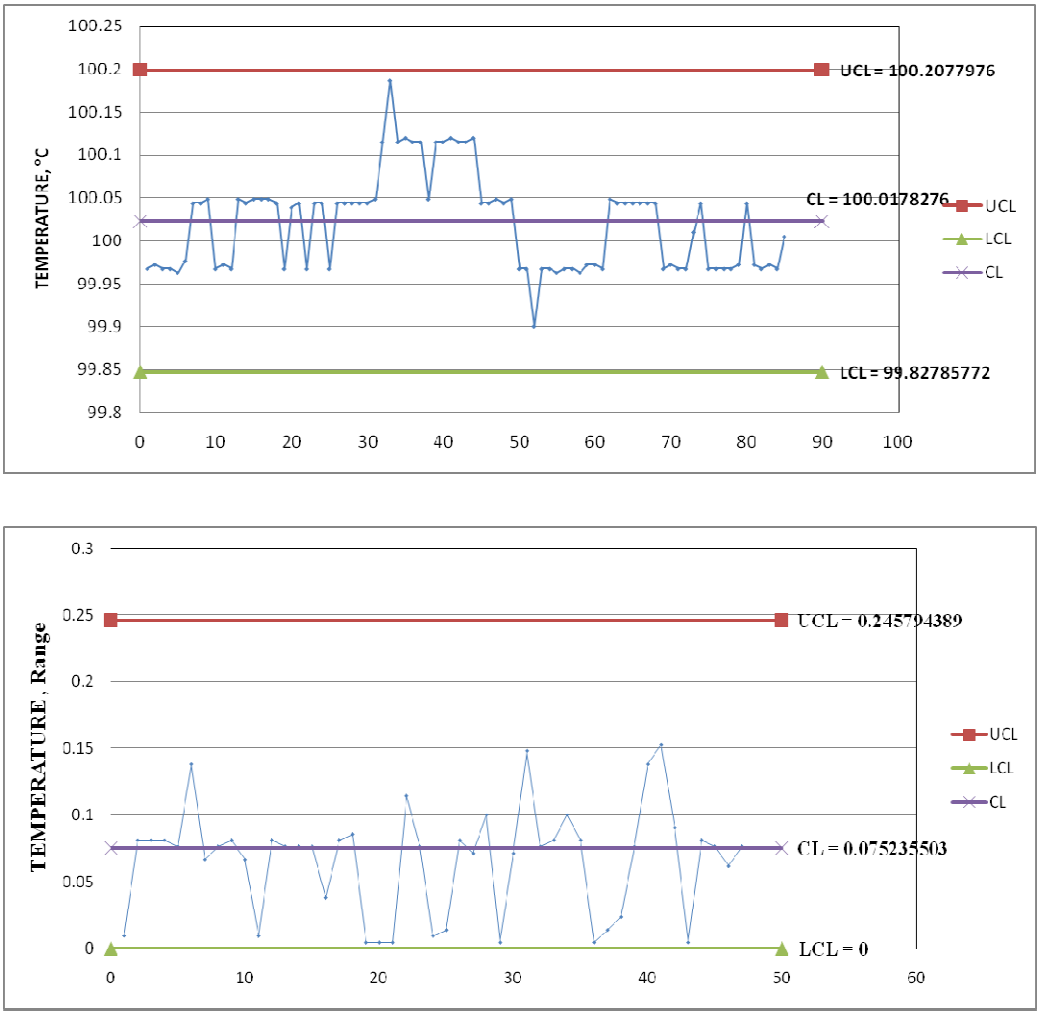


Figure 4.3 Shewhart Range and Shewhart Individual Chart During Normal Condition

Figure 4.3 show process attribute for temperature variable at normal operating condition. By using the historical data the UCL, LCL and CL was calculated by using Equation 2.4 for individual chart and Equation 2.5 for range chart. For range chart, the range of set data was calculated by subtracts the maximum data with the minimum data and each set of data consists of 5 historical data. Meanwhile, for individual chart all of the data will be used in order to calculate the standard deviation and from that value, the limit for this chart will be calculated.

After carried out the calculation, for individual chart, the value of Center Line is 100.018 °C. The UCL and LCL value are ± 0.1899 from the Center Line. As for range chart, the value of Center Line is 0.0752 and as for UCL and LCL is 0.246 and 0 respectively. From these two charts we can observe that the position of Center Line is different in term of gap between the limit. The limit for individual chart has same size of gap between CL and UCL and LCL while the range chart has deferent size of gap which the gap between CL and UCL is quite large compare to the gap between CL and LCL. From this observation, the shewhart individual has capabilities to detect the cause of changes when there is shift in mean. As for shewhart range, this chart only can detect when there is shift in variability of the process.

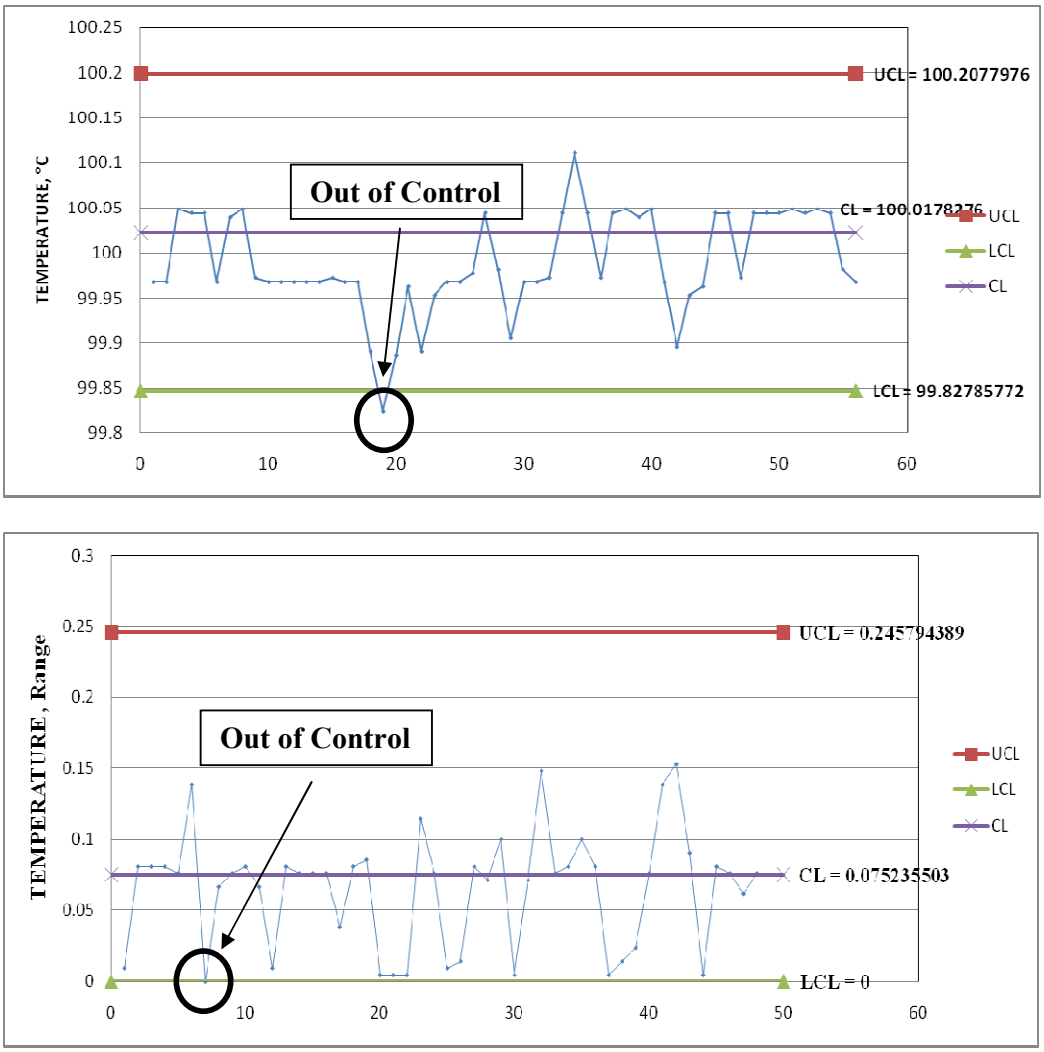


Figure 4.4 Shewhart Range and Shewhart Individual Chart for Temperature During Faulty Condition

Figure 4.4 show process attribute for temperature variable at normal operating condition when there is a fault. From the shewhart individual chart, we can see that fault or out of control condition was detected and occurs at data point number 19. As for shewhart range, the fault was detected at a data point number 7. After the fault was being detected, the process to find cause of fault and diagnose it will be initiated. This fault will be corrected when the cause of this variability was found out.

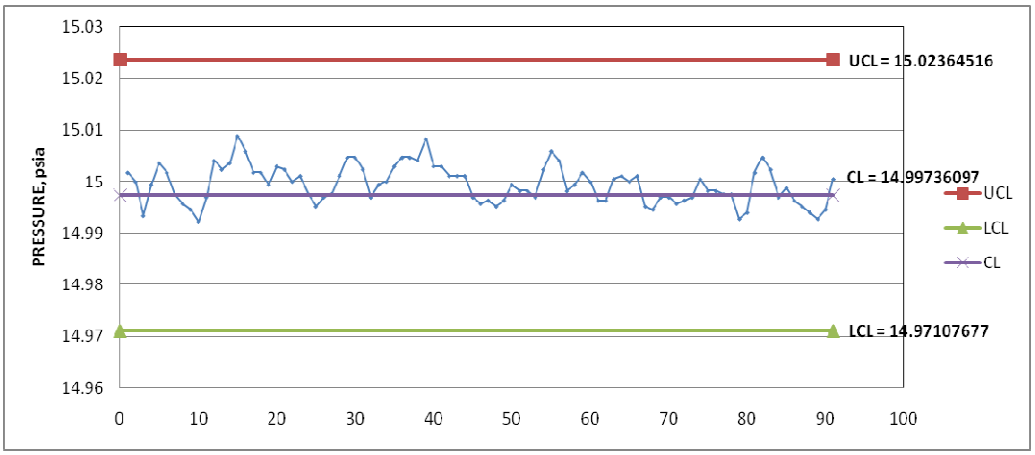


Figure 4.5 Shewhart Range and Shewhart Individual Chart for Pressure During Normal Condition

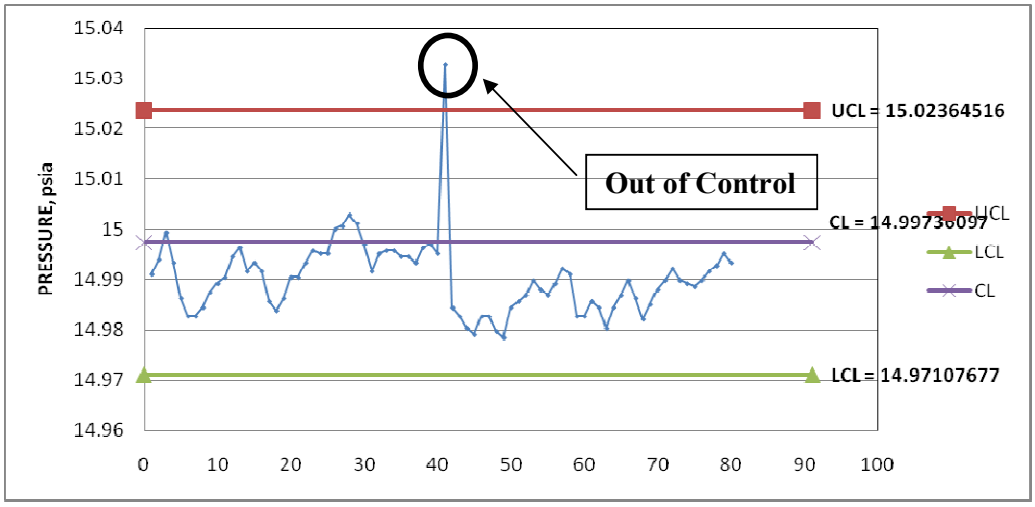


Figure 4.6 Shewhart Range and Shewhart Individual Chart for Pressure During Faulty Condition

Figure 4.5 show process attribute for pressure variable at normal operating condition. After carried out the calculation, for individual chart, the value of Center Line is 14.99736 psia. The UCL and LCL value are $\pm$ 0.0256 from the Center Line. After carried out control chart at normal operating condition the next step is to monitor the process and to find out fault on it. From Figure 4.6 we can see that fault occur at a data point number 40. After the fault was found out, the person in charge will detect where this problem occur and correct it at the same time before the process become worse.

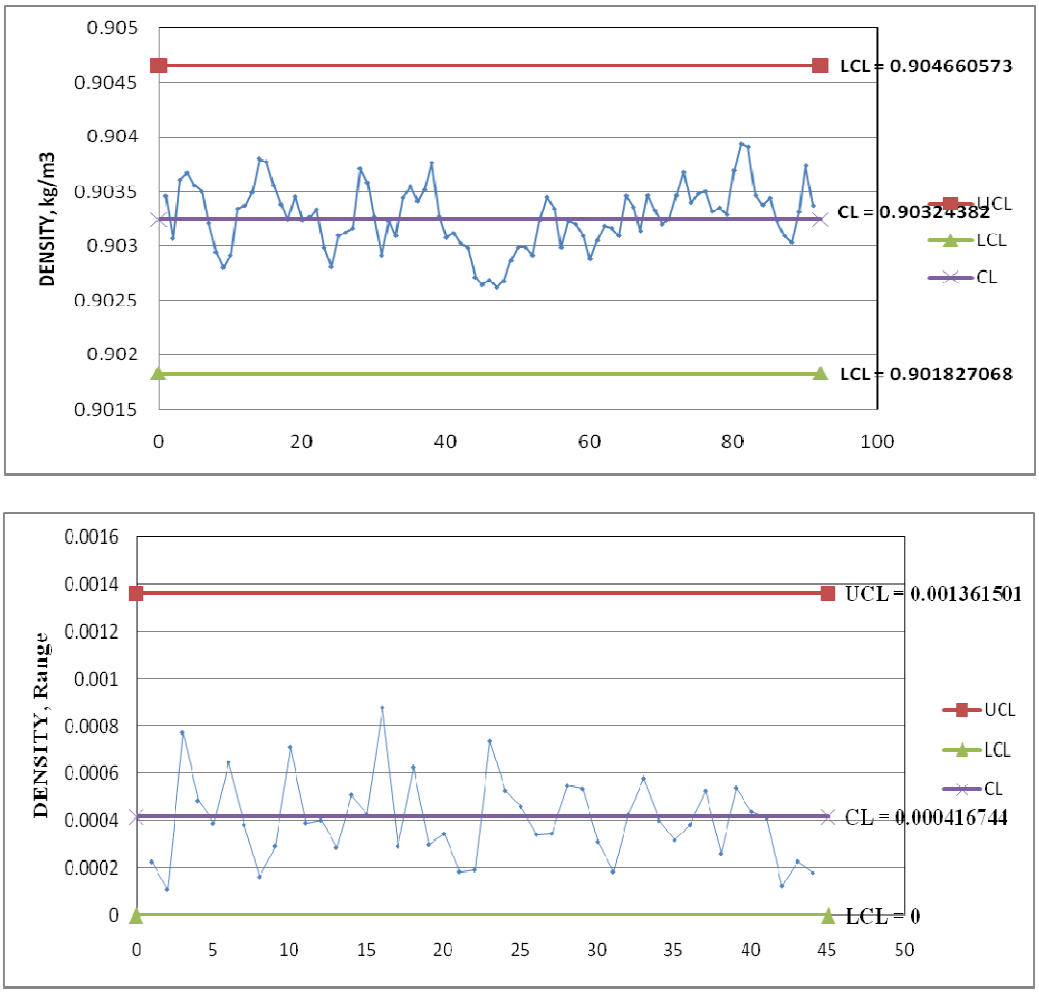


Figure 4.7 Shewhart Range and Shewhart Individual Chart for Density During Normal Condition

Figure 4.7 show control chart for quality variable which is density at normal operating condition. From the control chart above the value of Center Line for Shewhart individual is 0.903 kg/m^3 while the value of UCL and LCL was $\pm$ 0.0014. As for shewhart range chart, the process will be approach Center Line which is at 0.0000417. The UCL and LCL for this chart is 0.001361 and 0 respectively. The entire shewhart range chart has LCL value equal to zero. This is because from the equation 3.6, the value of D_3 is equal to zero because 5 number of data, n was arrange in every subgroup.

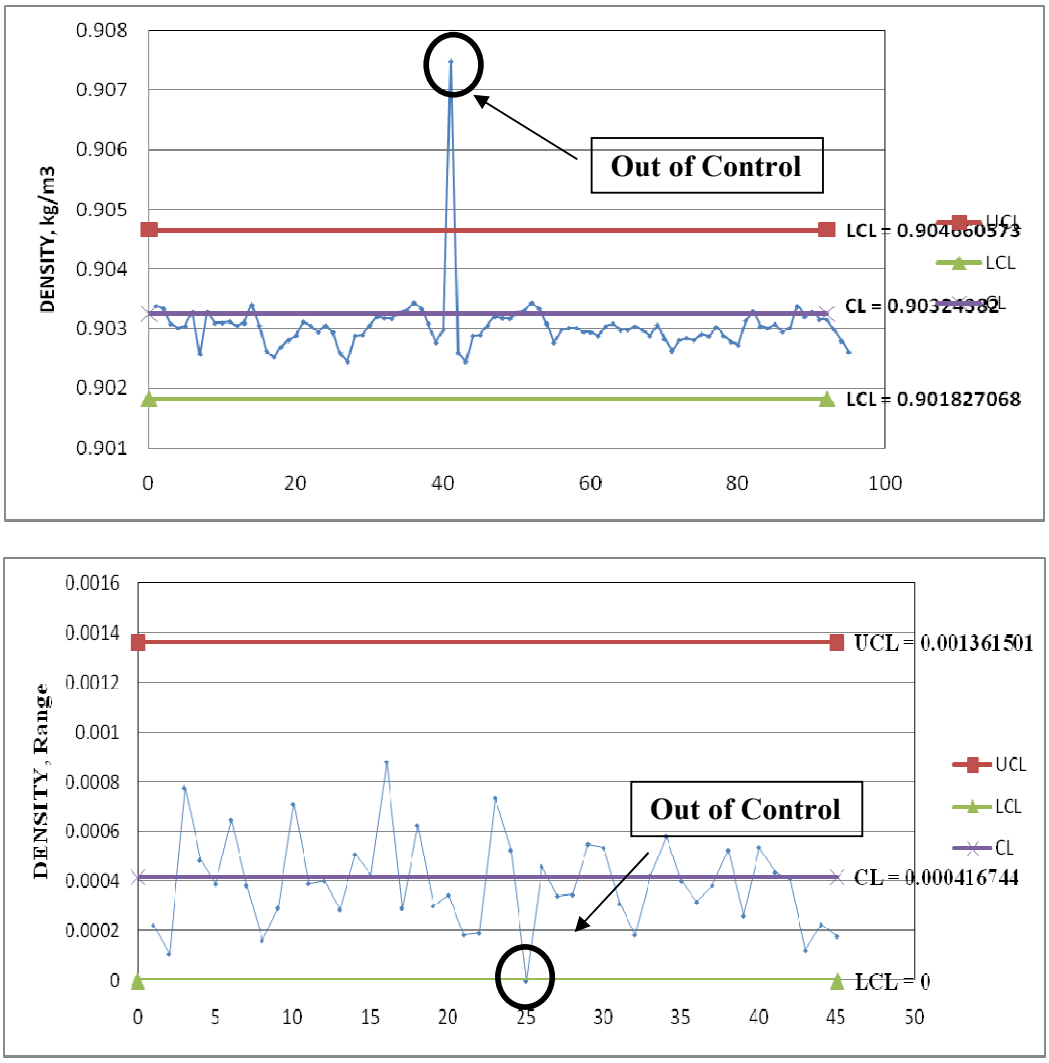


Figure 4.8 Shewhart range and Shewhart individual chart for Density during faulty condition

From Figure 4.8 we can see that fault occur at a data point number 40 for shewhart individual chart and at a data point number 25 for shewhart range chart. From this chart, the blue trend line approach and distribute around the violet trend line which is the Center Line of the control chart.

4.4 Correlation Coefficient

The calculation for correlated between process variables which are temperature and pressure and quality variables which is density was carried out by using Equation 3.1. Summarize of correlation coefficient between these variable is show in Table 4.1.

Table 4.1: Summarizing of Correlation Coefficient

Correlation Coefficient, C_{ij}	
Between Pressure (Process Variable) And Density (Quality Variable)	0.1122
Between Temperature (Process Variable) And Density (Quality Variable)	0.0151

4.5 Improved Statistical Process Control

Table 4.2: The Contol Limit For Improved Chart

Improved SPC Chart	**Quality Variable Control Limit**	**Process Variable Control Limit**
Shewhart Individual	$UCL = 3$ $LCL = -3$	$UCL = 3/C_{ij}$ $LCL = -3/C_{ij}$
Shewhart Range	$UCL = D_4\bar{R}$ $LCL = D_3\bar{R}$	$UCL = D_4\bar{R}/C_{ij}$ $LCL = D_3\bar{R}/C_{ij}$

After carried out correlation coefficient calculation, the new control chart for process variable which is temperature will be constructing by using equation on Table 4.2. From the UCL and LCL new calculation for each chart, the gap between UCL and LCL limit to the Center Line become wider and this make the control chart become more accurate and sensitive to detect fault.

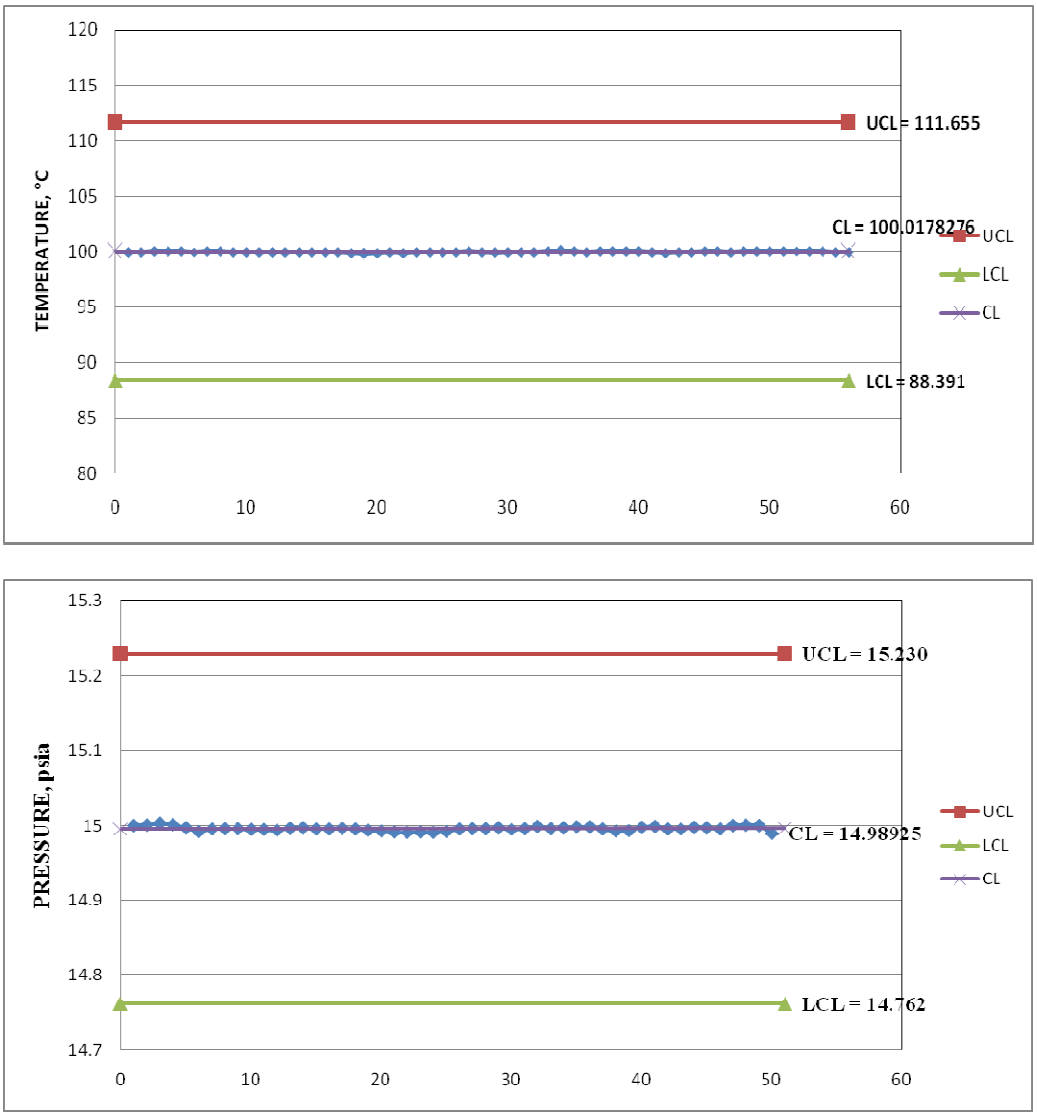


Figure 4.9 Improved Control Chart for Temperature Variable and Pressure Variable

From Figure 4.9, the gap for UCL for temperature variable after correlation coefficient was increase from 100.208 °C to 111.655 °C. Meanwhile, for LCL, the gap from CL was increase from temperature 99.828 °C to 88.391 °C. As for pressure variable, the UCL was change from 15.023 psia to 15.230 psia while the LCL was change from 14.971 psia to 14.762 psia.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Data based approaches rather than model-based approaches is more practical in process monitoring because it is often difficult to develop detailed physical models. Abnormal activity within process can be detect much more simple and easily corrected by using control chart. To create this control chart it is mandatory to collect the normal distributed data from the pilot plant at normal condition and other manipulated condition. For Shewhart chart, level of confident for the data distribute normally is 99.74%. Different types of graph have different kind of level of confident. From the control chart, fault can be detected early enough before the process become seriously upset. The process is defined as in control condition when the data lies within the UCL and LCL. The best process condition is when the data approach the CL of the control chart.

In order to increase the efficiency of the control chart, the correlation coefficient is needed. This correlation coefficient is used to translate the control limits of SPC charts from quality variable into process variable. The quality variables data is incorporated in the improved SPC chart during the faulty condition for fault detection purpose, while the process variables which has been correlated with the quality variables is used for fault diagnosis (Noorlisa, 2005).

5.2 Recommendation

In order to improve the applicability of the SPC method, Principal Component Analysis (PCA) or Partial Correlation Coefficient (PCorrA) are utilized, in order to determine the correlation coefficient between process variables and quality variables. This method for example PCA, normally applied in data analysis to find the cause of the problem occurred in the process. Santen *et al*. (1997) used *score* and *loading* plot via PCA method to access the problem of hot spot in reactors of Shell petrochemical process. The outcome showed that misdistribution in catalyst bed the most important factor cause high temperature in some of adiabatic Shell reactors. Solving hot spot problems has improved the performance of the process and generates extra savings and benefits in the order of 2 million dollars per annum. PCA method also can detect the faulty condition in various applications and can detect any change of relationship between variables.

Among these two correlation coefficient method, PCorrA performed better than the PCA. This is because the correlation coefficient developed by this method is closer to the actual value of the correlation coefficients representing the correlation between the selected process variables with the quality variables interest. (Mak & Kamarul, 2003).

LIST OF REFERENCES

Dale, E.S., Thomas, F.E., & Duncan, A.M., (2004). *Process Dynamics & Control*, Second Edition. John Wiley & Sons, Inc. 567-587

Douglas, C.M., & George, C.R., (2003). Applied *Statistics And Probability For Engineers*. Third Edition. John Wiley & Sons, Inc 595-641

James C.B. (2001). *Use, And Performance Of Statistical Control Charts For Clinical Process Improvement.* Northeastern University : PhD

Jeya, M.C. (2001). *Statistical Quality Control*. CRC Press LLC.

Kamarul A.I, Arshad, A., Mohamed, W.A, Noorlisa, H., Norazana, I., and Mak W.Y (2006). *Development Of Fault Detection, Diagnosis And Control System Identification Using Multivariate Statistical Process Control (MSPC).* Jabatan Kejuruteraan Kimia Fakulti Kejuruteraan Kimia Dan Kejuruteraan Sumber Asli. Universiti Teknologi Malaysia.

Kegel, T.M. Statistical Control of a Flowmeter Calibration Process. Director of Engineering Colorado Engineering Experiment Station, Inc. (CEESI) Nunn, Colorado 80648

Kegel, T.M. (1996). *Statistical Control of a Pressure Instrument Calibration Process*. Colorado Engineering Experiment Station.

Kegel, T.M. (2001). *Statistical Control Of The Measurement Process*. Colorado Engineering Experiment Station, Inc. Nunn, Colorado, Usa

Marilyn K. Hart. and Robert F. Hart. (2007). Introduction to Statistical Process Control Techniques. Statit Software, Inc.

Mark, L.C. (2007). *The Desk Reference of Statistical Quality Methods.* Second Edition. ASQ Quality Press, Milwaukee, Wisconsin.

Michael, S. and Shah, G.C. (2004). Quality Concepts for the Process Industry. Uhai Publishing, New York.

Murray, R.S., & Larry, J.S. (1999). Schaum's Outline of Theory and Problems of Statistics. International Edition. Mc.GRAW-HILL

Noorlisa, H., (2005). Fault *Detection And Diagnosis Via Improved Multivariate Statistical Process Control*. Master Thesis. Universiti Teknologi Malaysia.

Robert C.L. (2007). *Statistical Process Control*. IEOR 130, Methods Of Manufacturing Improvement.

Venkat Venkatasubramanian, Raghunathan Rengaswamy, Kewen Yin, Surya N. Kavuri (2003). *A Review Of Process Fault Detection And Diagnosis Part I: Quantitative Model-Based Methods.* Computer and Chemical Engineering. 27: 293-311

William, N., *Statistics for Engineers And Statistics*. Mc.GRAW-HILL. 723-752

Xi Sun, Horacio, J.M. and Tongwen Chen. (2005). *An Improved PCA Method With Application To Boiler Leak Detection.* Department Of Electrical And Computer Engineering, University Of Alberta, Edmonton, Alberta, Canada T6G 2G7

APPENDIX A

AIR FLOW PRESSURE TEMPERATURE PILOT PLANT

Figure A.1 : AFPT Process Control Training System

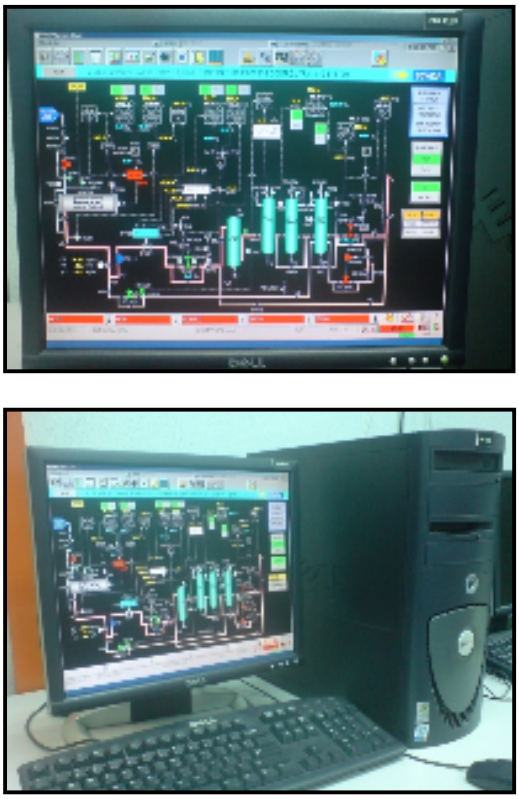


Figure A.2 : Distributed Control System (DCS)

APPENDIX B

RAW DATA

B.1 Raw Data For Pressure Variables At Set Point 15 psia

TAG NO.	DATE	TIME	PV(EU)	SETPOINT(EU)	OUTPUT(%)
PIC91A	2/11/2008	16:04:03	18.31345	15	68.39513
PIC91A	2/11/2008	16:04:04	18.3212	15	67.59586
PIC91A	2/11/2008	16:04:05	18.32895	15	66.80093
PIC91A	2/11/2008	16:04:06	18.3063	15	66.73222
PIC91A	2/11/2008	16:04:07	17.93793	15	71.15485
PIC91A	2/11/2008	16:04:08	17.41519	15	74.6689
PIC91A	2/11/2008	16:04:09	16.91868	15	76.89627
PIC91A	2/11/2008	16:04:10	16.53542	15	78.3905
PIC91A	2/11/2008	16:04:11	16.30832	15	78.60712
PIC91A	2/11/2008	16:04:12	16.18374	15	78.59907
PIC91A	2/11/2008	16:04:13	16.11579	15	78.44875
PIC91A	2/11/2008	16:04:14	16.08241	15	78.22923
PIC91A	2/11/2008	16:04:15	16.06215	15	78.07168
PIC91A	2/11/2008	16:04:16	16.04307	15	77.95021
PIC91A	2/11/2008	16:04:17	16.02758	15	77.80054
PIC91A	2/11/2008	16:04:18	16.01923	15	77.5754
PIC91A	2/11/2008	16:04:19	16.01208	15	77.39468
PIC91A	2/11/2008	16:04:20	16.00254	15	77.25999
PIC91A	2/11/2008	16:04:21	15.99002	15	77.13382
PIC91A	2/11/2008	16:04:22	15.97691	15	77.00037
PIC91A	2/11/2008	16:04:23	15.95903	15	76.94738
PIC91A	2/11/2008	16:04:24	15.93698	15	76.91821
PIC91A	2/11/2008	16:04:25	15.9179	15	76.82021
PIC91A	2/11/2008	16:04:26	15.90002	15	76.70706
PIC91A	2/11/2008	16:04:27	15.88274	15	76.62277
PIC91A	2/11/2008	16:04:28	15.86843	15	76.5022
PIC91A	2/11/2008	16:04:29	15.8577	15	76.35658
PIC91A	2/11/2008	16:04:30	15.84399	15	76.26853
PIC91A	2/11/2008	16:04:31	15.83267	15	76.15859
PIC91A	2/11/2008	16:04:32	15.81598	15	76.10586
PIC91A	2/11/2008	16:04:33	15.79869	15	76.0535
PIC91A	2/11/2008	16:04:34	15.78319	15	75.96564
PIC91A	2/11/2008	16:04:35	15.76889	15	75.88159
PIC91A	2/11/2008	16:04:36	15.75458	15	75.7825
PIC91A	2/11/2008	16:04:37	15.74087	15	75.72429
PIC91A	2/11/2008	16:04:38	15.73134	15	75.58326
PIC91A	2/11/2008	16:04:39	15.72478	15	75.45716
PIC91A	2/11/2008	16:04:40	15.72001	15	75.31629
PIC91A	2/11/2008	16:04:41	15.7063	15	75.32868
PIC91A	2/11/2008	16:04:42	15.69438	15	75.22937
PIC91A	2/11/2008	16:04:43	15.68246	15	75.13242
PIC91A	2/11/2008	16:04:44	15.6759	15	74.98866
PIC91A	2/11/2008	16:04:45	15.66577	15	74.96246
PIC91A	2/11/2008	16:04:46	15.64908	15	74.96474
PIC91A	2/11/2008	16:04:47	15.64074	15	74.79246
PIC91A	2/11/2008	16:04:48	15.63537	15	74.68977
PIC91A	2/11/2008	16:04:49	15.62762	15	74.61461
PIC91A	2/11/2008	16:04:50	15.62583	15	74.42819
PIC91A	2/11/2008	16:04:51	15.62226	15	74.35849
PIC91A	2/11/2008	16:04:52	15.61093	15	74.32848
PIC91A	2/11/2008	16:04:53	15.59961	15	74.25094
PIC91A	2/11/2008	16:04:54	15.58947	15	74.19989
PIC91A	2/11/2008	16:04:55	15.57636	15	74.16566
PIC91A	2/11/2008	16:04:56	15.56444	15	74.09012
PIC91A	2/11/2008	16:04:57	15.55848	15	73.99091
PIC91A	2/11/2008	16:04:58	15.55192	15	73.90781
PIC91A	2/11/2008	16:04:59	15.54119	15	73.88578
PIC91A	2/11/2008	16:05:00	15.53225	15	73.81664
PIC91A	2/11/2008	16:05:01	15.52152	15	73.79755
PIC91A	2/11/2008	16:05:02	15.51497	15	73.66722
PIC91A	2/11/2008	16:05:03	15.51378	15	73.54603
PIC91A	2/11/2008	16:05:04	15.50543	15	73.535
PIC91A	2/11/2008	16:05:05	15.49589	15	73.49612
PIC91A	2/11/2008	16:05:06	15.48457	15	73.46664
PIC91A	2/11/2008	16:05:07	15.4798	15	73.33471
PIC91A	2/11/2008	16:05:08	15.47503	15	73.27382
PIC91A	2/11/2008	16:05:09	15.4655	15	73.27441
PIC91A	2/11/2008	16:05:10	15.45477	15	73.22118
PIC91A	2/11/2008	16:05:11	15.45417	15	73.07225
PIC91A	2/11/2008	16:05:12	15.44583	15	73.09771
PIC91A	2/11/2008	16:05:13	15.43629	15	73.03909
PIC91A	2/11/2008	16:05:14	15.43033	15	72.94551
PIC91A	2/11/2008	16:05:15	15.42496	15	72.91526
PIC91A	2/11/2008	16:05:16	15.41781	15	72.87886
PIC91A	2/11/2008	16:05:17	15.41125	15	72.83214
PIC91A	2/11/2008	16:05:18	15.4047	15	72.78133
PIC91A	2/11/2008	16:05:19	15.39576	15	72.78228
PIC91A	2/11/2008	16:05:20	15.38622	15	72.73828
PIC91A	2/11/2008	16:05:21	15.37966	15	72.67524
PIC91A	2/11/2008	16:05:22	15.37668	15	72.61154
PIC91A	2/11/2008	16:05:23	15.37191	15	72.54353
PIC91A	2/11/2008	16:05:24	15.37072	15	72.44127
PIC91A	2/11/2008	16:05:25	15.36536	15	72.44781
PIC91A	2/11/2008	16:05:26	15.36238	15	72.35828
PIC91A	2/11/2008	16:05:27	15.3588	15	72.31232
PIC91A	2/11/2008	16:05:28	15.35165	15	72.30632
PIC91A	2/11/2008	16:05:29	15.34271	15	72.29168
PIC91A	2/11/2008	16:05:30	15.33138	15	72.30578
PIC91A	2/11/2008	16:05:31	15.32483	15	72.24269
PIC91A	2/11/2008	16:05:32	15.32602	15	72.11472
PIC91A	2/11/2008	16:05:33	15.32065	15	72.12251
PIC91A	2/11/2008	16:05:34	15.31231	15	72.12115
PIC91A	2/11/2008	16:05:35	15.30456	15	72.10443
PIC91A	2/11/2008	16:05:36	15.2986	15	72.04995
PIC91A	2/11/2008	16:05:37	15.29622	15	71.98187
PIC91A	2/11/2008	16:05:38	15.29264	15	71.96637
PIC91A	2/11/2008	16:05:39	15.28847	15	71.92406
PIC91A	2/11/2008	16:05:40	15.2831	15	71.90148
PIC91A	2/11/2008	16:05:41	15.28429	15	71.76128
PIC91A	2/11/2008	16:05:42	15.28668	15	71.71353
PIC91A	2/11/2008	16:05:43	15.27774	15	71.77326
PIC91A	2/11/2008	16:05:44	15.27178	15	71.72713
PIC91A	2/11/2008	16:05:45	15.26641	15	71.71201
PIC91A	2/11/2008	16:05:46	15.26105	15	71.68687
PIC91A	2/11/2008	16:05:47	15.2527	15	71.6843
PIC91A	2/11/2008	16:05:48	15.24913	15	71.65396

PIC91A	2/11/2008	16:05:49	15.24019	15	71.68117	PIC91A	2/11/2008	16:07:16	15.06137	15	70.18104
PIC91A	2/11/2008	16:05:50	15.23065	15	71.68164	PIC91A	2/11/2008	16:07:17	15.06077	15	70.16183
PIC91A	2/11/2008	16:05:51	15.22827	15	71.60513	PIC91A	2/11/2008	16:07:18	15.0572	15	70.2062
PIC91A	2/11/2008	16:05:52	15.22886	15	71.5188	PIC91A	2/11/2008	16:07:19	15.05541	15	70.17944
PIC91A	2/11/2008	16:05:53	15.22767	15	71.50867	PIC91A	2/11/2008	16:07:20	15.05779	15	70.12374
PIC91A	2/11/2008	16:05:54	15.2229	15	71.50819	PIC91A	2/11/2008	16:07:21	15.05541	15	70.19121
PIC91A	2/11/2008	16:05:55	15.22111	15	71.43399	PIC91A	2/11/2008	16:07:22	15.04706	15	70.24339
PIC91A	2/11/2008	16:05:56	15.21992	15	71.4068	PIC91A	2/11/2008	16:07:23	15.04706	15	70.15861
PIC91A	2/11/2008	16:05:57	15.21694	15	71.39384	PIC91A	2/11/2008	16:07:24	15.05183	15	70.09295
PIC91A	2/11/2008	16:05:58	15.21277	15	71.36237	PIC91A	2/11/2008	16:07:25	15.05362	15	70.10998
PIC91A	2/11/2008	16:05:59	15.21217	15	71.29106	PIC91A	2/11/2008	16:07:26	15.05362	15	70.09991
PIC91A	2/11/2008	16:06:00	15.21277	15	71.2444	PIC91A	2/11/2008	16:07:27	15.05064	15	70.12185
PIC91A	2/11/2008	16:06:01	15.21038	15	71.22195	PIC91A	2/11/2008	16:07:28	15.04587	15	70.15128
PIC91A	2/11/2008	16:06:02	15.20919	15	71.17481	PIC91A	2/11/2008	16:07:29	15.04528	15	70.0973
PIC91A	2/11/2008	16:06:03	15.20323	15	71.21098	PIC91A	2/11/2008	16:07:30	15.05183	15	70.02666
PIC91A	2/11/2008	16:06:04	15.19787	15	71.18284	PIC91A	2/11/2008	16:07:31	15.05481	15	70.02052
PIC91A	2/11/2008	16:06:05	15.19489	15	71.13955	PIC91A	2/11/2008	16:07:32	15.05124	15	70.09129
PIC91A	2/11/2008	16:06:06	15.19429	15	71.09765	PIC91A	2/11/2008	16:07:33	15.04587	15	70.08917
PIC91A	2/11/2008	16:06:07	15.19071	15	71.11339	PIC91A	2/11/2008	16:07:34	15.04766	15	70.02934
PIC91A	2/11/2008	16:06:08	15.18595	15	71.0864	PIC91A	2/11/2008	16:07:35	15.04826	15	70.04462
PIC91A	2/11/2008	16:06:09	15.18654	15	71.00278	PIC91A	2/11/2008	16:07:36	15.04647	15	70.05543
PIC91A	2/11/2008	16:06:10	15.18475	15	71.02019	PIC91A	2/11/2008	16:07:37	15.04468	15	70.03771
PIC91A	2/11/2008	16:06:11	15.1776	15	71.06441	PIC91A	2/11/2008	16:07:38	15.04528	15	70.02943
PIC91A	2/11/2008	16:06:12	15.17522	15	70.96761	PIC91A	2/11/2008	16:07:39	15.04349	15	70.05761
PIC91A	2/11/2008	16:06:13	15.17641	15	70.92467	PIC91A	2/11/2008	16:07:40	15.03753	15	70.09614
PIC91A	2/11/2008	16:06:14	15.17343	15	70.93352	PIC91A	2/11/2008	16:07:41	15.03514	15	70.0737
PIC91A	2/11/2008	16:06:15	15.17224	15	70.88389	PIC91A	2/11/2008	16:07:42	15.03514	15	70.06168
PIC91A	2/11/2008	16:06:16	15.16628	15	70.92268	PIC91A	2/11/2008	16:07:43	15.03574	15	70.0611
PIC91A	2/11/2008	16:06:17	15.16508	15	70.83949	PIC91A	2/11/2008	16:07:44	15.03395	15	70.07002
PIC91A	2/11/2008	16:06:18	15.16389	15	70.84547	PIC91A	2/11/2008	16:07:45	15.03157	15	70.07948
PIC91A	2/11/2008	16:06:19	15.16091	15	70.8269	PIC91A	2/11/2008	16:07:46	15.03157	15	70.05228
PIC91A	2/11/2008	16:06:20	15.15733	15	70.82854	PIC91A	2/11/2008	16:07:47	15.0268	15	70.10553
PIC91A	2/11/2008	16:06:21	15.15495	15	70.78197	PIC91A	2/11/2008	16:07:48	15.02918	15	70.0368
PIC91A	2/11/2008	16:06:22	15.15376	15	70.74964	PIC91A	2/11/2008	16:07:49	15.03157	15	70.01453
PIC91A	2/11/2008	16:06:23	15.15018	15	70.75488	PIC91A	2/11/2008	16:07:50	15.03276	15	70.02277
PIC91A	2/11/2008	16:06:24	15.14959	15	70.73192	PIC91A	2/11/2008	16:07:51	15.03336	15	70.00853
PIC91A	2/11/2008	16:06:25	15.14541	15	70.72758	PIC91A	2/11/2008	16:07:52	15.03395	15	69.99789
PIC91A	2/11/2008	16:06:26	15.14005	15	70.75552	PIC91A	2/11/2008	16:07:53	15.03216	15	70.02059
PIC91A	2/11/2008	16:06:27	15.13468	15	70.74751	PIC91A	2/11/2008	16:07:54	15.0262	15	70.06966
PIC91A	2/11/2008	16:06:28	15.13588	15	70.65955	PIC91A	2/11/2008	16:07:55	15.02799	15	69.97923
PIC91A	2/11/2008	16:06:29	15.1323	15	70.67801	PIC91A	2/11/2008	16:07:56	15.03216	15	69.97055
PIC91A	2/11/2008	16:06:30	15.1317	15	70.65765	PIC91A	2/11/2008	16:07:57	15.03038	15	69.99445
PIC91A	2/11/2008	16:06:31	15.1317	15	70.61311	PIC91A	2/11/2008	16:07:58	15.02978	15	69.98345
PIC91A	2/11/2008	16:06:32	15.12992	15	70.62862	PIC91A	2/11/2008	16:07:59	15.03216	15	69.93917
PIC91A	2/11/2008	16:06:33	15.12574	15	70.6162	PIC91A	2/11/2008	16:08:00	15.03455	15	69.91093
PIC91A	2/11/2008	16:06:34	15.12634	15	70.56156	PIC91A	2/11/2008	16:08:01	15.03753	15	69.90237
PIC91A	2/11/2008	16:06:35	15.12217	15	70.5889	PIC91A	2/11/2008	16:08:02	15.03693	15	69.9143
PIC91A	2/11/2008	16:06:36	15.11859	15	70.58909	PIC91A	2/11/2008	16:08:03	15.03395	15	69.93422
PIC91A	2/11/2008	16:06:37	15.1174	15	70.55425	PIC91A	2/11/2008	16:08:04	15.03216	15	69.93638
PIC91A	2/11/2008	16:06:38	15.11263	15	70.5874	PIC91A	2/11/2008	16:08:05	15.03097	15	69.91736
PIC91A	2/11/2008	16:06:39	15.10727	15	70.59833	PIC91A	2/11/2008	16:08:06	15.03336	15	69.89165
PIC91A	2/11/2008	16:06:40	15.10429	15	70.57504	PIC91A	2/11/2008	16:08:07	15.03336	15	69.88392
PIC91A	2/11/2008	16:06:41	15.10369	15	70.54428	PIC91A	2/11/2008	16:08:08	15.03216	15	69.90661
PIC91A	2/11/2008	16:06:42	15.10429	15	70.49164	PIC91A	2/11/2008	16:08:09	15.03216	15	69.88239
PIC91A	2/11/2008	16:06:43	15.10607	15	70.46158	PIC91A	2/11/2008	16:08:10	15.0274	15	69.95403
PIC91A	2/11/2008	16:06:44	15.11025	15	70.4094	PIC91A	2/11/2008	16:08:11	15.02084	15	69.97569
PIC91A	2/11/2008	16:06:45	15.10846	15	70.43518	PIC91A	2/11/2008	16:08:12	15.01786	15	69.97991
PIC91A	2/11/2008	16:06:46	15.1019	15	70.47803	PIC91A	2/11/2008	16:08:13	15.02203	15	69.89146
PIC91A	2/11/2008	16:06:47	15.09713	15	70.46847	PIC91A	2/11/2008	16:08:14	15.0262	15	69.86623
PIC91A	2/11/2008	16:06:48	15.09594	15	70.4299	PIC91A	2/11/2008	16:08:15	15.02263	15	69.93652
PIC91A	2/11/2008	16:06:49	15.09534	15	70.40345	PIC91A	2/11/2008	16:08:16	15.01726	15	69.9938
PIC91A	2/11/2008	16:06:50	15.09534	15	70.38519	PIC91A	2/11/2008	16:08:17	15.01786	15	69.93443
PIC91A	2/11/2008	16:06:51	15.09356	15	70.40546	PIC91A	2/11/2008	16:08:18	15.01786	15	69.93472
PIC91A	2/11/2008	16:06:52	15.08581	15	70.46621	PIC91A	2/11/2008	16:08:19	15.01905	15	69.91595
PIC91A	2/11/2008	16:06:53	15.08283	15	70.40871	PIC91A	2/11/2008	16:08:20	15.01726	15	69.95851
PIC91A	2/11/2008	16:06:54	15.08164	15	70.40417	PIC91A	2/11/2008	16:08:21	15.01726	15	69.91982
PIC91A	2/11/2008	16:06:55	15.08342	15	70.34348	PIC91A	2/11/2008	16:08:22	15.02322	15	69.85364
PIC91A	2/11/2008	16:06:56	15.0864	15	70.31188	PIC91A	2/11/2008	16:08:23	15.02442	15	69.87408
PIC91A	2/11/2008	16:06:57	15.08164	15	70.36812	PIC91A	2/11/2008	16:08:24	15.02442	15	69.8653
PIC91A	2/11/2008	16:06:58	15.07866	15	70.35177	PIC91A	2/11/2008	16:08:25	15.02561	15	69.83115
PIC91A	2/11/2008	16:06:59	15.08104	15	70.29761	PIC91A	2/11/2008	16:08:26	15.02799	15	69.81873
PIC91A	2/11/2008	16:07:00	15.07866	15	70.31683	PIC91A	2/11/2008	16:08:27	15.02501	15	69.87589
PIC91A	2/11/2008	16:07:01	15.07806	15	70.29571	PIC91A	2/11/2008	16:08:28	15.02143	15	69.86557
PIC91A	2/11/2008	16:07:02	15.07806	15	70.27779	PIC91A	2/11/2008	16:08:29	15.02203	15	69.83994
PIC91A	2/11/2008	16:07:03	15.07627	15	70.26781	PIC91A	2/11/2008	16:08:30	15.02263	15	69.8259
PIC91A	2/11/2008	16:07:04	15.07448	15	70.28111	PIC91A	2/11/2008	16:08:31	15.02442	15	69.81287
PIC91A	2/11/2008	16:07:05	15.06971	15	70.30072	PIC91A	2/11/2008	16:08:32	15.02442	15	69.82317
PIC91A	2/11/2008	16:07:06	15.07031	15	70.29652	PIC91A	2/11/2008	16:08:33	15.02322	15	69.83348
PIC91A	2/11/2008	16:07:07	15.06852	15	70.25148	PIC91A	2/11/2008	16:08:34	15.01786	15	69.9005
PIC91A	2/11/2008	16:07:08	15.07508	15	70.17117	PIC91A	2/11/2008	16:08:35	15.01726	15	69.85392
PIC91A	2/11/2008	16:07:09	15.07389	15	70.18979	PIC91A	2/11/2008	16:08:36	15.02024	15	69.80776
PIC91A	2/11/2008	16:07:10	15.07091	15	70.2294	PIC91A	2/11/2008	16:08:37	15.02024	15	69.827
PIC91A	2/11/2008	16:07:11	15.07091	15	70.18855	PIC91A	2/11/2008	16:08:38	15.02084	15	69.79884
PIC91A	2/11/2008	16:07:12	15.06793	15	70.19142	PIC91A	2/11/2008	16:08:39	15.02382	15	69.78237
PIC91A	2/11/2008	16:07:13	15.06673	15	70.18953	PIC91A	2/11/2008	16:08:40	15.02382	15	69.78601
PIC91A	2/11/2008	16:07:14	15.06316	15	70.2203	PIC91A	2/11/2008	16:08:41	15.02501	15	69.7659
PIC91A	2/11/2008	16:07:15	15.06197	15	70.17675	PIC91A	2/11/2008	16:08:42	15.03097	15	69.68468

PIC91A	2/11/2008	16:08:43	15.02799	15	69.77425	PIC91A	2/11/2008	16:10:10	14.99938	15	69.8237
PIC91A	2/11/2008	16:08:44	15.02263	15	69.79544	PIC91A	2/11/2008	16:10:11	15.00355	15	69.77077
PIC91A	2/11/2008	16:08:45	15.01965	15	69.79716	PIC91A	2/11/2008	16:10:12	15.00475	15	69.80618
PIC91A	2/11/2008	16:08:46	15.01726	15	69.81549	PIC91A	2/11/2008	16:10:13	15.00475	15	69.78264
PIC91A	2/11/2008	16:08:47	15.01845	15	69.7776	PIC91A	2/11/2008	16:10:14	15.00534	15	69.76493
PIC91A	2/11/2008	16:08:48	15.02024	15	69.7516	PIC91A	2/11/2008	16:10:15	15.00296	15	69.81607
PIC91A	2/11/2008	16:08:49	15.02024	15	69.77733	PIC91A	2/11/2008	16:10:16	15.00236	15	69.79678
PIC91A	2/11/2008	16:08:50	15.01845	15	69.7812	PIC91A	2/11/2008	16:10:17	15.00475	15	69.77529
PIC91A	2/11/2008	16:08:51	15.01726	15	69.78025	PIC91A	2/11/2008	16:10:18	15.00236	15	69.80024
PIC91A	2/11/2008	16:08:52	15.01369	15	69.83179	PIC91A	2/11/2008	16:10:19	15.00117	15	69.80303
PIC91A	2/11/2008	16:08:53	15.0113	15	69.82228	PIC91A	2/11/2008	16:10:20	15.00057	15	69.81777
PIC91A	2/11/2008	16:08:54	15.01011	15	69.8167	PIC91A	2/11/2008	16:10:21	15.00117	15	69.79223
PIC91A	2/11/2008	16:08:55	15.00773	15	69.85988	PIC91A	2/11/2008	16:10:22	14.99759	15	69.84766
PIC91A	2/11/2008	16:08:56	15.00415	15	69.85713	PIC91A	2/11/2008	16:10:23	14.9964	15	69.85125
PIC91A	2/11/2008	16:08:57	15.00594	15	69.7953	PIC91A	2/11/2008	16:10:24	14.997	15	69.82961
PIC91A	2/11/2008	16:08:58	15.0119	15	69.78339	PIC91A	2/11/2008	16:10:25	15.00475	15	69.72816
PIC91A	2/11/2008	16:08:59	15.00475	15	69.908	PIC91A	2/11/2008	16:10:26	14.99998	15	69.85814
PIC91A	2/11/2008	16:09:00	14.99998	15	69.88944	PIC91A	2/11/2008	16:10:27	14.99461	15	69.84862
PIC91A	2/11/2008	16:09:01	14.99819	15	69.87901	PIC91A	2/11/2008	16:10:28	15.00117	15	69.75437
PIC91A	2/11/2008	16:09:02	14.99998	15	69.84413	PIC91A	2/11/2008	16:10:29	15.00117	15	69.81638
PIC91A	2/11/2008	16:09:03	15.00117	15	69.87211	PIC91A	2/11/2008	16:10:30	15.00355	15	69.75487
PIC91A	2/11/2008	16:09:04	15.00236	15	69.84798	PIC91A	2/11/2008	16:10:31	15.00713	15	69.75106
PIC91A	2/11/2008	16:09:05	15.00117	15	69.87985	PIC91A	2/11/2008	16:10:32	15.00773	15	69.74245
PIC91A	2/11/2008	16:09:06	14.99879	15	69.88961	PIC91A	2/11/2008	16:10:33	15.00355	15	69.79868
PIC91A	2/11/2008	16:09:07	15.00177	15	69.83015	PIC91A	2/11/2008	16:10:34	15.00236	15	69.79095
PIC91A	2/11/2008	16:09:08	15.00534	15	69.82662	PIC91A	2/11/2008	16:10:35	15.00296	15	69.78446
PIC91A	2/11/2008	16:09:09	15.00296	15	69.86043	PIC91A	2/11/2008	16:10:36	15.00653	15	69.73914
PIC91A	2/11/2008	16:09:10	15.00236	15	69.85564	PIC91A	2/11/2008	16:10:37	15.00832	15	69.73563
PIC91A	2/11/2008	16:09:11	15.00296	15	69.85032	PIC91A	2/11/2008	16:10:38	15.00832	15	69.76159
PIC91A	2/11/2008	16:09:13	15.00713	15	69.80487	PIC91A	2/11/2008	16:10:39	15.00594	15	69.77827
PIC91A	2/11/2008	16:09:13	15.00475	15	69.8681	PIC91A	2/11/2008	16:10:40	15.00236	15	69.80367
PIC91A	2/11/2008	16:09:14	15.00177	15	69.87469	PIC91A	2/11/2008	16:10:41	15.00177	15	69.78729
PIC91A	2/11/2008	16:09:15	15.00057	15	69.86461	PIC91A	2/11/2008	16:10:42	14.99998	15	69.81611
PIC91A	2/11/2008	16:09:16	14.99998	15	69.85616	PIC91A	2/11/2008	16:10:43	14.99759	15	69.81841
PIC91A	2/11/2008	16:09:17	15.00296	15	69.83897	PIC91A	2/11/2008	16:10:44	14.99998	15	69.77962
PIC91A	2/11/2008	16:09:18	15.00177	15	69.87146	PIC91A	2/11/2008	16:10:45	15.00117	15	69.77626
PIC91A	2/11/2008	16:09:19	15.00177	15	69.85411	PIC91A	2/11/2008	16:10:46	15.00117	15	69.79063
PIC91A	2/11/2008	16:09:20	15.00296	15	69.83586	PIC91A	2/11/2008	16:10:47	15.00475	15	69.71997
PIC91A	2/11/2008	16:09:21	15.00177	15	69.87032	PIC91A	2/11/2008	16:10:48	15.00653	15	69.74817
PIC91A	2/11/2008	16:09:22	15.00177	15	69.85255	PIC91A	2/11/2008	16:10:49	15.00355	15	69.79391
PIC91A	2/11/2008	16:09:23	15.00653	15	69.79629	PIC91A	2/11/2008	16:10:50	15.00296	15	69.76324
PIC91A	2/11/2008	16:09:24	15.00594	15	69.82774	PIC91A	2/11/2008	16:10:51	15.00773	15	69.68993
PIC91A	2/11/2008	16:09:25	15.00296	15	69.84479	PIC91A	2/11/2008	16:10:52	15.01071	15	69.73621
PIC91A	2/11/2008	16:09:26	15.00475	15	69.82069	PIC91A	2/11/2008	16:10:53	15.00475	15	69.79755
PIC91A	2/11/2008	16:09:27	15.00177	15	69.86621	PIC91A	2/11/2008	16:10:54	15.00236	15	69.77771
PIC91A	2/11/2008	16:09:28	15.00177	15	69.82647	PIC91A	2/11/2008	16:10:55	15.00236	15	69.77045
PIC91A	2/11/2008	16:09:29	15.00415	15	69.80444	PIC91A	2/11/2008	16:10:56	15.00296	15	69.76545
PIC91A	2/11/2008	16:09:30	15.00475	15	69.83569	PIC91A	2/11/2008	16:10:57	15.00415	15	69.76781
PIC91A	2/11/2008	16:09:31	15.00475	15	69.82419	PIC91A	2/11/2008	16:10:58	15.00236	15	69.77396
PIC91A	2/11/2008	16:09:32	15.00475	15	69.83463	PIC91A	2/11/2008	16:10:59	15.00236	15	69.77856
PIC91A	2/11/2008	16:09:33	15.00236	15	69.84492	PIC91A	2/11/2008	16:11:00	15.00057	15	69.77953
PIC91A	2/11/2008	16:09:34	15.00415	15	69.83318	PIC91A	2/11/2008	16:11:01	15.00415	15	69.75389
PIC91A	2/11/2008	16:09:35	15.00296	15	69.85378	PIC91A	2/11/2008	16:11:02	15.00236	15	69.78109
PIC91A	2/11/2008	16:09:36	15.00594	15	69.7795	PIC91A	2/11/2008	16:11:03	15.00296	15	69.75581
PIC91A	2/11/2008	16:09:37	15.00594	15	69.83298	PIC91A	2/11/2008	16:11:04	15.00296	15	69.77686
PIC91A	2/11/2008	16:09:38	15.00296	15	69.83321	PIC91A	2/11/2008	16:11:05	15.00296	15	69.76019
PIC91A	2/11/2008	16:09:39	15.00415	15	69.8033	PIC91A	2/11/2008	16:11:06	15.00296	15	69.75455
PIC91A	2/11/2008	16:09:40	15.00653	15	69.78658	PIC91A	2/11/2008	16:11:07	15.00594	15	69.73068
PIC91A	2/11/2008	16:09:41	15.00773	15	69.78055	PIC91A	2/11/2008	16:11:08	15.00534	15	69.72995
PIC91A	2/11/2008	16:09:42	15.00773	15	69.79949	PIC91A	2/11/2008	16:11:09	15.00713	15	69.72047
PIC91A	2/11/2008	16:09:43	15.00594	15	69.836	PIC91A	2/11/2008	16:11:10	15.00773	15	69.71982
PIC91A	2/11/2008	16:09:44	15.00236	15	69.84326	PIC91A	2/11/2008	16:11:11	15.01011	15	69.67987
PIC91A	2/11/2008	16:09:45	15.00117	15	69.85773	PIC91A	2/11/2008	16:11:12	15.00832	15	69.73997
PIC91A	2/11/2008	16:09:46	15.00177	15	69.81629	PIC91A	2/11/2008	16:11:13	15.00832	15	69.7043
PIC91A	2/11/2008	16:09:47	15.00534	15	69.78193	PIC91A	2/11/2008	16:11:14	15.00534	15	69.75385
PIC91A	2/11/2008	16:09:48	15.00594	15	69.80766	PIC91A	2/11/2008	16:11:15	15.00534	15	69.71329
PIC91A	2/11/2008	16:09:49	15.00415	15	69.81635	PIC91A	2/11/2008	16:11:16	15.00832	15	69.69501
PIC91A	2/11/2008	16:09:50	15.00594	15	69.78127	PIC91A	2/11/2008	16:11:17	15.00713	15	69.72678
PIC91A	2/11/2008	16:09:51	15.00296	15	69.82864	PIC91A	2/11/2008	16:11:18	15.00832	15	69.67638
PIC91A	2/11/2008	16:09:52	15.00236	15	69.82023	PIC91A	2/11/2008	16:11:19	15.00773	15	69.73161
PIC91A	2/11/2008	16:09:53	15.00355	15	69.79537	PIC91A	2/11/2008	16:11:20	15.00236	15	69.77681
PIC91A	2/11/2008	16:09:54	15.00296	15	69.83391	PIC91A	2/11/2008	16:11:21	15.00236	15	69.73928
PIC91A	2/11/2008	16:09:55	15.00475	15	69.77043	PIC91A	2/11/2008	16:11:22	15.00117	15	69.7617
PIC91A	2/11/2008	16:09:56	15.00951	15	69.73336	PIC91A	2/11/2008	16:11:23	15.00236	15	69.73809
PIC91A	2/11/2008	16:09:57	15.00773	15	69.7946	PIC91A	2/11/2008	16:11:24	15.00057	15	69.78125
PIC91A	2/11/2008	16:09:58	15.00534	15	69.79434	PIC91A	2/11/2008	16:11:25	15.00296	15	69.71326
PIC91A	2/11/2008	16:09:59	15.00534	15	69.80109	PIC91A	2/11/2008	16:11:26	15.00355	15	69.75352
PIC91A	2/11/2008	16:10:00	15.00475	15	69.7746	PIC91A	2/11/2008	16:11:27	14.99998	15	69.79051
PIC91A	2/11/2008	16:10:01	15.00773	15	69.74876	PIC91A	2/11/2008	16:11:28	14.99819	15	69.76941
PIC91A	2/11/2008	16:10:02	15.00475	15	69.82434	PIC91A	2/11/2008	16:11:29	14.99998	15	69.73949
PIC91A	2/11/2008	16:10:03	14.99938	15	69.86529	PIC91A	2/11/2008	16:11:30	15.00117	15	69.7338
PIC91A	2/11/2008	16:10:04	14.99819	15	69.82788	PIC91A	2/11/2008	16:11:31	15.00594	15	69.69006
PIC91A	2/11/2008	16:10:05	15.00296	15	69.7657	PIC91A	2/11/2008	16:11:32	14.99938	15	69.80373
PIC91A	2/11/2008	16:10:06	15.00534	15	69.76829	PIC91A	2/11/2008	16:11:33	14.9958	15	69.79017
PIC91A	2/11/2008	16:10:07	15.00415	15	69.80415	PIC91A	2/11/2008	16:11:34	14.997	15	69.76069
PIC91A	2/11/2008	16:10:08	15.00475	15	69.80153	PIC91A	2/11/2008	16:11:35	15.00057	15	69.73252
PIC91A	2/11/2008	16:10:09	15.00177	15	69.8346	PIC91A	2/11/2008	16:11:36	15.00057	15	69.75851

PIC91A	2/11/2008	16:11:37	15.00177	15	69.72213
PIC91A	2/11/2008	16:11:38	15.00177	15	69.74133
PIC91A	2/11/2008	16:11:39	14.99998	15	69.77701
PIC91A	2/11/2008	16:11:40	14.99342	15	69.83935
PIC91A	2/11/2008	16:11:41	14.99938	15	69.68372
PIC91A	2/11/2008	16:11:42	15.00355	15	69.72205
PIC91A	2/11/2008	16:11:43	15.00177	15	69.75162
PIC91A	2/11/2008	16:11:44	14.99759	15	69.80444
PIC91A	2/11/2008	16:11:45	14.9958	15	69.79352
PIC91A	2/11/2008	16:11:46	14.99461	15	69.79839
PIC91A	2/11/2008	16:11:47	14.99223	15	69.81013
PIC91A	2/11/2008	16:11:48	14.997	15	69.73194
PIC91A	2/11/2008	16:11:49	15.00415	15	69.70097
PIC91A	2/11/2008	16:11:50	15.00236	15	69.75768
PIC91A	2/11/2008	16:11:51	15.00355	15	69.70815
PIC91A	2/11/2008	16:11:52	15.00892	15	69.65672
PIC91A	2/11/2008	16:11:53	15.00594	15	69.74808
PIC91A	2/11/2008	16:11:54	15.00177	15	69.76099
PIC91A	2/11/2008	16:11:55	15.00177	15	69.73955
PIC91A	2/11/2008	16:11:56	14.99938	15	69.77285
PIC91A	2/11/2008	16:11:57	15.00296	15	69.71906
PIC91A	2/11/2008	16:11:58	15.00236	15	69.75162
PIC91A	2/11/2008	16:11:59	14.99998	15	69.75933
PIC91A	2/11/2008	16:12:00	15.00117	15	69.72596
PIC91A	2/11/2008	16:12:01	14.99759	15	69.79197
PIC91A	2/11/2008	16:12:02	14.99521	15	69.79826
PIC91A	2/11/2008	16:12:03	14.997	15	69.75729
PIC91A	2/11/2008	16:12:04	14.99759	15	69.7645
PIC91A	2/11/2008	16:12:05	15.00117	15	69.7258
PIC91A	2/11/2008	16:12:06	15.00475	15	69.69736
PIC91A	2/11/2008	16:12:07	15.00475	15	69.72534
PIC91A	2/11/2008	16:12:08	15.00236	15	69.75562
PIC91A	2/11/2008	16:12:09	14.997	15	69.79492
PIC91A	2/11/2008	16:12:10	14.99938	15	69.71397
PIC91A	2/11/2008	16:12:11	14.99998	15	69.75504
PIC91A	2/11/2008	16:12:12	15.00296	15	69.71154
PIC91A	2/11/2008	16:12:13	15.00475	15	69.7074
PIC91A	2/11/2008	16:12:14	15.00475	15	69.712
PIC91A	2/11/2008	16:12:15	15.00415	15	69.72474
PIC91A	2/11/2008	16:12:16	15.00832	15	69.66383
PIC91A	2/11/2008	16:12:17	15.00296	15	69.7543
PIC91A	2/11/2008	16:12:18	15.00296	15	69.72057
PIC91A	2/11/2008	16:12:19	15.00117	15	69.76584
PIC91A	2/11/2008	16:12:20	15.00117	15	69.7319
PIC91A	2/11/2008	16:12:21	15.00117	15	69.73914
PIC91A	2/11/2008	16:12:22	14.997	15	69.78242
PIC91A	2/11/2008	16:12:23	14.9958	15	69.78317
PIC91A	2/11/2008	16:12:24	14.9964	15	69.77127
PIC91A	2/11/2008	16:12:25	14.99521	15	69.80019
PIC91A	2/11/2008	16:12:26	14.9964	15	69.75823
PIC91A	2/11/2008	16:12:27	14.99938	15	69.75414
PIC91A	2/11/2008	16:12:28	14.99819	15	69.75681
PIC91A	2/11/2008	16:12:29	14.99819	15	69.76787
PIC91A	2/11/2008	16:12:30	14.997	15	69.77595
PIC91A	2/11/2008	16:12:31	15.00236	15	69.69345
PIC91A	2/11/2008	16:12:32	15.00594	15	69.67413
PIC91A	2/11/2008	16:12:33	15.00415	15	69.74914
PIC91A	2/11/2008	16:12:34	14.99819	15	69.79146
PIC91A	2/11/2008	16:12:35	14.99938	15	69.74036
PIC91A	2/11/2008	16:12:36	15.00177	15	69.72108
PIC91A	2/11/2008	16:12:37	14.99998	15	69.78001
PIC91A	2/11/2008	16:12:38	14.9964	15	69.79504
PIC91A	2/11/2008	16:12:39	14.9964	15	69.75905
PIC91A	2/11/2008	16:12:40	15.00057	15	69.71861
PIC91A	2/11/2008	16:12:41	15.00117	15	69.73535
PIC91A	2/11/2008	16:12:42	14.99998	15	69.75616
PIC91A	2/11/2008	16:12:43	15.00117	15	69.71348
PIC91A	2/11/2008	16:12:44	14.99521	15	69.83295
PIC91A	2/11/2008	16:12:45	14.99461	15	69.75875
PIC91A	2/11/2008	16:12:46	14.997	15	69.75522
PIC91A	2/11/2008	16:12:47	14.997	15	69.79189
PIC91A	2/11/2008	16:12:48	14.9958	15	69.76965
PIC91A	2/11/2008	16:12:49	14.9964	15	69.76749
PIC91A	2/11/2008	16:12:50	14.997	15	69.76422
PIC91A	2/11/2008	16:12:51	15.00057	15	69.7239
PIC91A	2/11/2008	16:12:52	14.99819	15	69.79755
PIC91A	2/11/2008	16:12:53	14.99819	15	69.76221
PIC91A	2/11/2008	16:12:54	14.99759	15	69.79359
PIC91A	2/11/2008	16:12:55	14.99759	15	69.7822
PIC91A	2/11/2008	16:12:56	14.99282	15	69.8425
PIC91A	2/11/2008	16:12:57	14.99402	15	69.76921
PIC91A	2/11/2008	16:12:58	15.00177	15	69.69172
PIC91A	2/11/2008	16:13:00	15.00475	15	69.7645
PIC91A	2/11/2008	16:13:00	15.00236	15	69.77254
PIC91A	2/11/2008	16:13:01	14.997	15	69.78012
PIC91A	2/11/2008	16:13:02	14.99879	15	69.73842
PIC91A	2/11/2008	16:13:04	14.9964	15	69.79131
PIC91A	2/11/2008	16:13:04	14.99521	15	69.80111
PIC91A	2/11/2008	16:13:05	14.99402	15	69.8061
PIC91A	2/11/2008	16:13:06	14.99282	15	69.80966
PIC91A	2/11/2008	16:13:07	14.99461	15	69.79505
PIC91A	2/11/2008	16:13:28	15.00057	15	69.75051

B.2 Raw Data For Temperature Variables At Set Point 100°C

TAG NO.	DATE	TIME	PV(EU)	SETPOINT(EU)	OUTPUT(%)
TIC91A	2/11/2008	15:39:13	99.74345	100	19.57248
TIC91A	2/11/2008	15:39:14	99.74345	100	19.40281
TIC91A	2/11/2008	15:39:17	99.74345	100	19.16323
TIC91A	2/11/2008	15:39:18	99.74822	100	18.78272
TIC91A	2/11/2008	15:39:19	99.74345	100	19.18966
TIC91A	2/11/2008	15:39:20	99.66716	100	25.30841
TIC91A	2/11/2008	15:39:21	99.67193	100	23.46289
TIC91A	2/11/2008	15:39:22	99.66239	100	23.21967
TIC91A	2/11/2008	15:39:23	99.60994	100	26.90515
TIC91A	2/11/2008	15:39:24	99.64809	100	21.76338
TIC91A	2/11/2008	15:39:25	99.66716	100	20.07133
TIC91A	2/11/2008	15:39:26	99.66716	100	20.07312
TIC91A	2/11/2008	15:39:27	99.66716	100	20.12237
TIC91A	2/11/2008	15:39:28	99.66716	100	20.12827
TIC91A	2/11/2008	15:39:29	99.66239	100	20.54446
TIC91A	2/11/2008	15:39:30	99.66716	100	20.16043
TIC91A	2/11/2008	15:39:31	99.66716	100	20.20175
TIC91A	2/11/2008	15:39:32	99.66716	100	20.24091
TIC91A	2/11/2008	15:39:33	99.66716	100	20.27849
TIC91A	2/11/2008	15:39:34	99.66716	100	20.68536
TIC91A	2/11/2008	15:39:35	99.71484	100	16.58813
TIC91A	2/11/2008	15:39:36	99.67193	100	21.23473
TIC91A	2/11/2008	15:39:37	99.66716	100	21.3548
TIC91A	2/11/2008	15:39:38	99.71484	100	17.10415
TIC91A	2/11/2008	15:39:39	99.73869	100	16.30281
TIC91A	2/11/2008	15:39:40	99.74345	100	16.92366
TIC91A	2/11/2008	15:39:41	99.74345	100	17.68094
TIC91A	2/11/2008	15:39:42	99.74345	100	18.2406
TIC91A	2/11/2008	15:39:43	99.74822	100	18.25488
TIC91A	2/11/2008	15:39:44	99.79591	100	14.56918
TIC91A	2/11/2008	15:39:45	99.74822	100	19.56715
TIC91A	2/11/2008	15:39:46	99.67193	100	24.99602
TIC91A	2/11/2008	15:39:47	99.66716	100	24.16702
TIC91A	2/11/2008	15:39:48	99.59563	100	28.99848
TIC91A	2/11/2008	15:39:49	99.59563	100	27.00407
TIC91A	2/11/2008	15:39:50	99.66239	100	20.53172
TIC91A	2/11/2008	15:39:51	99.61471	100	24.80484
TIC91A	2/11/2008	15:39:52	99.66716	100	20.19697
TIC91A	2/11/2008	15:39:53	99.66716	100	20.42866
TIC91A	2/11/2008	15:39:54	99.59563	100	25.95289
TIC91A	2/11/2008	15:39:55	99.59563	100	24.84713
TIC91A	2/11/2008	15:39:56	99.66239	100	18.60833
TIC91A	2/11/2008	15:39:57	99.66716	100	18.99068
TIC91A	2/11/2008	15:39:58	99.67193	100	19.12914
TIC91A	2/11/2008	15:39:59	99.67193	100	19.61176
TIC91A	2/11/2008	15:40:00	99.59563	100	25.7456
TIC91A	2/11/2008	15:40:01	99.59563	100	24.73487
TIC91A	2/11/2008	15:40:02	99.59563	100	24.00332
TIC91A	2/11/2008	15:40:03	99.59563	100	23.47515
TIC91A	2/11/2008	15:40:04	99.59563	100	23.09991
TIC91A	2/11/2008	15:40:05	99.59563	100	22.85566
TIC91A	2/11/2008	15:40:06	99.59563	100	22.65062
TIC91A	2/11/2008	15:40:07	99.59087	100	22.95326
TIC91A	2/11/2008	15:40:08	99.59563	100	22.44864
TIC91A	2/11/2008	15:40:09	99.59563	100	22.3998
TIC91A	2/11/2008	15:40:10	99.59563	100	22.37843
TIC91A	2/11/2008	15:40:11	99.59563	100	22.31307
TIC91A	2/11/2008	15:40:12	99.59563	100	22.31269
TIC91A	2/11/2008	15:40:13	99.59563	100	22.34702
TIC91A	2/11/2008	15:40:14	99.66716	100	16.93682
TIC91A	2/11/2008	15:40:15	99.71484	100	14.19055
TIC91A	2/11/2008	15:40:16	99.74345	100	14.10837
TIC91A	2/11/2008	15:40:17	99.74345	100	15.99627
TIC91A	2/11/2008	15:40:18	99.74345	100	17.38392
TIC91A	2/11/2008	15:40:19	99.74345	100	18.41319
TIC91A	2/11/2008	15:40:20	99.73869	100	19.51979
TIC91A	2/11/2008	15:40:21	99.78637	100	16.00823
TIC91A	2/11/2008	15:40:22	99.82452	100	14.61181
TIC91A	2/11/2008	15:40:23	99.82452	100	16.16012
TIC91A	2/11/2008	15:40:24	99.82452	100	17.261
TIC91A	2/11/2008	15:40:25	99.81976	100	18.5177
TIC91A	2/11/2008	15:40:26	99.82452	100	18.72439
TIC91A	2/11/2008	15:40:27	99.81976	100	19.95517
TIC91A	2/11/2008	15:40:28	99.89128	100	14.36763
TIC91A	2/11/2008	15:40:29	99.90559	100	14.72217
TIC91A	2/11/2008	15:40:30	99.89605	100	16.6623
TIC91A	2/11/2008	15:40:31	99.89128	100	17.82599
TIC91A	2/11/2008	15:40:32	99.89128	100	18.36816
TIC91A	2/11/2008	15:40:33	99.89128	100	18.76864
TIC91A	2/11/2008	15:40:34	99.89128	100	19.08298
TIC91A	2/11/2008	15:40:35	99.82452	100	24.74108
TIC91A	2/11/2008	15:40:36	99.82452	100	23.63564
TIC91A	2/11/2008	15:40:37	99.89605	100	16.98298
TIC91A	2/11/2008	15:40:38	99.90082	100	17.37231
TIC91A	2/11/2008	15:40:39	99.89605	100	18.29949
TIC91A	2/11/2008	15:40:40	99.89128	100	19.07367
TIC91A	2/11/2008	15:40:41	99.82452	100	24.75489
TIC91A	2/11/2008	15:40:42	99.81976	100	24.0719
TIC91A	2/11/2008	15:40:43	99.93896	100	14.05874
TIC91A	2/11/2008	15:40:44	99.97234	100	13.14899
TIC91A	2/11/2008	15:40:45	99.89128	100	20.98904
TIC91A	2/11/2008	15:40:46	99.93896	100	16.69489
TIC91A	2/11/2008	15:40:47	99.97234	100	15.06613
TIC91A	2/11/2008	15:40:48	99.97234	100	16.11034
TIC91A	2/11/2008	15:40:49	100.0439	100	11.08702
TIC91A	2/11/2008	15:40:50	100.0486	100	12.66488
TIC91A	2/11/2008	15:40:51	100.0486	100	14.19528
TIC91A	2/11/2008	15:40:52	100.0486	100	14.68593
TIC91A	2/11/2008	15:40:53	100.0486	100	16.15355
TIC91A	2/11/2008	15:40:54	100.1154	100	11.63693
TIC91A	2/11/2008	15:40:55	100.1154	100	13.30771
TIC91A	2/11/2008	15:40:56	100.1202	100	14.08889
TIC91A	2/11/2008	15:40:57	100.1869	100	9.566903
TIC91A	2/11/2008	15:40:58	100.2012	100	10.44887
TIC91A	2/11/2008	15:40:59	100.2346	100	10.25073
TIC91A	2/11/2008	15:41:00	100.2012	100	14.22831
TIC91A	2/11/2008	15:41:01	100.2012	100	14.86657
TIC91A	2/11/2008	15:41:02	100.2012	100	15.3482
TIC91A	2/11/2008	15:41:03	100.2012	100	15.67712
TIC91A	2/11/2008	15:41:04	100.2012	100	15.9117
TIC91A	2/11/2008	15:41:05	100.2775	100	10.19386
TIC91A	2/11/2008	15:41:06	100.2728	100	12.09518
TIC91A	2/11/2008	15:41:07	100.2728	100	13.13132
TIC91A	2/11/2008	15:41:08	100.2728	100	13.86134
TIC91A	2/11/2008	15:41:09	100.2728	100	14.56608
TIC91A	2/11/2008	15:41:10	100.2775	100	14.33809
TIC91A	2/11/2008	15:41:11	100.2728	100	15.05613
TIC91A	2/11/2008	15:41:12	100.3443	100	9.721753
TIC91A	2/11/2008	15:41:13	100.3491	100	10.70143
TIC91A	2/11/2008	15:41:14	100.3061	100	15.10727
TIC91A	2/11/2008	15:41:15	100.2728	100	17.47103
TIC91A	2/11/2008	15:41:16	100.2775	100	16.5778
TIC91A	2/11/2008	15:41:17	100.2775	100	15.88778
TIC91A	2/11/2008	15:41:18	100.2775	100	15.81522
TIC91A	2/11/2008	15:41:19	100.3109	100	12.79503
TIC91A	2/11/2008	15:41:20	100.3872	100	7.478578
TIC91A	2/11/2008	15:41:21	100.4254	100	6.548105
TIC91A	2/11/2008	15:41:22	100.3109	100	17.22723
TIC91A	2/11/2008	15:41:23	100.3872	100	10.15891
TIC91A	2/11/2008	15:41:24	100.4015	100	10.53322
TIC91A	2/11/2008	15:41:25	100.3443	100	15.45929
TIC91A	2/11/2008	15:41:26	100.4206	100	8.969032
TIC91A	2/11/2008	15:41:27	100.4254	100	9.815624
TIC91A	2/11/2008	15:41:28	100.4254	100	10.79978
TIC91A	2/11/2008	15:41:29	100.3443	100	17.43571
TIC91A	2/11/2008	15:41:30	100.3443	100	16.64759
TIC91A	2/11/2008	15:41:31	100.3538	100	16.03856
TIC91A	2/11/2008	15:41:32	100.3491	100	15.84511
TIC91A	2/11/2008	15:41:33	100.3491	100	15.32181
TIC91A	2/11/2008	15:41:34	100.3491	100	15.37039
TIC91A	2/11/2008	15:41:35	100.3491	100	14.97363
TIC91A	2/11/2008	15:41:36	100.4158	100	9.227329
TIC91A	2/11/2008	15:41:37	100.4206	100	10.0342
TIC91A	2/11/2008	15:41:38	100.4206	100	10.92873
TIC91A	2/11/2008	15:41:39	100.4254	100	11.19061
TIC91A	2/11/2008	15:41:40	100.5016	100	6.123824
TIC91A	2/11/2008	15:41:41	100.4254	100	13.69248
TIC91A	2/11/2008	15:41:42	100.4206	100	13.86005
TIC91A	2/11/2008	15:41:43	100.4254	100	13.23322
TIC91A	2/11/2008	15:41:44	100.4206	100	13.54002
TIC91A	2/11/2008	15:41:45	100.4254	100	13.0543
TIC91A	2/11/2008	15:41:46	100.4254	100	12.96296
TIC91A	2/11/2008	15:41:47	100.4206	100	13.30668
TIC91A	2/11/2008	15:41:48	100.4254	100	12.83155
TIC91A	2/11/2008	15:41:49	100.4921	100	7.276787
TIC91A	2/11/2008	15:41:50	100.473	100	10.31385
TIC91A	2/11/2008	15:41:51	100.4254	100	14.1276
TIC91A	2/11/2008	15:41:52	100.4206	100	14.08524
TIC91A	2/11/2008	15:41:53	100.4254	100	13.33984
TIC91A	2/11/2008	15:41:54	100.4254	100	13.09853
TIC91A	2/11/2008	15:41:55	100.3538	100	18.85792
TIC91A	2/11/2008	15:41:56	100.3491	100	17.6263
TIC91A	2/11/2008	15:41:57	100.3443	100	16.8053
TIC91A	2/11/2008	15:41:58	100.3491	100	15.5148
TIC91A	2/11/2008	15:41:59	100.3491	100	14.81277
TIC91A	2/11/2008	15:42:00	100.3443	100	14.73329
TIC91A	2/11/2008	15:42:01	100.4206	100	8.77368
TIC91A	2/11/2008	15:42:02	100.4206	100	9.759943
TIC91A	2/11/2008	15:42:03	100.3491	100	15.63047
TIC91A	2/11/2008	15:42:04	100.3443	100	15.25285
TIC91A	2/11/2008	15:42:05	100.3443	100	14.67525
TIC91A	2/11/2008	15:42:06	100.2775	100	19.39779
TIC91A	2/11/2008	15:42:07	100.3443	100	12.62674
TIC91A	2/11/2008	15:42:08	100.4254	100	6.679612
TIC91A	2/11/2008	15:42:09	100.3491	100	14.05285
TIC91A	2/11/2008	15:42:10	100.3491	100	13.63691
TIC91A	2/11/2008	15:42:11	100.3443	100	13.40046
TIC91A	2/11/2008	15:42:12	100.3443	100	13.23324
TIC91A	2/11/2008	15:42:13	100.3252	100	14.73866
TIC91A	2/11/2008	15:42:14	100.2871	100	16.68521
TIC91A	2/11/2008	15:42:15	100.3252	100	13.43276
TIC91A	2/11/2008	15:42:16	100.2918	100	15.3069
TIC91A	2/11/2008	15:42:17	100.3443	100	11.09763

TIC91A	2/11/2008	15:42:18	100.3443	100	11.50842
TIC91A	2/11/2008	15:42:19	100.2775	100	16.98207
TIC91A	2/11/2008	15:42:20	100.2108	100	21.48072
TIC91A	2/11/2008	15:42:21	100.2775	100	14.42832
TIC91A	2/11/2008	15:42:22	100.2775	100	14.04602
TIC91A	2/11/2008	15:42:23	100.2108	100	19.32807
TIC91A	2/11/2008	15:42:24	100.2584	100	14.48858
TIC91A	2/11/2008	15:42:25	100.2012	100	18.14134
TIC91A	2/11/2008	15:42:26	100.2012	100	16.9745
TIC91A	2/11/2008	15:42:27	100.1965	100	16.53674
TIC91A	2/11/2008	15:42:28	100.1297	100	21.40413
TIC91A	2/11/2008	15:42:29	100.1154	100	20.589
TIC91A	2/11/2008	15:42:30	100.1154	100	19.00554
TIC91A	2/11/2008	15:42:31	100.1154	100	17.86383
TIC91A	2/11/2008	15:42:32	100.1965	100	10.58985
TIC91A	2/11/2008	15:42:33	100.2775	100	5.09075
TIC91A	2/11/2008	15:42:34	100.2775	100	7.140505
TIC91A	2/11/2008	15:42:35	100.2012	100	14.28902
TIC91A	2/11/2008	15:42:36	100.2012	100	14.06187
TIC91A	2/11/2008	15:42:37	100.1202	100	20.33744
TIC91A	2/11/2008	15:42:38	100.0534	100	23.55926
TIC91A	2/11/2008	15:42:39	100.1154	100	17.00601
TIC91A	2/11/2008	15:42:40	100.1202	100	15.952
TIC91A	2/11/2008	15:42:41	100.1154	100	15.87285
TIC91A	2/11/2008	15:42:42	100.1202	100	15.07323
TIC91A	2/11/2008	15:42:43	100.1917	100	9.27487
TIC91A	2/11/2008	15:42:44	100.1202	100	16.06264
TIC91A	2/11/2008	15:42:45	100.1154	100	15.95722
TIC91A	2/11/2008	15:42:46	100.1154	100	15.56758
TIC91A	2/11/2008	15:42:47	100.0343	100	21.35703
TIC91A	2/11/2008	15:42:48	100.0486	100	18.00442
TIC91A	2/11/2008	15:42:49	100.0486	100	17.16743
TIC91A	2/11/2008	15:42:50	100.0486	100	16.59146
TIC91A	2/11/2008	15:42:51	100.1154	100	11.28082
TIC91A	2/11/2008	15:42:52	100.1965	100	6.062517
TIC91A	2/11/2008	15:42:53	100.1392	100	12.88978
TIC91A	2/11/2008	15:42:54	100.1202	100	14.47615
TIC91A	2/11/2008	15:42:55	100.1154	100	14.7677
TIC91A	2/11/2008	15:42:56	100.1202	100	14.28146
TIC91A	2/11/2008	15:42:57	100.0439	100	20.26392
TIC91A	2/11/2008	15:42:58	100.0486	100	18.50519
TIC91A	2/11/2008	15:42:59	100.0486	100	17.50573
TIC91A	2/11/2008	15:43:00	100.0486	100	16.79413
TIC91A	2/11/2008	15:43:01	100.0439	100	16.67287
TIC91A	2/11/2008	15:43:02	100.0486	100	15.86565
TIC91A	2/11/2008	15:43:03	100.0486	100	15.54495
TIC91A	2/11/2008	15:43:04	100.0439	100	15.77452
TIC91A	2/11/2008	15:43:05	100.0486	100	15.20426
TIC91A	2/11/2008	15:43:06	100.1154	100	9.842775
TIC91A	2/11/2008	15:43:07	100.1965	100	4.567489
TIC91A	2/11/2008	15:43:08	100.2012	100	6.533361
TIC91A	2/11/2008	15:43:09	100.1202	100	14.73613
TIC91A	2/11/2008	15:43:10	100.0439	100	20.55148
TIC91A	2/11/2008	15:43:11	100.0439	100	19.11126
TIC91A	2/11/2008	15:43:12	100.0534	100	17.49626
TIC91A	2/11/2008	15:43:13	100.0439	100	18.11871
TIC91A	2/11/2008	15:43:14	100.0534	100	16.49232
TIC91A	2/11/2008	15:43:15	100.0439	100	16.73866
TIC91A	2/11/2008	15:43:16	99.97711	100	20.74436
TIC91A	2/11/2008	15:43:17	100.0486	100	14.31654
TIC91A	2/11/2008	15:43:18	100.1202	100	9.437319
TIC91A	2/11/2008	15:43:19	100.0439	100	16.72945
TIC91A	2/11/2008	15:43:20	100.1154	100	10.94592
TIC91A	2/11/2008	15:43:21	100.1202	100	11.41051
TIC91A	2/11/2008	15:43:22	100.0439	100	18.18856
TIC91A	2/11/2008	15:43:23	100.0439	100	17.27886
TIC91A	2/11/2008	15:43:24	100.0486	100	16.24415
TIC91A	2/11/2008	15:43:25	100.0439	100	16.20257
TIC91A	2/11/2008	15:43:26	100.0486	100	15.45494
TIC91A	2/11/2008	15:43:27	100.0439	100	15.60359
TIC91A	2/11/2008	15:43:28	100.0439	100	15.45544
TIC91A	2/11/2008	15:43:29	100.1154	100	9.66128
TIC91A	2/11/2008	15:43:30	100.1154	100	10.85774
TIC91A	2/11/2008	15:43:31	100.1154	100	11.69296
TIC91A	2/11/2008	15:43:32	100.1202	100	11.93721
TIC91A	2/11/2008	15:43:33	100.1202	100	12.42361
TIC91A	2/11/2008	15:43:34	100.1202	100	12.80093
TIC91A	2/11/2008	15:43:35	100.1154	100	13.43839
TIC91A	2/11/2008	15:43:36	100.1154	100	13.6088
TIC91A	2/11/2008	15:43:37	100.1154	100	13.73316
TIC91A	2/11/2008	15:43:38	100.0582	100	18.64429
TIC91A	2/11/2008	15:43:39	100.1154	100	13.24709
TIC91A	2/11/2008	15:43:40	100.0486	100	18.05028
TIC91A	2/11/2008	15:43:41	100.1059	100	12.25973
TIC91A	2/11/2008	15:43:42	100.1154	100	12.10178
TIC91A	2/11/2008	15:43:43	100.1202	100	12.16644
TIC91A	2/11/2008	15:43:44	100.1202	100	12.56519
TIC91A	2/11/2008	15:43:45	100.1154	100	13.23736
TIC91A	2/11/2008	15:43:46	100.0486	100	18.75235
TIC91A	2/11/2008	15:43:47	100.0486	100	17.58489
TIC91A	2/11/2008	15:43:48	100.1011	100	12.32773
TIC91A	2/11/2008	15:43:49	100.1202	100	11.39552
TIC91A	2/11/2008	15:43:50	100.1154	100	12.42871
TIC91A	2/11/2008	15:43:51	100.1202	100	12.42443
TIC91A	2/11/2008	15:43:52	100.0439	100	18.88129
TIC91A	2/11/2008	15:43:53	100.0486	100	17.3281
TIC91A	2/11/2008	15:43:54	100.0486	100	16.54118
TIC91A	2/11/2008	15:43:55	100.1154	100	11.34825
TIC91A	2/11/2008	15:43:56	100.1154	100	12.02549
TIC91A	2/11/2008	15:43:57	100.0439	100	17.86807
TIC91A	2/11/2008	15:43:58	100.0439	100	17.03949
TIC91A	2/11/2008	15:43:59	100.0486	100	16.00734
TIC91A	2/11/2008	15:44:00	100.0486	100	15.53947
TIC91A	2/11/2008	15:44:01	100.0439	100	15.60427
TIC91A	2/11/2008	15:44:02	100.0486	100	14.90844
TIC91A	2/11/2008	15:44:03	99.96758	100	20.86872
TIC91A	2/11/2008	15:44:04	99.97234	100	19.35513
TIC91A	2/11/2008	15:44:05	99.96758	100	18.58963
TIC91A	2/11/2008	15:44:06	100.0248	100	12.87177
TIC91A	2/11/2008	15:44:07	100.1154	100	6.314488
TIC91A	2/11/2008	15:44:08	100.1154	100	8.284903
TIC91A	2/11/2008	15:44:09	100.1154	100	9.765818
TIC91A	2/11/2008	15:44:10	100.0486	100	15.42058
TIC91A	2/11/2008	15:44:11	100.0629	100	14.94726
TIC91A	2/11/2008	15:44:12	99.99619	100	20.09254
TIC91A	2/11/2008	15:44:13	99.96758	100	20.74722
TIC91A	2/11/2008	15:44:14	100.0486	100	13.48176
TIC91A	2/11/2008	15:44:15	100.0486	100	13.71378
TIC91A	2/11/2008	15:44:16	100.0486	100	13.4944
TIC91A	2/11/2008	15:44:17	100.1154	100	8.341493
TIC91A	2/11/2008	15:44:18	100.0486	100	14.40609
TIC91A	2/11/2008	15:44:19	100.0439	100	14.79164
TIC91A	2/11/2008	15:44:20	100.1154	100	9.335438
TIC91A	2/11/2008	15:44:21	100.0486	100	15.16652
TIC91A	2/11/2008	15:44:22	100.0486	100	14.92084
TIC91A	2/11/2008	15:44:23	100.0439	100	15.18045
TIC91A	2/11/2008	15:44:24	100.0439	100	14.99848
TIC91A	2/11/2008	15:44:25	99.96758	100	20.24434
TIC91A	2/11/2008	15:44:26	100.0963	100	9.082483
TIC91A	2/11/2008	15:44:27	100.0486	100	14.41147
TIC91A	2/11/2008	15:44:28	100.0439	100	14.7469
TIC91A	2/11/2008	15:44:29	100.1154	100	9.269247
TIC91A	2/11/2008	15:44:30	100.1154	100	10.45712
TIC91A	2/11/2008	15:44:31	100.0439	100	16.4008
TIC91A	2/11/2008	15:44:32	100.0486	100	15.47556
TIC91A	2/11/2008	15:44:33	100.1154	100	10.50008
TIC91A	2/11/2008	15:44:34	100.0439	100	16.77583
TIC91A	2/11/2008	15:44:35	100.0486	100	15.78348
TIC91A	2/11/2008	15:44:36	100.0439	100	15.98618
TIC91A	2/11/2008	15:44:37	100.0486	100	14.94523
TIC91A	2/11/2008	15:44:38	100.001	100	18.75069
TIC91A	2/11/2008	15:44:39	99.96281	100	20.44355
TIC91A	2/11/2008	15:44:40	99.96758	100	18.7346
TIC91A	2/11/2008	15:44:41	99.97234	100	17.34924
TIC91A	2/11/2008	15:44:42	100.0486	100	11.25123
TIC91A	2/11/2008	15:44:43	100.0439	100	12.40701
TIC91A	2/11/2008	15:44:44	100.0486	100	12.55757
TIC91A	2/11/2008	15:44:45	100.0439	100	13.34593
TIC91A	2/11/2008	15:44:46	99.99619	100	17.7029
TIC91A	2/11/2008	15:44:47	99.96758	100	18.95243
TIC91A	2/11/2008	15:44:48	100.0486	100	12.12692
TIC91A	2/11/2008	15:44:49	99.91989	100	22.51634
TIC91A	2/11/2008	15:44:50	99.93896	100	18.60063
TIC91A	2/11/2008	15:44:51	99.89128	100	21.51759
TIC91A	2/11/2008	15:44:52	99.88651	100	20.39335
TIC91A	2/11/2008	15:44:53	99.89128	100	18.82967
TIC91A	2/11/2008	15:44:54	99.96758	100	12.29188
TIC91A	2/11/2008	15:44:55	100.0153	100	8.983276
TIC91A	2/11/2008	15:44:56	100.0439	100	8.536333
TIC91A	2/11/2008	15:44:57	99.97234	100	15.14384
TIC91A	2/11/2008	15:44:58	99.96758	100	15.4436
TIC91A	2/11/2008	15:44:59	99.96758	100	15.41067
TIC91A	2/11/2008	15:45:00	99.97234	100	14.95804
TIC91A	2/11/2008	15:45:01	99.96758	100	15.30978
TIC91A	2/11/2008	15:45:02	99.99619	100	13.12024
TIC91A	2/11/2008	15:45:03	100.02	100	11.14787
TIC91A	2/11/2008	15:45:04	100.0486	100	10.00024
TIC91A	2/11/2008	15:45:05	100.0439	100	11.52083
TIC91A	2/11/2008	15:45:06	100.0486	100	11.91759
TIC91A	2/11/2008	15:45:07	99.96758	100	18.32013
TIC91A	2/11/2008	15:45:08	99.89128	100	23.28885
TIC91A	2/11/2008	15:45:09	99.96281	100	15.50974
TIC91A	2/11/2008	15:45:10	99.96758	100	15.11047
TIC91A	2/11/2008	15:45:11	99.91989	100	19.16609
TIC91A	2/11/2008	15:45:12	99.96281	100	14.3727
TIC91A	2/11/2008	15:45:13	100.0439	100	8.847103
TIC91A	2/11/2008	15:45:14	100.0486	100	9.962472
TIC91A	2/11/2008	15:45:15	100.0391	100	11.50122
TIC91A	2/11/2008	15:45:16	100.0868	100	8.310804
TIC91A	2/11/2008	15:45:17	100.0439	100	13.31276
TIC91A	2/11/2008	15:45:18	100.0105	100	15.42397
TIC91A	2/11/2008	15:45:19	100.0486	100	12.52733
TIC91A	2/11/2008	15:45:20	100.0439	100	13.39468
TIC91A	2/11/2008	15:45:21	99.96758	100	19.13016
TIC91A	2/11/2008	15:45:22	99.96758	100	18.05423
TIC91A	2/11/2008	15:45:23	99.97234	100	16.87953
TIC91A	2/11/2008	15:45:24	99.96281	100	17.14397
TIC91A	2/11/2008	15:45:25	99.96758	100	16.32539
TIC91A	2/11/2008	15:45:26	99.96758	100	15.98303
TIC91A	2/11/2008	15:45:27	99.96758	100	15.80997
TIC91A	2/11/2008	15:45:28	100.0057	100	12.402
TIC91A	2/11/2008	15:45:29	100.0439	100	10.40388
TIC91A	2/11/2008	15:45:30	100.0439	100	11.5094
TIC91A	2/11/2008	15:45:31	100.0868	100	8.649298
TIC91A	2/11/2008	15:45:32	100.1154	100	8.059834
TIC91A	2/11/2008	15:45:33	100.0725	100	13.17619
TIC91A	2/11/2008	15:45:34	100.0439	100	15.43369
TIC91A	2/11/2008	15:45:35	100.0439	100	15.14645
TIC91A	2/11/2008	15:45:36	100.0486	100	14.57068
TIC91A	2/11/2008	15:45:37	100.0057	100	17.4494
TIC91A	2/11/2008	15:45:38	100.0486	100	13.70745
TIC91A	2/11/2008	15:45:39	100.0057	100	17.45245

TIC91A	2/11/2008	15:45:40	99.9342	100	22.24184
TIC91A	2/11/2008	15:45:41	99.96281	100	17.5327
TIC91A	2/11/2008	15:45:42	99.96758	100	16.54381
TIC91A	2/11/2008	15:45:43	99.89605	100	21.99571
TIC91A	2/11/2008	15:45:44	99.93896	100	16.61957
TIC91A	2/11/2008	15:45:45	99.96758	100	14.27096
TIC91A	2/11/2008	15:45:46	99.96758	100	14.54659
TIC91A	2/11/2008	15:45:47	99.90082	100	20.13753
TIC91A	2/11/2008	15:45:48	99.89128	100	19.63294
TIC91A	2/11/2008	15:45:49	99.89128	100	18.58083
TIC91A	2/11/2008	15:45:50	99.96758	100	11.98205
TIC91A	2/11/2008	15:45:51	100.0868	100	3.265779
TIC91A	2/11/2008	15:45:52	100.1154	100	4.15639
TIC91A	2/11/2008	15:45:53	100.1202	100	6.265236
TIC91A	2/11/2008	15:45:54	100.1154	100	8.528162
TIC91A	2/11/2008	15:45:55	100.082	100	12.73033
TIC91A	2/11/2008	15:45:56	100.0439	100	15.75406
TIC91A	2/11/2008	15:45:57	100.1154	100	10.2384
TIC91A	2/11/2008	15:45:58	100.1154	100	11.13776
TIC91A	2/11/2008	15:45:59	100.1154	100	11.79418
TIC91A	2/11/2008	15:46:00	100.0439	100	17.43221
TIC91A	2/11/2008	15:46:01	100.0439	100	16.62178
TIC91A	2/11/2008	15:46:02	99.97711	100	21.46761
TIC91A	2/11/2008	15:46:03	99.96758	100	20.4371
TIC91A	2/11/2008	15:46:04	100.0486	100	13.10228
TIC91A	2/11/2008	15:46:05	99.97234	100	19.27704
TIC91A	2/11/2008	15:46:06	99.97234	100	18.05283
TIC91A	2/11/2008	15:46:07	99.96758	100	17.60048
TIC91A	2/11/2008	15:46:08	99.96281	100	16.93523
TIC91A	2/11/2008	15:46:09	99.96758	100	16.15495
TIC91A	2/11/2008	15:46:10	99.97234	100	15.82441
TIC91A	2/11/2008	15:46:11	99.96758	100	15.96857
TIC91A	2/11/2008	15:46:12	99.96758	100	15.68278
TIC91A	2/11/2008	15:46:13	100.0439	100	10.00853
TIC91A	2/11/2008	15:46:14	100.1154	100	5.291484
TIC91A	2/11/2008	15:46:15	100.0486	100	12.9676
TIC91A	2/11/2008	15:46:16	100.0486	100	13.27552
TIC91A	2/11/2008	15:46:17	100.0439	100	13.8829
TIC91A	2/11/2008	15:46:18	99.97711	100	19.49941
TIC91A	2/11/2008	15:46:19	99.99619	100	16.51801
TIC91A	2/11/2008	15:46:20	100.0486	100	12.32693
TIC91A	2/11/2008	15:46:21	100.0439	100	13.20511
TIC91A	2/11/2008	15:46:22	100.001	100	16.95367
TIC91A	2/11/2008	15:46:23	100.0439	100	13.38177
TIC91A	2/11/2008	15:46:24	99.96758	100	19.1888
TIC91A	2/11/2008	15:46:25	100.0343	100	12.58636
TIC91A	2/11/2008	15:46:26	100.0439	100	12.37485
TIC91A	2/11/2008	15:46:27	100.0343	100	13.38354
TIC91A	2/11/2008	15:46:28	100.1154	100	7.127324
TIC91A	2/11/2008	15:46:29	100.1154	100	8.817556
TIC91A	2/11/2008	15:46:30	100.1202	100	9.648468
TIC91A	2/11/2008	15:46:31	100.0486	100	16.47845
TIC91A	2/11/2008	15:46:32	100.0486	100	15.81021
TIC91A	2/11/2008	15:46:33	100.0486	100	15.30116
TIC91A	2/11/2008	15:46:34	100.0439	100	15.36883
TIC91A	2/11/2008	15:46:35	100.0486	100	14.66225
TIC91A	2/11/2008	15:46:36	100.0439	100	14.88008
TIC91A	2/11/2008	15:46:37	100.0439	100	14.70324
TIC91A	2/11/2008	15:46:38	100.0439	100	14.59129
TIC91A	2/11/2008	15:46:39	100.0486	100	14.10735
TIC91A	2/11/2008	15:46:40	99.96758	100	20.39324
TIC91A	2/11/2008	15:46:41	100.0486	100	12.9908
TIC91A	2/11/2008	15:46:42	100.0486	100	13.24198
TIC91A	2/11/2008	15:46:43	99.96758	100	19.41338
TIC91A	2/11/2008	15:46:44	100.0439	100	12.2688
TIC91A	2/11/2008	15:46:45	100.0629	100	11.20343
TIC91A	2/11/2008	15:46:46	100.0486	100	13.10315
TIC91A	2/11/2008	15:46:47	99.96758	100	19.30512
TIC91A	2/11/2008	15:46:48	99.95327	100	19.3909
TIC91A	2/11/2008	15:46:49	99.90559	100	21.28796
TIC91A	2/11/2008	15:46:50	99.96758	100	15.47439
TIC91A	2/11/2008	15:46:51	99.96758	100	15.32831
TIC91A	2/11/2008	15:46:52	99.9485	100	16.86294
TIC91A	2/11/2008	15:46:53	99.89128	100	20.38242
TIC91A	2/11/2008	15:46:54	99.89128	100	19.49068
TIC91A	2/11/2008	15:46:55	99.89128	100	18.49126
TIC91A	2/11/2008	15:46:56	99.91512	100	15.71237
TIC91A	2/11/2008	15:46:57	99.96758	100	12.0074
TIC91A	2/11/2008	15:46:58	99.96758	100	12.84115
TIC91A	2/11/2008	15:46:59	99.96758	100	13.40694
TIC91A	2/11/2008	15:47:00	100.0486	100	7.845219
TIC91A	2/11/2008	15:47:01	100.02	100	11.91828
TIC91A	2/11/2008	15:47:02	99.96758	100	16.30276
TIC91A	2/11/2008	15:47:05	100.0534	100	10.35323
TIC91A	2/11/2008	15:47:06	100.0248	100	13.35875
TIC91A	2/11/2008	15:47:07	99.97234	100	17.24647
TIC91A	2/11/2008	15:47:08	99.96758	100	16.97523
TIC91A	2/11/2008	15:47:09	99.90082	100	21.99127
TIC91A	2/11/2008	15:47:10	99.90559	100	19.74502
TIC91A	2/11/2008	15:47:11	99.96281	100	14.70588
TIC91A	2/11/2008	15:47:12	99.96758	100	14.47114
TIC91A	2/11/2008	15:47:13	100.0439	100	9.014431
TIC91A	2/11/2008	15:47:14	100.1154	100	5.166754
TIC91A	2/11/2008	15:47:15	100.1154	100	7.395981
TIC91A	2/11/2008	15:47:16	100.1154	100	9.009843
TIC91A	2/11/2008	15:47:17	100.1154	100	10.19025
TIC91A	2/11/2008	15:47:18	100.0439	100	16.69304
TIC91A	2/11/2008	15:47:19	100.0582	100	14.80027
TIC91A	2/11/2008	15:47:20	100.1154	100	10.62552
TIC91A	2/11/2008	15:47:21	100.1154	100	11.38447
TIC91A	2/11/2008	15:47:22	100.1154	100	11.91901
TIC91A	2/11/2008	15:47:23	100.1154	100	12.32806
TIC91A	2/11/2008	15:47:24	100.1154	100	12.6048
TIC91A	2/11/2008	15:47:25	100.1965	100	6.393764
TIC91A	2/11/2008	15:47:26	100.2584	100	3.291184
TIC91A	2/11/2008	15:47:27	100.2012	100	9.549767
TIC91A	2/11/2008	15:47:28	100.1965	100	10.69819
TIC91A	2/11/2008	15:47:29	100.268	100	5.973707
TIC91A	2/11/2008	15:47:30	100.1965	100	12.51296
TIC91A	2/11/2008	15:47:31	100.2012	100	12.09626
TIC91A	2/11/2008	15:47:32	100.2728	100	6.516055
TIC91A	2/11/2008	15:47:33	100.2775	100	7.496544
TIC91A	2/11/2008	15:47:34	100.1965	100	14.92962
TIC91A	2/11/2008	15:47:35	100.1965	100	14.24873
TIC91A	2/11/2008	15:47:36	100.1965	100	13.72526
TIC91A	2/11/2008	15:47:37	100.2012	100	12.96484
TIC91A	2/11/2008	15:47:38	100.2775	100	7.411498
TIC91A	2/11/2008	15:47:39	100.1965	100	14.50775
TIC91A	2/11/2008	15:47:40	100.268	100	8.304531
TIC91A	2/11/2008	15:47:41	100.1965	100	14.1577
TIC91A	2/11/2008	15:47:42	100.1917	100	14.08305
TIC91A	2/11/2008	15:47:43	100.1154	100	18.90231
TIC91A	2/11/2008	15:47:44	100.1965	100	11.27744
TIC91A	2/11/2008	15:47:45	100.2537	100	6.736776
TIC91A	2/11/2008	15:47:46	100.1965	100	12.03685
TIC91A	2/11/2008	15:47:47	100.1965	100	12.09822
TIC91A	2/11/2008	15:47:48	100.1965	100	12.07988
TIC91A	2/11/2008	15:47:49	100.1965	100	12.12289
TIC91A	2/11/2008	15:47:50	100.1965	100	12.11008
TIC91A	2/11/2008	15:47:51	100.1154	100	18.18778
TIC91A	2/11/2008	15:47:52	100.1154	100	16.4183
TIC91A	2/11/2008	15:47:53	100.1154	100	15.51114
TIC91A	2/11/2008	15:47:54	100.1154	100	14.80005
TIC91A	2/11/2008	15:47:55	100.1154	100	14.27665
TIC91A	2/11/2008	15:47:56	100.1154	100	13.89095
TIC91A	2/11/2008	15:47:57	100.0582	100	18.38285
TIC91A	2/11/2008	15:47:58	100.0439	100	18.07639
TIC91A	2/11/2008	15:47:59	100.1154	100	11.57673
TIC91A	2/11/2008	15:48:00	100.1202	100	11.47584
TIC91A	2/11/2008	15:48:01	100.1917	100	6.772276
TIC91A	2/11/2008	15:48:02	100.1345	100	12.96118
TIC91A	2/11/2008	15:48:03	100.1154	100	14.15786
TIC91A	2/11/2008	15:48:04	100.0439	100	19.4614
TIC91A	2/11/2008	15:48:05	100.1154	100	12.86292
TIC91A	2/11/2008	15:48:06	100.1154	100	12.8212
TIC91A	2/11/2008	15:48:07	99.99142	100	22.45583
TIC91A	2/11/2008	15:48:08	99.96758	100	21.84888
TIC91A	2/11/2008	15:48:09	99.98188	100	19.33185
TIC91A	2/11/2008	15:48:10	99.96281	100	19.31709
TIC91A	2/11/2008	15:48:11	99.95327	100	17.74522
TIC91A	2/11/2008	15:48:12	99.96281	100	16.23681
TIC91A	2/11/2008	15:48:13	99.96758	100	15.39215
TIC91A	2/11/2008	15:48:14	99.96281	100	15.49445
TIC91A	2/11/2008	15:48:15	99.9485	100	15.37025
TIC91A	2/11/2008	15:48:16	99.96281	100	14.16848
TIC91A	2/11/2008	15:48:17	99.90559	100	19.08502
TIC91A	2/11/2008	15:48:18	99.89128	100	18.91132
TIC91A	2/11/2008	15:48:19	99.96758	100	12.4856
TIC91A	2/11/2008	15:48:20	99.96758	100	12.92537
TIC91A	2/11/2008	15:48:21	99.96758	100	13.27253
TIC91A	2/11/2008	15:48:22	99.96281	100	13.94888
TIC91A	2/11/2008	15:48:23	99.96758	100	13.68566
TIC91A	2/11/2008	15:48:24	99.96758	100	13.86937
TIC91A	2/11/2008	15:48:25	99.96758	100	13.96456
TIC91A	2/11/2008	15:48:26	100.0439	100	8.324586
TIC91A	2/11/2008	15:48:27	99.98665	100	14.51121
TIC91A	2/11/2008	15:48:28	99.91035	100	20.53191
TIC91A	2/11/2008	15:48:29	99.89128	100	20.29912
TIC91A	2/11/2008	15:48:30	99.96281	100	13.93797
TIC91A	2/11/2008	15:48:31	99.89128	100	19.77261
TIC91A	2/11/2008	15:48:32	99.89128	100	18.51068
TIC91A	2/11/2008	15:48:33	99.89128	100	17.54914
TIC91A	2/11/2008	15:48:34	99.96758	100	11.2132
TIC91A	2/11/2008	15:48:35	99.89605	100	17.73494
TIC91A	2/11/2008	15:48:36	99.88651	100	17.70596
TIC91A	2/11/2008	15:48:37	99.89128	100	16.67416
TIC91A	2/11/2008	15:48:38	99.96758	100	10.54028
TIC91A	2/11/2008	15:48:39	99.89128	100	17.29842
TIC91A	2/11/2008	15:48:40	99.96281	100	11.75896
TIC91A	2/11/2008	15:48:41	99.96758	100	12.12906
TIC91A	2/11/2008	15:48:42	100.0439	100	7.376515
TIC91A	2/11/2008	15:48:43	99.99142	100	13.49427
TIC91A	2/11/2008	15:48:44	99.96758	100	15.33946
TIC91A	2/11/2008	15:48:45	99.89128	100	20.45139
TIC91A	2/11/2008	15:48:46	99.96758	100	13.65016
TIC91A	2/11/2008	15:48:47	100.0248	100	9.010418
TIC91A	2/11/2008	15:48:48	100.0439	100	8.964597
TIC91A	2/11/2008	15:48:49	100.0486	100	9.822206
TIC91A	2/11/2008	15:48:50	100.0439	100	11.18599
TIC91A	2/11/2008	15:48:51	99.96758	100	17.25234
TIC91A	2/11/2008	15:48:52	99.9485	100	16.99065
TIC91A	2/11/2008	15:48:53	99.96758	100	15.02663
TIC91A	2/11/2008	15:48:54	99.96758	100	14.84606
TIC91A	2/11/2008	15:48:55	99.96758	100	14.75234
TIC91A	2/11/2008	15:48:56	99.96281	100	15.01053
TIC91A	2/11/2008	15:48:57	99.96758	100	14.5392
TIC91A	2/11/2008	15:48:58	99.89128	100	20.63613
TIC91A	2/11/2008	15:48:59	99.89128	100	19.19432
TIC91A	2/11/2008	15:49:00	99.89128	100	18.15401
TIC91A	2/11/2008	15:49:01	99.88651	100	17.76392
TIC91A	2/11/2008	15:49:02	99.82452	100	21.37581
TIC91A	2/11/2008	15:49:03	99.74345	100	25.64118

TIC91A	2/11/2008	15:49:04	99.74822	100	22.78749
TIC91A	2/11/2008	15:49:05	99.73869	100	21.86715
TIC91A	2/11/2008	15:49:06	99.82452	100	13.61046
TIC91A	2/11/2008	15:49:07	99.74345	100	20.40314
TIC91A	2/11/2008	15:49:08	99.81976	100	13.24959
TIC91A	2/11/2008	15:49:09	99.74822	100	19.39185
TIC91A	2/11/2008	15:49:10	99.73869	100	19.42829
TIC91A	2/11/2008	15:49:11	99.81499	100	12.64515
TIC91A	2/11/2008	15:49:12	99.75299	100	18.62598
TIC91A	2/11/2008	15:49:13	99.66716	100	24.96048
TIC91A	2/11/2008	15:49:14	99.66716	100	23.00771
TIC91A	2/11/2008	15:49:15	99.66716	100	21.567
TIC91A	2/11/2008	15:49:16	99.66239	100	20.95911
TIC91A	2/11/2008	15:49:17	99.66716	100	19.80754
TIC91A	2/11/2008	15:49:18	99.66239	100	19.66774
TIC91A	2/11/2008	15:49:19	99.74345	100	13.06821
TIC91A	2/11/2008	15:49:20	99.73869	100	14.4949
TIC91A	2/11/2008	15:49:21	99.73869	100	15.27433
TIC91A	2/11/2008	15:49:22	99.74345	100	15.4284
TIC91A	2/11/2008	15:49:23	99.73869	100	16.32467
TIC91A	2/11/2008	15:49:24	99.66716	100	22.00113
TIC91A	2/11/2008	15:49:25	99.71008	100	17.31535
TIC91A	2/11/2008	15:49:26	99.73869	100	15.47906
TIC91A	2/11/2008	15:49:27	99.74345	100	15.59345
TIC91A	2/11/2008	15:49:28	99.74345	100	16.05631
TIC91A	2/11/2008	15:49:29	99.73869	100	16.75125
TIC91A	2/11/2008	15:49:30	99.73869	100	17.01057
TIC91A	2/11/2008	15:49:31	99.74345	100	16.82354
TIC91A	2/11/2008	15:49:32	99.74345	100	16.94683
TIC91A	2/11/2008	15:49:33	99.74345	100	17.04649
TIC91A	2/11/2008	15:49:34	99.73869	100	17.55105
TIC91A	2/11/2008	15:49:35	99.74345	100	17.19061
TIC91A	2/11/2008	15:49:36	99.66239	100	23.43785
TIC91A	2/11/2008	15:49:38	99.73869	100	15.80498
TIC91A	2/11/2008	15:49:38	99.73869	100	16.13248
TIC91A	2/11/2008	15:49:39	99.66716	100	21.9698
TIC91A	2/11/2008	15:49:40	99.73869	100	16.00308
TIC91A	2/11/2008	15:49:41	99.73869	100	16.5449
TIC91A	2/11/2008	15:49:42	99.73869	100	16.88978
TIC91A	2/11/2008	15:49:43	99.73869	100	17.20897
TIC91A	2/11/2008	15:49:44	99.82452	100	11.20583
TIC91A	2/11/2008	15:49:45	99.74345	100	18.97264
TIC91A	2/11/2008	15:49:46	99.82452	100	12.45153
TIC91A	2/11/2008	15:49:47	99.73869	100	20.28054
TIC91A	2/11/2008	15:49:48	99.74345	100	19.31945
TIC91A	2/11/2008	15:49:49	99.81976	100	13.11195
TIC91A	2/11/2008	15:49:50	99.74345	100	20.06375
TIC91A	2/11/2008	15:49:51	99.81499	100	13.66946
TIC91A	2/11/2008	15:49:52	99.81976	100	14.34219
TIC91A	2/11/2008	15:49:53	99.75299	100	20.57479
TIC91A	2/11/2008	15:49:54	99.74345	100	20.49082
TIC91A	2/11/2008	15:49:55	99.74345	100	19.82817
TIC91A	2/11/2008	15:49:56	99.82452	100	13.08212
TIC91A	2/11/2008	15:49:57	99.81976	100	14.56797
TIC91A	2/11/2008	15:49:58	99.82452	100	14.90971
TIC91A	2/11/2008	15:49:59	99.81976	100	15.92006
TIC91A	2/11/2008	15:50:00	99.89605	100	10.44566
TIC91A	2/11/2008	15:50:01	99.82452	100	17.16083
TIC91A	2/11/2008	15:50:02	99.81976	100	17.58617
TIC91A	2/11/2008	15:50:03	99.81976	100	17.5661
TIC91A	2/11/2008	15:50:04	99.82452	100	17.17331
TIC91A	2/11/2008	15:50:05	99.81976	100	17.58578
TIC91A	2/11/2008	15:50:06	99.86267	100	13.9533
TIC91A	2/11/2008	15:50:07	99.89605	100	12.39669
TIC91A	2/11/2008	15:50:08	99.89128	100	13.9166
TIC91A	2/11/2008	15:50:09	99.89128	100	14.62513
TIC91A	2/11/2008	15:50:10	99.88651	100	15.60893
TIC91A	2/11/2008	15:50:11	99.88651	100	15.98488
TIC91A	2/11/2008	15:50:12	99.82452	100	21.35484
TIC91A	2/11/2008	15:50:13	99.82452	100	20.27643
TIC91A	2/11/2008	15:50:14	99.81976	100	19.89463
TIC91A	2/11/2008	15:50:15	99.82452	100	18.95918
TIC91A	2/11/2008	15:50:16	99.82452	100	18.55526
TIC91A	2/11/2008	15:50:17	99.82452	100	18.25891
TIC91A	2/11/2008	15:50:18	99.82452	100	18.05119
TIC91A	2/11/2008	15:50:19	99.81976	100	18.3042
TIC91A	2/11/2008	15:50:20	99.82452	100	17.81648
TIC91A	2/11/2008	15:50:21	99.81976	100	18.14272
TIC91A	2/11/2008	15:50:22	99.82452	100	17.70748
TIC91A	2/11/2008	15:50:23	99.75299	100	23.49389
TIC91A	2/11/2008	15:50:24	99.82452	100	16.55619
TIC91A	2/11/2008	15:50:25	99.81976	100	17.21883
TIC91A	2/11/2008	15:50:26	99.81976	100	17.41924
TIC91A	2/11/2008	15:50:27	99.82452	100	17.14533
TIC91A	2/11/2008	15:50:28	99.74345	100	23.17378
TIC91A	2/11/2008	15:50:29	99.81976	100	16.04567
TIC91A	2/11/2008	15:50:30	99.82452	100	16.19166
TIC91A	2/11/2008	15:50:31	99.82452	100	16.57951
TIC91A	2/11/2008	15:50:32	99.81499	100	17.69872
TIC91A	2/11/2008	15:50:33	99.81976	100	17.51072
TIC91A	2/11/2008	15:50:34	99.81976	100	17.65009
TIC91A	2/11/2008	15:50:35	99.74345	100	23.66483
TIC91A	2/11/2008	15:50:36	99.81976	100	16.46131
TIC91A	2/11/2008	15:50:37	99.74345	100	22.88285
TIC91A	2/11/2008	15:50:38	99.81976	100	15.88281
TIC91A	2/11/2008	15:50:39	99.81976	100	16.50435
TIC91A	2/11/2008	15:50:40	99.89128	100	11.78499
TIC91A	2/11/2008	15:50:41	99.89128	100	13.33109
TIC91A	2/11/2008	15:50:42	99.89128	100	14.40851
TIC91A	2/11/2008	15:50:43	99.8579	100	17.94027
TIC91A	2/11/2008	15:50:44	99.81976	100	20.57931
TIC91A	2/11/2008	15:50:45	99.7816	100	22.2312
TIC91A	2/11/2008	15:50:46	99.81976	100	18.62107
TIC91A	2/11/2008	15:50:47	99.82452	100	18.11934
TIC91A	2/11/2008	15:50:48	99.81976	100	18.497
TIC91A	2/11/2008	15:50:49	99.82452	100	18.05927
TIC91A	2/11/2008	15:50:50	99.8579	100	15.45304
TIC91A	2/11/2008	15:50:51	99.81976	100	18.79323
TIC91A	2/11/2008	15:50:52	99.82452	100	18.29255
TIC91A	2/11/2008	15:50:53	99.89605	100	12.6985
TIC91A	2/11/2008	15:50:54	99.89128	100	14.32986
TIC91A	2/11/2008	15:50:55	99.88651	100	15.58125
TIC91A	2/11/2008	15:50:56	99.89128	100	15.80371
TIC91A	2/11/2008	15:50:57	99.88651	100	16.66789
TIC91A	2/11/2008	15:50:58	99.96758	100	10.64362
TIC91A	2/11/2008	15:50:59	99.96758	100	12.29397
TIC91A	2/11/2008	15:51:00	99.89128	100	19.02997
TIC91A	2/11/2008	15:51:01	99.89128	100	18.59737
TIC91A	2/11/2008	15:51:02	100.0391	100	6.891293
TIC91A	2/11/2008	15:51:03	99.96758	100	14.98975
TIC91A	2/11/2008	15:51:04	99.97234	100	15.06355
TIC91A	2/11/2008	15:51:05	100.0391	100	9.967484
TIC91A	2/11/2008	15:51:06	100.0153	100	13.7358
TIC91A	2/11/2008	15:51:07	99.96281	100	18.18699
TIC91A	2/11/2008	15:51:08	99.96758	100	17.51934
TIC91A	2/11/2008	15:51:09	99.99619	100	14.95078
TIC91A	2/11/2008	15:51:10	100.0439	100	12.07844
TIC91A	2/11/2008	15:51:11	100.0439	100	13.16508
TIC91A	2/11/2008	15:51:12	100.0439	100	14.01755
TIC91A	2/11/2008	15:51:13	100.0439	100	14.5846
TIC91A	2/11/2008	15:51:14	100.0486	100	14.65056
TIC91A	2/11/2008	15:51:15	100.02	100	17.36642
TIC91A	2/11/2008	15:51:16	99.96758	100	20.75319
TIC91A	2/11/2008	15:51:17	99.96758	100	19.68901
TIC91A	2/11/2008	15:51:18	99.96758	100	18.95237
TIC91A	2/11/2008	15:51:19	99.97234	100	18.00502
TIC91A	2/11/2008	15:51:20	99.96758	100	17.99164
TIC91A	2/11/2008	15:51:24	99.89605	100	21.54585
TIC91A	2/11/2008	15:51:24	99.95804	100	15.71683
TIC91A	2/11/2008	15:51:25	99.96758	100	15.38167
TIC91A	2/11/2008	15:51:26	99.89605	100	21.7126
TIC91A	2/11/2008	15:51:27	99.89128	100	20.95146
TIC91A	2/11/2008	15:51:28	99.81976	100	25.6253
TIC91A	2/11/2008	15:51:29	99.88651	100	18.26361
TIC91A	2/11/2008	15:51:30	99.89128	100	17.74698
TIC91A	2/11/2008	15:51:31	99.89605	100	17.32002
TIC91A	2/11/2008	15:51:32	99.81976	100	23.29156
TIC91A	2/11/2008	15:51:33	99.8436	100	20.02765
TIC91A	2/11/2008	15:51:34	99.89605	100	15.88695
TIC91A	2/11/2008	15:51:35	99.80545	100	23.21778
TIC91A	2/11/2008	15:51:36	99.76253	100	24.73589
TIC91A	2/11/2008	15:51:37	99.82452	100	18.88433
TIC91A	2/11/2008	15:51:38	99.82452	100	18.71586
TIC91A	2/11/2008	15:51:39	99.82452	100	18.6552
TIC91A	2/11/2008	15:51:40	99.89605	100	12.99279
TIC91A	2/11/2008	15:51:41	99.89605	100	14.29076
TIC91A	2/11/2008	15:51:42	99.89128	100	15.55116
TIC91A	2/11/2008	15:51:43	99.89128	100	16.14286
TIC91A	2/11/2008	15:51:44	99.89128	100	16.56208
TIC91A	2/11/2008	15:51:45	99.89128	100	16.88773
TIC91A	2/11/2008	15:51:46	99.89128	100	17.14962
TIC91A	2/11/2008	15:51:47	99.88651	100	17.71217
TIC91A	2/11/2008	15:51:48	99.89128	100	17.42826
TIC91A	2/11/2008	15:51:49	99.96758	100	11.9413
TIC91A	2/11/2008	15:51:50	99.9485	100	14.98424
TIC91A	2/11/2008	15:51:51	99.82452	100	25.15576
TIC91A	2/11/2008	15:51:52	99.88651	100	18.26875
TIC91A	2/11/2008	15:51:53	99.89605	100	17.56236
TIC91A	2/11/2008	15:51:54	99.89128	100	18.01914
TIC91A	2/11/2008	15:51:55	99.89128	100	18.02512
TIC91A	2/11/2008	15:51:56	99.89128	100	17.99336
TIC91A	2/11/2008	15:51:57	99.81976	100	23.30567
TIC91A	2/11/2008	15:51:58	99.75776	100	26.53215
TIC91A	2/11/2008	15:51:59	99.82452	100	19.96077
TIC91A	2/11/2008	15:52:00	99.88651	100	14.47367
TIC91A	2/11/2008	15:52:01	99.89605	100	14.78779
TIC91A	2/11/2008	15:52:02	99.89128	100	16.03444
TIC91A	2/11/2008	15:52:03	99.81976	100	21.89432
TIC91A	2/11/2008	15:52:04	99.82452	100	20.75347
TIC91A	2/11/2008	15:52:05	99.89605	100	14.98351
TIC91A	2/11/2008	15:52:06	99.89128	100	16.23696
TIC91A	2/11/2008	15:52:07	99.89128	100	16.76425
TIC91A	2/11/2008	15:52:08	99.89128	100	17.15381
TIC91A	2/11/2008	15:52:09	99.89128	100	17.42225
TIC91A	2/11/2008	15:52:10	99.88651	100	18.02751
TIC91A	2/11/2008	15:52:11	99.89128	100	17.73696
TIC91A	2/11/2008	15:52:12	99.88651	100	18.26418
TIC91A	2/11/2008	15:52:13	99.89128	100	17.93418
TIC91A	2/11/2008	15:52:14	99.89128	100	17.9914
TIC91A	2/11/2008	15:52:15	99.89128	100	18.05279
TIC91A	2/11/2008	15:52:16	99.88651	100	18.13957
TIC91A	2/11/2008	15:52:17	99.88651	100	18.33979
TIC91A	2/11/2008	15:52:18	99.82452	100	23.24551
TIC91A	2/11/2008	15:52:19	99.81976	100	22.47313
TIC91A	2/11/2008	15:52:20	99.89128	100	15.95343
TIC91A	2/11/2008	15:52:21	99.89128	100	16.64291
TIC91A	2/11/2008	15:52:22	99.88651	100	17.1626
TIC91A	2/11/2008	15:52:23	99.89128	100	17.26077
TIC91A	2/11/2008	15:52:24	99.89128	100	17.55125
TIC91A	2/11/2008	15:52:25	99.82452	100	22.96054
TIC91A	2/11/2008	15:52:26	99.82452	100	21.88055
TIC91A	2/11/2008	15:52:27	99.90082	100	15.76862

TIC91A	2/11/2008	15:52:28	99.89128	100	17.13624
TIC91A	2/11/2008	15:52:29	99.89605	100	17.08945
TIC91A	2/11/2008	15:52:30	99.89128	100	17.69933
TIC91A	2/11/2008	15:52:31	99.82929	100	23.08294
TIC91A	2/11/2008	15:52:32	99.89128	100	17.43979
TIC91A	2/11/2008	15:52:33	99.89128	100	17.71122
TIC91A	2/11/2008	15:52:34	99.83883	100	22.27141
TIC91A	2/11/2008	15:52:35	99.89128	100	17.78658
TIC91A	2/11/2008	15:52:36	99.88651	100	18.38135
TIC91A	2/11/2008	15:52:37	99.82929	100	23.24752
TIC91A	2/11/2008	15:52:38	99.82452	100	22.44488
TIC91A	2/11/2008	15:52:39	99.89128	100	16.62222
TIC91A	2/11/2008	15:52:40	99.90559	100	16.6647
TIC91A	2/11/2008	15:52:41	99.88651	100	18.47448
TIC91A	2/11/2008	15:52:42	99.9485	100	13.40547
TIC91A	2/11/2008	15:52:43	99.96758	100	13.25762
TIC91A	2/11/2008	15:52:44	99.89128	100	20.53039
TIC91A	2/11/2008	15:52:45	99.97234	100	13.95092
TIC91A	2/11/2008	15:52:46	99.96758	100	15.31046
TIC91A	2/11/2008	15:52:47	99.96758	100	16.01435
TIC91A	2/11/2008	15:52:48	99.96281	100	16.8978
TIC91A	2/11/2008	15:52:49	99.97711	100	16.03493
TIC91A	2/11/2008	15:52:50	100.0439	100	11.83265
TIC91A	2/11/2008	15:52:51	100.0439	100	13.25365
TIC91A	2/11/2008	15:52:52	100.0486	100	13.91165
TIC91A	2/11/2008	15:52:53	99.96758	100	20.74375
TIC91A	2/11/2008	15:52:54	99.89128	100	25.66847
TIC91A	2/11/2008	15:52:55	99.97234	100	17.70612
TIC91A	2/11/2008	15:52:56	99.96758	100	18.06815
TIC91A	2/11/2008	15:52:57	100.0486	100	12.29137
TIC91A	2/11/2008	15:52:58	100.0439	100	13.90797
TIC91A	2/11/2008	15:52:59	100.0486	100	14.38917
TIC91A	2/11/2008	15:53:00	100.0486	100	15.01697
TIC91A	2/11/2008	15:53:01	100.0486	100	15.49393
TIC91A	2/11/2008	15:53:02	100.0439	100	16.24911
TIC91A	2/11/2008	15:53:03	99.96758	100	22.57615
TIC91A	2/11/2008	15:53:04	100.0391	100	15.63828
TIC91A	2/11/2008	15:53:05	100.0439	100	15.76687
TIC91A	2/11/2008	15:53:06	99.96758	100	22.21983
TIC91A	2/11/2008	15:53:07	100.0439	100	14.98886
TIC91A	2/11/2008	15:53:08	100.0439	100	15.56041
TIC91A	2/11/2008	15:53:09	99.96758	100	21.69151
TIC91A	2/11/2008	15:53:10	100.0439	100	14.58024
TIC91A	2/11/2008	15:53:11	100.0439	100	15.2823
TIC91A	2/11/2008	15:53:12	100.0439	100	15.77449
TIC91A	2/11/2008	15:53:13	100.0439	100	15.82539
TIC91A	2/11/2008	15:53:14	100.0439	100	16.17079
TIC91A	2/11/2008	15:53:15	100.0486	100	16.03753
TIC91A	2/11/2008	15:53:16	100.1154	100	11.29015
TIC91A	2/11/2008	15:53:17	100.1869	100	6.980986
TIC91A	2/11/2008	15:53:18	100.1154	100	14.30008
TIC91A	2/11/2008	15:53:19	100.1202	100	14.43711
TIC91A	2/11/2008	15:53:20	100.1154	100	15.23512
TIC91A	2/11/2008	15:53:21	100.1154	100	15.53986
TIC91A	2/11/2008	15:53:22	100.0486	100	21.06276
TIC91A	2/11/2008	15:53:23	100.1154	100	15.01071
TIC91A	2/11/2008	15:53:24	100.1154	100	15.33061
TIC91A	2/11/2008	15:53:25	100.1917	100	9.909456
TIC91A	2/11/2008	15:53:26	100.1965	100	10.98745
TIC91A	2/11/2008	15:53:27	100.1965	100	12.20183
TIC91A	2/11/2008	15:53:28	100.2012	100	12.70169
TIC91A	2/11/2008	15:53:29	100.2012	100	13.37696
TIC91A	2/11/2008	15:53:30	100.206	100	13.42226
TIC91A	2/11/2008	15:53:31	100.1726	100	16.18425
TIC91A	2/11/2008	15:53:32	100.1965	100	14.34047
TIC91A	2/11/2008	15:53:33	100.2012	100	14.18964
TIC91A	2/11/2008	15:53:34	100.1202	100	20.131
TIC91A	2/11/2008	15:53:35	100.1154	100	19.03555
TIC91A	2/11/2008	15:53:36	100.1154	100	18.26844
TIC91A	2/11/2008	15:53:37	100.1202	100	17.29241
TIC91A	2/11/2008	15:53:38	100.0439	100	22.62326
TIC91A	2/11/2008	15:53:39	100.0439	100	21.04724
TIC91A	2/11/2008	15:53:40	100.0486	100	19.54533
TIC91A	2/11/2008	15:53:41	100.0439	100	19.12321
TIC91A	2/11/2008	15:53:42	100.0486	100	18.14972
TIC91A	2/11/2008	15:53:43	99.96758	100	23.47402
TIC91A	2/11/2008	15:53:44	99.89128	100	27.27451
TIC91A	2/11/2008	15:53:45	99.96758	100	18.74901
TIC91A	2/11/2008	15:53:46	99.89128	100	24.18842
TIC91A	2/11/2008	15:53:47	99.89128	100	22.61893
TIC91A	2/11/2008	15:53:48	99.89128	100	21.4709
TIC91A	2/11/2008	15:53:49	99.89128	100	20.59401
TIC91A	2/11/2008	15:53:50	99.82452	100	24.95676
TIC91A	2/11/2008	15:53:51	99.82452	100	23.36181
TIC91A	2/11/2008	15:53:52	99.89128	100	16.79483
TIC91A	2/11/2008	15:53:53	99.82452	100	22.25819
TIC91A	2/11/2008	15:53:54	99.82452	100	21.35409
TIC91A	2/11/2008	15:53:55	99.88651	100	15.75974
TIC91A	2/11/2008	15:53:56	99.90082	100	15.4256
TIC91A	2/11/2008	15:53:57	99.89128	100	16.85828
TIC91A	2/11/2008	15:53:58	99.96758	100	11.09565
TIC91A	2/11/2008	15:53:59	99.96758	100	12.8883
TIC91A	2/11/2008	15:54:00	99.89128	100	19.54388
TIC91A	2/11/2008	15:54:01	99.89128	100	19.23724
TIC91A	2/11/2008	15:54:02	99.82452	100	24.3973
TIC91A	2/11/2008	15:54:03	99.82452	100	22.98851
TIC91A	2/11/2008	15:54:04	99.89605	100	16.55415
TIC91A	2/11/2008	15:54:05	99.82452	100	22.45234
TIC91A	2/11/2008	15:54:06	99.82452	100	21.59456
TIC91A	2/11/2008	15:54:07	99.89128	100	16.26323
TIC91A	2/11/2008	15:54:08	99.83883	100	21.31837
TIC91A	2/11/2008	15:54:09	99.87221	100	17.66125
TIC91A	2/11/2008	15:54:10	99.89605	100	16.28944
TIC91A	2/11/2008	15:54:11	99.82452	100	21.91117
TIC91A	2/11/2008	15:54:12	99.81976	100	21.60447
TIC91A	2/11/2008	15:54:13	99.89128	100	15.22839
TIC91A	2/11/2008	15:54:14	99.90082	100	15.41152
TIC91A	2/11/2008	15:54:15	99.82452	100	21.9312
TIC91A	2/11/2008	15:54:16	99.82452	100	21.21034
TIC91A	2/11/2008	15:54:17	99.89605	100	15.24508
TIC91A	2/11/2008	15:54:18	99.89128	100	16.56519
TIC91A	2/11/2008	15:54:19	99.88651	100	17.54792
TIC91A	2/11/2008	15:54:20	99.89128	100	17.53415
TIC91A	2/11/2008	15:54:21	99.81976	100	23.30498
TIC91A	2/11/2008	15:54:22	99.86744	100	18.29779
TIC91A	2/11/2008	15:54:23	99.88651	100	17.25879
TIC91A	2/11/2008	15:54:24	99.82452	100	22.7539
TIC91A	2/11/2008	15:54:25	99.86744	100	18.19744
TIC91A	2/11/2008	15:54:26	99.89605	100	16.47077
TIC91A	2/11/2008	15:54:27	99.89128	100	17.37634
TIC91A	2/11/2008	15:54:28	99.96281	100	11.9632
TIC91A	2/11/2008	15:54:29	99.96758	100	13.2573
TIC91A	2/11/2008	15:54:30	99.96758	100	14.57922
TIC91A	2/11/2008	15:54:31	99.89128	100	21.32053
TIC91A	2/11/2008	15:54:32	99.96281	100	14.84141
TIC91A	2/11/2008	15:54:33	99.97234	100	14.98974
TIC91A	2/11/2008	15:54:34	99.89605	100	21.95354
TIC91A	2/11/2008	15:54:35	99.97234	100	15.21747
TIC91A	2/11/2008	15:54:36	99.96758	100	16.33875
TIC91A	2/11/2008	15:54:37	100.0486	100	10.95173
TIC91A	2/11/2008	15:54:38	100.0439	100	13.02242
TIC91A	2/11/2008	15:54:39	100.0439	100	14.18653
TIC91A	2/11/2008	15:54:40	100.0439	100	15.05914
TIC91A	2/11/2008	15:54:41	100.0439	100	15.6966
TIC91A	2/11/2008	15:54:42	100.0439	100	16.16154
TIC91A	2/11/2008	15:54:43	100.0439	100	16.50128
TIC91A	2/11/2008	15:54:44	99.96758	100	22.18053
TIC91A	2/11/2008	15:54:45	99.97234	100	20.70198
TIC91A	2/11/2008	15:54:46	99.96758	100	20.35589
TIC91A	2/11/2008	15:54:47	99.96758	100	19.79119
TIC91A	2/11/2008	15:54:48	100.0105	100	15.70704
TIC91A	2/11/2008	15:54:49	100.0439	100	13.93642
TIC91A	2/11/2008	15:54:50	99.96758	100	20.72126
TIC91A	2/11/2008	15:54:51	99.96758	100	20.05448
TIC91A	2/11/2008	15:54:52	99.96758	100	19.52965
TIC91A	2/11/2008	15:54:53	99.96758	100	19.20612
TIC91A	2/11/2008	15:54:54	99.97234	100	18.48477
TIC91A	2/11/2008	15:54:55	100.0439	100	12.49979
TIC91A	2/11/2008	15:54:56	99.97234	100	18.86426
TIC91A	2/11/2008	15:54:57	99.96758	100	18.99179
TIC91A	2/11/2008	15:54:58	99.97234	100	18.3488
TIC91A	2/11/2008	15:54:59	99.96758	100	18.5964
TIC91A	2/11/2008	15:55:00	100.0057	100	15.26002
TIC91A	2/11/2008	15:55:01	100.0439	100	13.28019
TIC91A	2/11/2008	15:55:02	99.96758	100	19.86832
TIC91A	2/11/2008	15:55:03	99.96281	100	19.7853
TIC91A	2/11/2008	15:55:04	99.96758	100	19.06137
TIC91A	2/11/2008	15:55:05	99.96758	100	18.8466
TIC91A	2/11/2008	15:55:06	99.96281	100	19.09907
TIC91A	2/11/2008	15:55:07	99.96758	100	18.50379
TIC91A	2/11/2008	15:55:08	100.0486	100	12.58696
TIC91A	2/11/2008	15:55:09	100.0439	100	14.18483
TIC91A	2/11/2008	15:55:10	100.0486	100	14.65723
TIC91A	2/11/2008	15:55:11	100.0486	100	15.33548
TIC91A	2/11/2008	15:55:12	100.0439	100	16.21695
TIC91A	2/11/2008	15:55:13	100.0439	100	16.5504
TIC91A	2/11/2008	15:55:14	100.0439	100	16.81027
TIC91A	2/11/2008	15:55:15	100.0439	100	16.98304
TIC91A	2/11/2008	15:55:16	100.0439	100	17.10729
TIC91A	2/11/2008	15:55:17	100.0439	100	17.21733
TIC91A	2/11/2008	15:55:18	100.0486	100	16.83081
TIC91A	2/11/2008	15:55:19	100.0439	100	17.32135
TIC91A	2/11/2008	15:55:20	100.0486	100	16.9437
TIC91A	2/11/2008	15:55:21	100.0439	100	17.34604
TIC91A	2/11/2008	15:55:22	100.0486	100	16.9607
TIC91A	2/11/2008	15:55:23	100.0439	100	17.3561
TIC91A	2/11/2008	15:55:24	100.0486	100	16.96566
TIC91A	2/11/2008	15:55:25	100.0439	100	17.39652
TIC91A	2/11/2008	15:55:26	100.0439	100	17.43624
TIC91A	2/11/2008	15:55:27	99.9342	100	25.75401
TIC91A	2/11/2008	15:55:28	99.96281	100	21.26916
TIC91A	2/11/2008	15:55:29	100.0486	100	13.82568
TIC91A	2/11/2008	15:55:30	100.0439	100	15.395
TIC91A	2/11/2008	15:55:31	100.0439	100	15.94988
TIC91A	2/11/2008	15:55:32	100.0105	100	19.17386
TIC91A	2/11/2008	15:55:33	99.96758	100	21.76782
TIC91A	2/11/2008	15:55:34	99.96758	100	20.81091
TIC91A	2/11/2008	15:55:35	99.96758	100	20.07094
TIC91A	2/11/2008	15:55:36	99.97234	100	19.12369
TIC91A	2/11/2008	15:55:37	99.97234	100	18.76174
TIC91A	2/11/2008	15:55:38	99.91989	100	22.0183
TIC91A	2/11/2008	15:55:39	99.96758	100	17.74578
TIC91A	2/11/2008	15:55:40	99.96281	100	18.25227
TIC91A	2/11/2008	15:55:41	99.97234	100	17.48537
TIC91A	2/11/2008	15:55:42	99.89128	100	23.89768
TIC91A	2/11/2008	15:55:43	99.91989	100	20.10273
TIC91A	2/11/2008	15:55:44	100.0343	100	10.86438
TIC91A	2/11/2008	15:55:45	100.0486	100	11.56664
TIC91A	2/11/2008	15:55:46	100.0486	100	13.05932
TIC91A	2/11/2008	15:55:47	100.0439	100	14.5416
TIC91A	2/11/2008	15:55:48	100.0439	100	15.29064
TIC91A	2/11/2008	15:55:49	99.96758	100	21.40034

TIC91A	2/11/2008	15:55:50	99.96758	100	20.49108
TIC91A	2/11/2008	15:55:51	99.96758	100	19.88438
TIC91A	2/11/2008	15:55:52	100.0486	100	13.43651
TIC91A	2/11/2008	15:55:53	100.0486	100	14.39021
TIC91A	2/11/2008	15:55:54	100.0439	100	15.53306
TIC91A	2/11/2008	15:55:55	100.0486	100	15.6478
TIC91A	2/11/2008	15:55:56	100.0486	100	16.00936
TIC91A	2/11/2008	15:55:57	100.1154	100	10.78428
TIC91A	2/11/2008	15:55:58	100.0486	100	17.14484
TIC91A	2/11/2008	15:55:59	100.0677	100	15.46161
TIC91A	2/11/2008	15:56:00	100.0439	100	18.15822
TIC91A	2/11/2008	15:56:01	100.0486	100	17.50677
TIC91A	2/11/2008	15:56:02	99.97711	100	23.29081
TIC91A	2/11/2008	15:56:03	99.96758	100	22.54974
TIC91A	2/11/2008	15:56:04	100.0439	100	15.37713
TIC91A	2/11/2008	15:56:05	100.0486	100	15.54438
TIC91A	2/11/2008	15:56:06	100.0439	100	16.34374
TIC91A	2/11/2008	15:56:07	100.0486	100	16.21401
TIC91A	2/11/2008	15:56:08	100.0439	100	16.83233
TIC91A	2/11/2008	15:56:09	100.0486	100	16.5864
TIC91A	2/11/2008	15:56:10	100.0439	100	17.08767
TIC91A	2/11/2008	15:56:11	99.97711	100	22.65942
TIC91A	2/11/2008	15:56:12	100.0391	100	16.15054
TIC91A	2/11/2008	15:56:13	99.97711	100	21.61868
TIC91A	2/11/2008	15:56:14	99.96758	100	21.31694
TIC91A	2/11/2008	15:56:15	100.0439	100	14.87118
TIC91A	2/11/2008	15:56:16	100.1154	100	9.619197
TIC91A	2/11/2008	15:56:17	100.0963	100	13.06355
TIC91A	2/11/2008	15:56:18	100.0486	100	17.30615
TIC91A	2/11/2008	15:56:19	100.0439	100	17.62505
TIC91A	2/11/2008	15:56:20	100.0439	100	17.56252
TIC91A	2/11/2008	15:56:21	99.97234	100	23.03839
TIC91A	2/11/2008	15:56:22	99.96758	100	21.97601
TIC91A	2/11/2008	15:56:23	99.99142	100	18.89549
TIC91A	2/11/2008	15:56:24	100.0439	100	14.93057
TIC91A	2/11/2008	15:56:25	100.0439	100	15.56427
TIC91A	2/11/2008	15:56:26	99.96758	100	21.99778
TIC91A	2/11/2008	15:56:27	100.0439	100	15.32344
TIC91A	2/11/2008	15:56:28	100.0486	100	15.42957
TIC91A	2/11/2008	15:56:29	100.0439	100	16.26243
TIC91A	2/11/2008	15:56:30	99.9485	100	23.79826
TIC91A	2/11/2008	15:56:31	99.96758	100	20.30471
TIC91A	2/11/2008	15:56:32	99.96758	100	19.67919
TIC91A	2/11/2008	15:56:33	100.0486	100	13.23419
TIC91A	2/11/2008	15:56:34	100.0439	100	14.61437
TIC91A	2/11/2008	15:56:35	100.0439	100	15.27338
TIC91A	2/11/2008	15:56:36	99.96758	100	21.41427
TIC91A	2/11/2008	15:56:37	100.0391	100	14.5373
TIC91A	2/11/2008	15:56:38	100.0486	100	14.55727
TIC91A	2/11/2008	15:56:39	99.97234	100	21.16396
TIC91A	2/11/2008	15:56:40	99.96758	100	20.61802
TIC91A	2/11/2008	15:56:41	99.96758	100	19.90446
TIC91A	2/11/2008	15:56:42	99.96758	100	19.38206
TIC91A	2/11/2008	15:56:43	99.96758	100	18.99984
TIC91A	2/11/2008	15:56:44	99.96758	100	18.72041
TIC91A	2/11/2008	15:56:45	99.97234	100	18.15243
TIC91A	2/11/2008	15:56:46	99.96758	100	18.41472
TIC91A	2/11/2008	15:56:47	99.96758	100	18.29385
TIC91A	2/11/2008	15:56:48	99.89128	100	24.19135
TIC91A	2/11/2008	15:56:49	99.82452	100	28.31564
TIC91A	2/11/2008	15:56:50	99.88651	100	20.73189
TIC91A	2/11/2008	15:56:51	99.81976	100	25.15449
TIC91A	2/11/2008	15:56:52	99.81976	100	23.71847
TIC91A	2/11/2008	15:56:53	99.88174	100	17.50466
TIC91A	2/11/2008	15:56:54	99.89605	100	16.88655
TIC91A	2/11/2008	15:56:55	99.82452	100	22.93918
TIC91A	2/11/2008	15:56:56	99.81976	100	22.42475
TIC91A	2/11/2008	15:56:57	99.82929	100	20.88562
TIC91A	2/11/2008	15:56:58	99.89128	100	16.29815
TIC91A	2/11/2008	15:56:59	99.88651	100	17.45612
TIC91A	2/11/2008	15:57:00	99.89128	100	17.53296
TIC91A	2/11/2008	15:57:01	99.81976	100	23.47201
TIC91A	2/11/2008	15:57:02	99.81976	100	22.52337
TIC91A	2/11/2008	15:57:03	99.89128	100	16.18601
TIC91A	2/11/2008	15:57:04	99.89605	100	16.58595
TIC91A	2/11/2008	15:57:05	99.82452	100	22.71915
TIC91A	2/11/2008	15:57:06	99.82452	100	21.87362
TIC91A	2/11/2008	15:57:07	99.89605	100	15.61805
TIC91A	2/11/2008	15:57:08	99.82452	100	22.13654
TIC91A	2/11/2008	15:57:09	99.82452	100	21.4397
TIC91A	2/11/2008	15:57:10	99.89128	100	15.69381
TIC91A	2/11/2008	15:57:11	99.88651	100	17.04085
TIC91A	2/11/2008	15:57:12	99.95804	100	12.03936
TIC91A	2/11/2008	15:57:13	99.88651	100	18.7962
TIC91A	2/11/2008	15:57:14	99.89128	100	18.52583
TIC91A	2/11/2008	15:57:15	99.96281	100	13.76451
TIC91A	2/11/2008	15:57:16	99.89128	100	20.67627
TIC91A	2/11/2008	15:57:17	99.95327	100	15.05893
TIC91A	2/11/2008	15:57:18	99.96758	100	14.96202
TIC91A	2/11/2008	15:57:19	99.96758	100	15.86713
TIC91A	2/11/2008	15:57:20	99.97711	100	15.72075
TIC91A	2/11/2008	15:57:21	100.0439	100	11.76778
TIC91A	2/11/2008	15:57:22	99.98188	100	18.52048
TIC91A	2/11/2008	15:57:23	99.90559	100	24.64105
TIC91A	2/11/2008	15:57:24	99.96758	100	18.05302
TIC91A	2/11/2008	15:57:25	99.96758	100	18.157
TIC91A	2/11/2008	15:57:26	99.97234	100	17.80846
TIC91A	2/11/2008	15:57:27	100.0439	100	12.61824
TIC91A	2/11/2008	15:57:28	100.1106	100	8.368311
TIC91A	2/11/2008	15:57:29	100.0439	100	15.62097
TIC91A	2/11/2008	15:57:30	99.97234	100	21.10244
TIC91A	2/11/2008	15:57:31	100.0439	100	14.67889
TIC91A	2/11/2008	15:57:32	100.0486	100	15.06607
TIC91A	2/11/2008	15:57:33	100.0391	100	16.47255
TIC91A	2/11/2008	15:57:34	100.0486	100	16.06364
TIC91A	2/11/2008	15:57:35	99.96758	100	22.48679
TIC91A	2/11/2008	15:57:36	99.89605	100	26.65162
TIC91A	2/11/2008	15:57:37	99.95327	100	19.71921
TIC91A	2/11/2008	15:57:38	99.96281	100	18.82414
TIC91A	2/11/2008	15:57:39	100.0439	100	12.32536
TIC91A	2/11/2008	15:57:40	100.0439	100	13.76319
TIC91A	2/11/2008	15:57:41	99.97234	100	20.48047
TIC91A	2/11/2008	15:57:42	100.0439	100	14.57609
TIC91A	2/11/2008	15:57:43	100.0439	100	15.41521
TIC91A	2/11/2008	15:57:44	100.0439	100	15.98899
TIC91A	2/11/2008	15:57:45	100.0486	100	16.00309
TIC91A	2/11/2008	15:57:46	100.0439	100	16.7685
TIC91A	2/11/2008	15:57:47	100.0486	100	16.61387
TIC91A	2/11/2008	15:57:48	100.0439	100	17.15833
TIC91A	2/11/2008	15:57:49	99.98188	100	22.50745
TIC91A	2/11/2008	15:57:50	99.96758	100	22.33233
TIC91A	2/11/2008	15:57:51	99.96758	100	21.26619
TIC91A	2/11/2008	15:57:52	100.0486	100	14.38802
TIC91A	2/11/2008	15:57:53	100.1059	100	10.31201
TIC91A	2/11/2008	15:57:54	100.1202	100	11.00842
TIC91A	2/11/2008	15:57:55	100.0439	100	17.88254
TIC91A	2/11/2008	15:57:56	100.0486	100	17.40018
TIC91A	2/11/2008	15:57:57	100.0439	100	17.76481
TIC91A	2/11/2008	15:57:58	100.0486	100	17.31265
TIC91A	2/11/2008	15:57:59	100.1059	100	12.45075
TIC91A	2/11/2008	15:58:00	100.0582	100	17.83731
TIC91A	2/11/2008	15:58:01	100.0439	100	18.72457
TIC91A	2/11/2008	15:58:02	100.0439	100	18.43427
TIC91A	2/11/2008	15:58:03	100.0439	100	18.21766
TIC91A	2/11/2008	15:58:04	100.0439	100	18.04233
TIC91A	2/11/2008	15:58:05	99.97234	100	23.61323
TIC91A	2/11/2008	15:58:06	99.96758	100	22.50078
TIC91A	2/11/2008	15:58:07	99.96758	100	21.39321
TIC91A	2/11/2008	15:58:08	99.96758	100	20.18974
TIC91A	2/11/2008	15:58:09	99.96758	100	19.68163
TIC91A	2/11/2008	15:58:10	99.96758	100	19.30753
TIC91A	2/11/2008	15:58:11	99.96758	100	19.03405
TIC91A	2/11/2008	15:58:12	99.96758	100	18.81424
TIC91A	2/11/2008	15:58:13	99.96758	100	18.7334
TIC91A	2/11/2008	15:58:14	99.96281	100	18.96425
TIC91A	2/11/2008	15:58:15	99.97234	100	18.08883
TIC91A	2/11/2008	15:58:16	100.0439	100	12.72798
TIC91A	2/11/2008	15:58:17	100.0486	100	13.61575
TIC91A	2/11/2008	15:58:18	100.0486	100	14.60105
TIC91A	2/11/2008	15:58:19	100.0439	100	15.70763
TIC91A	2/11/2008	15:58:20	100.0486	100	15.77821
TIC91A	2/11/2008	15:58:21	100.1011	100	11.76068
TIC91A	2/11/2008	15:58:22	100.1154	100	12.14683
TIC91A	2/11/2008	15:58:23	100.0486	100	17.98011
TIC91A	2/11/2008	15:58:24	100.0439	100	18.11785
TIC91A	2/11/2008	15:58:25	100.0439	100	17.92143
TIC91A	2/11/2008	15:58:26	100.0439	100	17.77876
TIC91A	2/11/2008	15:58:27	100.0439	100	17.69062
TIC91A	2/11/2008	15:58:28	100.0439	100	17.62977
TIC91A	2/11/2008	15:58:29	100.0439	100	17.58032
TIC91A	2/11/2008	15:58:30	100.0439	100	17.5429
TIC91A	2/11/2008	15:58:31	100.0391	100	17.91978
TIC91A	2/11/2008	15:58:32	100.0439	100	17.4553
TIC91A	2/11/2008	15:58:33	100.0439	100	17.46668
TIC91A	2/11/2008	15:58:34	100.0439	100	17.45492
TIC91A	2/11/2008	15:58:35	99.96758	100	23.61419
TIC91A	2/11/2008	15:58:36	99.96758	100	22.15068
TIC91A	2/11/2008	15:58:37	100.02	100	16.65715
TIC91A	2/11/2008	15:58:38	99.96758	100	21.4243
TIC91A	2/11/2008	15:58:39	99.96758	100	20.56736
TIC91A	2/11/2008	15:58:40	99.96758	100	19.90076
TIC91A	2/11/2008	15:58:41	100.0439	100	13.68207
TIC91A	2/11/2008	15:58:42	100.0439	100	14.68052
TIC91A	2/11/2008	15:58:43	100.0963	100	10.99268
TIC91A	2/11/2008	15:58:44	100.0629	100	15.71228
TIC91A	2/11/2008	15:58:45	100.0439	100	17.42016
TIC91A	2/11/2008	15:58:46	100.0439	100	17.41876
TIC91A	2/11/2008	15:58:47	100.0439	100	17.41291
TIC91A	2/11/2008	15:58:48	99.99619	100	21.46237
TIC91A	2/11/2008	15:58:49	99.96758	100	22.52933
TIC91A	2/11/2008	15:58:50	99.96758	100	21.31314
TIC91A	2/11/2008	15:58:51	99.83406	100	30.68262
TIC91A	2/11/2008	15:58:52	99.89605	100	22.53302
TIC91A	2/11/2008	15:58:53	99.88651	100	22.23029
TIC91A	2/11/2008	15:58:54	99.88651	100	21.38788
TIC91A	2/11/2008	15:58:55	99.96281	100	14.59922
TIC91A	2/11/2008	15:58:56	99.96758	100	15.22018
TIC91A	2/11/2008	15:58:57	99.88651	100	22.18111
TIC91A	2/11/2008	15:58:58	99.88174	100	21.78346
TIC91A	2/11/2008	15:58:59	99.81976	100	25.49769
TIC91A	2/11/2008	15:59:00	99.82452	100	23.57638
TIC91A	2/11/2008	15:59:01	99.89605	100	16.71907
TIC91A	2/11/2008	15:59:02	99.89128	100	17.62816
TIC91A	2/11/2008	15:59:03	99.89128	100	17.96841
TIC91A	2/11/2008	15:59:04	99.88651	100	18.64401
TIC91A	2/11/2008	15:59:05	99.96281	100	12.61893
TIC91A	2/11/2008	15:59:06	99.96758	100	13.81388
TIC91A	2/11/2008	15:59:07	99.89128	100	20.79515
TIC91A	2/11/2008	15:59:08	99.88174	100	21.11052
TIC91A	2/11/2008	15:59:09	99.81976	100	24.99921
TIC91A	2/11/2008	15:59:10	99.89128	100	18.20441
TIC91A	2/11/2008	15:59:11	99.88651	100	18.90883