

**SUPPLY OF GAS TO 4 CHAK RASALA**

**FOR SUI NORTHERN GAS PIPELINES LTD.**

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SEMESTER: Fall-2016, MSPM - III

PROGRAM: MS (PROJECT MANAGEMENT)



**BAHRIA UNIVERSITY LAHORE CAMPUS**

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**SUBMITTED TO:**

**MR. FAISAL SHAHZAD**

**SUBMISSION DATE:**

**Jan 25<sup>th</sup>, 2016**



# SUI NORTHERN GAS PIPELINES LIMITED

REGIONAL OFFICE SHEIKHUPURA

Dated Jan 18, 2017

## CERTIFICATE

This witness statement is issued to the applicants for the fulfillment of their MS (Project Management) program requirements being carried out at Bahria University Lahore Campus (BULC).

It is witnessed that Mr. **Muhammad Kashif Saddique** Enrollment: **03-298152-046** & Mr. **Awais Ahmad Brar** Enrollment: **03-298152-042** Class: **MSPM-III** have worked and utilized our premises in our real-time project for implementing project management skills using Primavera as a leading software tool.

They, in case of participation in organization's project, have contributed fully in the "SUPPLY OF GAS TO CHAK # 4 RASALA" in the fields mentioned as under

1. Planning
2. Scheduling
3. Performance Monitoring & Earned Value Analysis

Additionally, it is noteworthy to mention that Mr. Muhammad Kashif Saddique & Mr. Awais Ahmad Brar demonstrated good ethical practices, enthusiastic approach to work, task convergence capabilities, and professionalism while there stay with this organization.

Certified By Company Official:

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Taskeen -ul - Islam Hashim  
Dy. Chief Engineer (D)  
SNGPL, Sheikhpura (D)

Verified By Trainer:

(Signature & Date)

Mr./Ms.

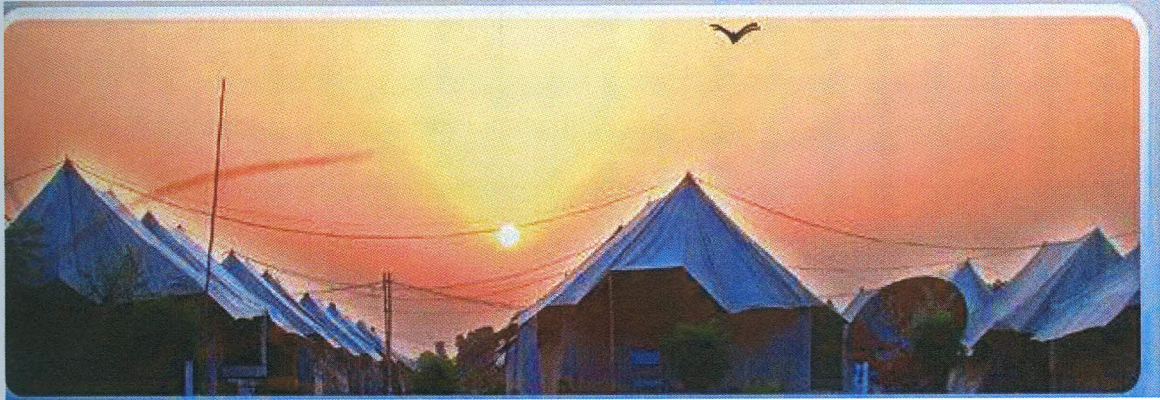
## Preface

As a part of MSPM curriculum and in order to practically implement the knowledge & concepts acquired throughout the course of this program on Primavera P6, we have made a project report on **“Supply of Gas to 4 Chak Rasala”** which explains our work on Primavera P6 in the backdrop of the said project.. The basic motive and the driving force behind this report was to understand working methodology of Primavera and how Primavera is different from MS Project.

In this project report, we have employed various concepts related to Project Management practices as advised by PMI USA. We have also included Primavera P6 implementation guide and charts regarding schedule, activities and cost of the project.

Working on Primavera P6 and this project report helped us enhance our knowledge and Project Management skills, which will assist us to work in more effective ways using Primavera P6. We faced certain impediments during the making of this report. Our efforts to overcome these impediments left us with various lessons learned which not only gave us food for thought but will definitely help us in our Professional life.

Through this report we realized the importance of team work and time management.



## **Acknowledgement**

Success and Failure lies with the Creator of the seven heavens. Above each and everything we are most thankful to our kind Creator, whose unwavering support, unflinching help and absolutely unconditional love has made us what we are today and has helped us complete this report. Without His blessings it was never going to happen.

The success and final outcome of this project report required a lot of guidance. We are sincerely thankful to our respected trainer Mr. Faisal Shahzad for his kind guidance throughout the project development. We can't thank him enough for taking out time for us even out of his busy personal and professional schedule. We are thankful to Mr. Taskeen-Ul-Islam Hashim for his invaluable advice during the course of project.

We would like to express our gratitude to our parents for their kind support and assistance; otherwise it would have been difficult to keep the spirit of work constantly high.

## Contents

List of Tables .....	7
Table of Figures .....	8
SNGPL (Sui Northern Gas Pipelines Limited) .....	9
1.1 Introduction .....	9
1.2 Vision .....	9
1.3 Mission .....	9
1.4 Core Values .....	10
1.4.1 Commitment .....	10
1.4.2 Responsibility .....	10
1.4.3 Courtesy .....	10
1.4.4 Integrity .....	10
1.4.5 Competence .....	10
1.5 Geographical Presence .....	11
1.6 Organizational Structure .....	12
1.7 Departments .....	13
1.8 Projects .....	13
1.9 Excellence through integrated management system .....	14
Primavera .....	15
2.1 Organizational Breakdown structure (OBS) .....	15
2.2 Enterprise Project Structure .....	15
2.3 Creating project in primavera .....	16
2.4 Work Break down structure .....	16
2.5 WBS in Primavera .....	16
2.6 Roles .....	16
2.7 Roles in Primavera .....	17
2.8 Resources .....	17
2.9 Resources in Primavera .....	18
2.10 Activity .....	18

2.11	Schedule .....	20
2.12	Project Review .....	22
2.13	6 Steps to Successful Schedules .....	23
2.14	Earned Value .....	25
	Project .....	29
3.1	Project Title.....	29
3.2	Significance with company's business drivers .....	29
3.3	Project Objectives .....	30
3.3.1	Success Factors .....	30
3.4	External Dependencies.....	30
3.5	Stakeholder Analysis& Management .....	30
3.6	Project Documents .....	31
3.7	Implementation Strategy .....	31
	Project Charter .....	33
4.1	Version History .....	33
4.2	Introduction.....	33
4.3	Project Objectives .....	33
4.4	High Level Requirements .....	33
4.5	Success Criteria.....	33
4.6	Estimated Timeline .....	34
4.7	High Level Risks.....	34
4.8	Constraints & Assumptions .....	34
4.9	Project Milestones.....	34
4.10	Stakeholder .....	35
4.11	Project Budget Estimates .....	35
4.12	Project Organization .....	35
4.13	Project Charter Approval .....	36
	Project Scope Statement .....	38
5.1	Version History .....	38
5.2	Introduction.....	38

5.3 Project Scope Description .....	38
5.4 Acceptance Criteria.....	39
5.5 Project Deliverables .....	39
Primavera P6 Actual Working & Progress .....	40
6.1 Activity Usage Profile (S-Curve UNIT) .....	40
6.2 Activity Usage Profile (S-Curve Cost) .....	41
6.3 Gantt Chart.....	42
6.4 Primavera Activity Details.....	45
6.4 Primavera Activity-wise EVM .....	46
6.5 Primavera EVM Report (Complete Project).....	57
6.6 Primavera Resource Report .....	58
6.7 Primavera Activity Status Report .....	62
6.8 Primavera WBS Summary .....	63
6.9 Primavera S-Curve.....	64
Issues Log: .....	65
Conclusion .....	67
Recommendations.....	68
References:.....	69

## List of Tables

Table 1.1: Certification .....	14
Table 2.1: Task Type Description.....	20
Table 3.1: Stakeholders.....	31
Table 4.1: Project Charter version history .....	33
Table 4.2: Milestones .....	35
Table 4.3: Stakeholders.....	35
Table 4.4: Budget Estimate.....	35
Table 4.5: Key Roles.....	36
Table 5.1: Version History.....	38
Table 5.2: Project Deliverables.....	39

## Table of Figures

Name of Figures	Page number
Figure 1.1: Map of Geographical Presence	11
Figure 1.2: Organizational Structure	12
Figure 3.1: Implementation Strategy	32
Figure 6.1 Activity Profile Usage (S-Units)	40
Figure 6.2 Activity Profile Usage (S-Cost)	41
Figure 6.3a Gantt Chart	42
Figure 6.3b Gantt Chart	43
Figure 6.3c Gantt Chart	43
Figure 6.3d Gantt Chart	44
Figure 6.4a Primavera Activity Details	45
Figure 6.4b Primavera Activity Details	45
Figure 6.4c Primavera Activity Details	46
Figure 6.5 Primavera S-Curve	64

# Chapter 1

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## **SNGPL (Sui Northern Gas Pipelines Limited)**

### **1.1 Introduction**

Sui Northern Gas Pipelines Limited (SNGPL) was incorporated as a private limited Company in 1963 and converted into a public limited company in January 1964 under the Companies Act 1913, now Companies Ordinance 1984.

The Company has over 50 years of experience in operation and maintenance of high-pressure gas transmission and distribution systems. It has also expanded its activities as Engineering, Procurement and Construction (EPC) Contractor to undertake the planning, designing and construction of pipelines, both for itself and other organizations.

Sui Northern Gas Pipelines Limited (SNGPL) is the largest integrated gas company with transmission system that extends from Sui in Baluchistan to Peshawar in Khyber Pakhtunkhwa (KPK) comprising over 7,756 KM of Transmission System (Main lines & Loop lines). Distribution system consists of 94,263 KMs of pipeline and has over 5.02 million consumers comprising Commercial, Domestic, General Industry, and Fertilizer Power & Cement Sectors. Annual gas sales to the consumers were 597,056 MMCF worth Rs. 216,652 million during Jul 2011 - Jun 2012.

### **1.2 Vision**

To be the leading integrated natural gas provider in the region seeking to improve the quality of life of our customers and achieve maximum benefit for our stakeholders by providing an uninterrupted and environment friendly energy resource [1]

### **1.3 Mission**

A commitment to deliver natural gas to all doorsteps in our chosen areas through continuous expansion of our network, by optimally employing technological, human and organizational resources, best practices and high ethical standards.[1]

## **1.4 Core Values**

### **1.4.1 Commitment**

We are committed to our vision, mission and to creating and delivering stakeholder value.

### **1.4.2 Responsibility**

We are responsible - as individuals and as teams -for our work and our actions. We welcome scrutiny, and we hold ourselves accountable.

### **1.4.3 Courtesy**

We are courteous - with our customers, stakeholders, and towards each other and encourage open communication

### **1.4.4 Integrity**

We have integrity - as individuals and as teams – our decisions are characterized by honesty and fairness.

### **1.4.5 Competence**

We are competent and strive to continuously develop and improve our skills and business practices.

## 1.5 Geographical Presence

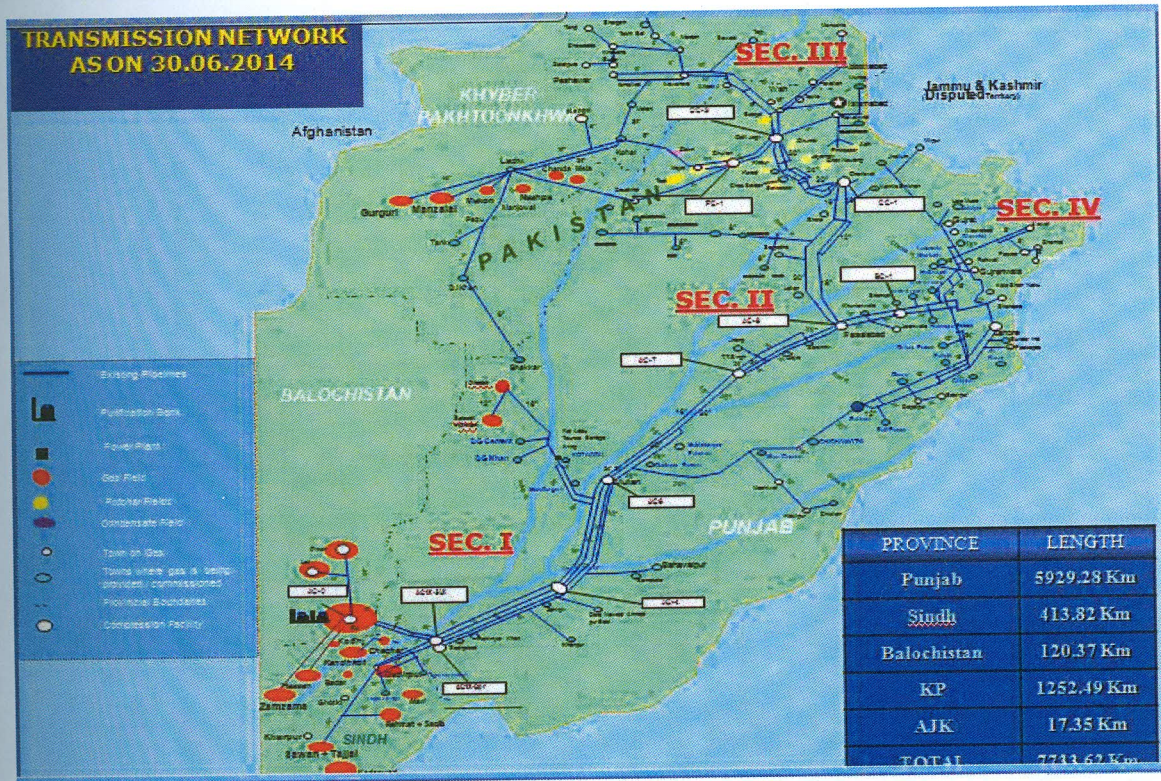
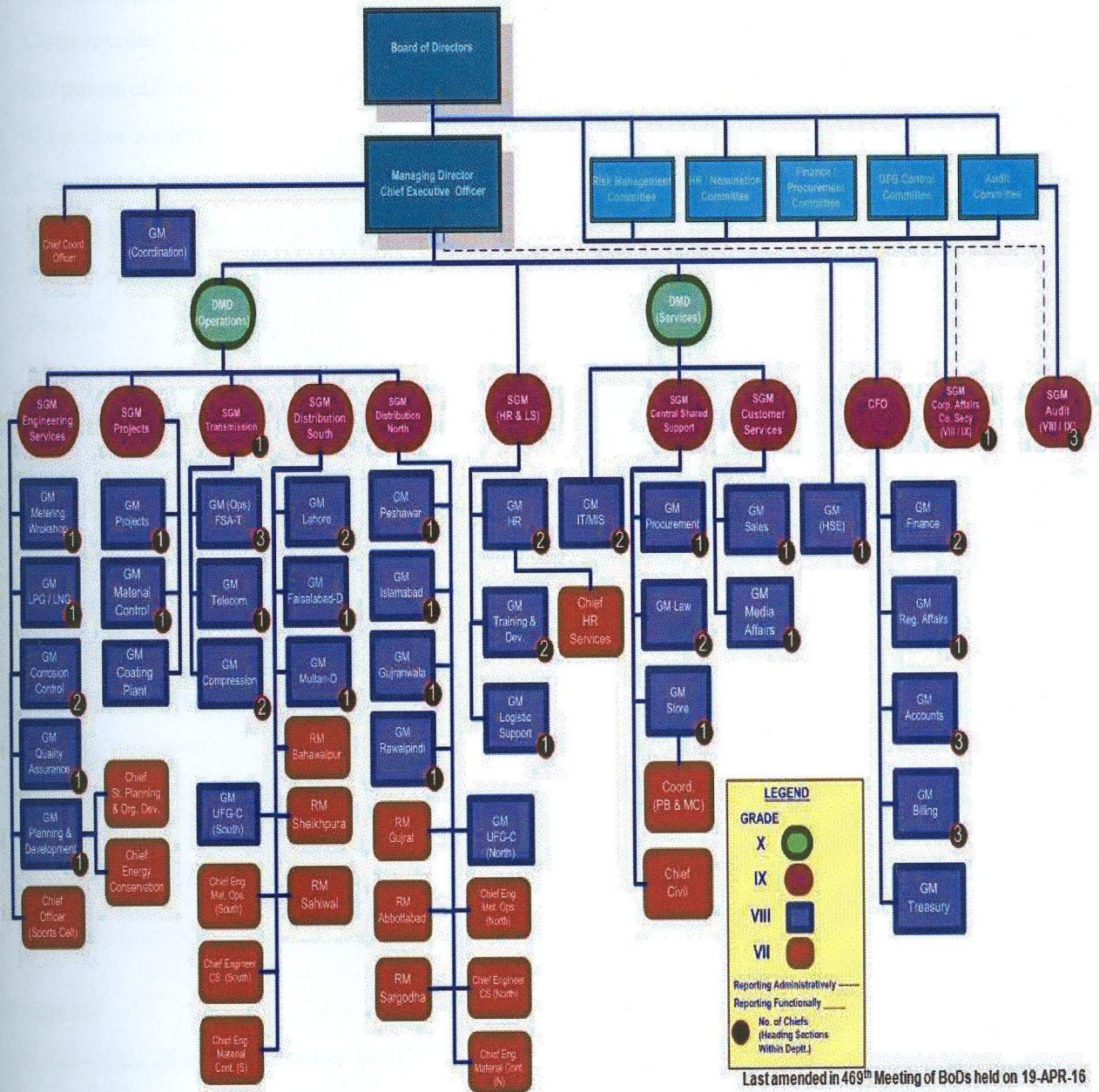


Figure 2.1: Map of Geographical Presence

# 1.6 Organizational Structure

## SNGPL ORGANIZATIONAL STRUCTURE APPROVED BY THE BOARD OF DIRECTORS



**LEGEND**

**GRADE**

- X (Green circle)
- IX (Red circle)
- VIII (Blue square)
- VII (Red circle)

Reporting Administratively ———  
Reporting Functionally ———

No. of Chiefs (Heading Sections Within Deptt.)

Last amended in 469<sup>th</sup> Meeting of BoDs held on 19-APR-16

Figure 1.2: Organizational Structure

## **1.7 Departments**

- SNGPL have twenty one functional departments listed as below
- Central shared support
- Engineering services
- Compression
- Corporate affairs
- Corrosion control
- Customer service
- Distribution North
- Distribution South
- Projects
- Finance
- Health Safety & Environment
- Planning & Development
- IT/MIS
- Telecommunication
- Transmission
- Internal Audit
- Quality Assurance
- Human Resource
- Sales
- Stores
- LPG/LNG
- Logistic Support,

## **1.8 Projects**

Sui Northern Gas Pipelines Limited (SNGPL) stands as the biggest gas utility Company of Pakistan with highly trained and dedicated work force led by a dynamic management and hardworking leadership. Projects department is an integral part of the Company. Initially SNGPL's construction work was carried out by foreign companies. Starting from 1973, Projects

department took over designing, procurement and construction of high pressure transmission lines and allied facilities independently

At present, construction activities of 42" diameter 21.85 Km loop line have been completed. Work on 42" diameter 153 Km pipelines to cater for upcoming LNG gas imports aimed easing energy demands in the country. Work on 24" dia 54.50 km Kohat-Dakhni line is also in progress. It is part of Infrastructure Development Project comprising 145 Km of 24" diameter and 38 Km of 10" diameter natural gas transmission lines. This project is designed to absorb additional gas available from northern sources in Khyber Pakhtunkhwa and to make the system flexible. The total cost of the project is Rs.5, 165 Million.[1]

### **1.9 Excellence through integrated management system**

SNGPL has always focused quality in all areas. Departments of quality and HSE were established over the period of time and for the continuous improvement of policies, standards of working and working atmosphere and SNGPL has gained a lot .SNGPL is having certification details are as under. SNGPL's 11 sites have been registered under the "SMART2" Program by Pakistan Environmental Protection Agency (PAK-EPA) [2]

Sr.No	Certification Name	Description
1	ISO 14001:2004	Environmental Management system
2	OHSAS 18001:2007	Occupational Health and safety Assessment series OH&S Management system

***Table 1.1: Certification***

# Chapter 2

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## Primavera

### 2.1 Organizational Breakdown structure (OBS)

It is a hierarchy based structure that explains the structure of an organization on the software. The OBS defines the organization of human resources within an organization plus the rights and accesses of the said resources on different projects. Moreover, the chain of command in a company is also manifested by the Organizational Breakdown Structure. The OBS of an organization may be a portrayal of its EPS, but these two can also diverge. The peculiar OBS elements can be a mixture of human resources with specific personal/professional identity, different business units, divisions & departments, and specialties. The interconnection of an EPS and OBS is such that the OBS may be employed for the application of security roles and access to all projects.

#### a. OBS in Primavera

1. Go to Enterprise down the menu bar & select OBS.
2. Clicking Add button, we can add as many OBSs as we want.
3. Name the OBSs.
4. Hierarchy of OBS can be changed with the help of arrow keys.
5. Close the OBS window after adding OBS.

### 2.2 Enterprise Project Structure

1. Click Enterprise down the menu bar, and select Enterprise project Structure.
2. Click on the EPS name column where we want to add a new element.
3. Select the Add button.
4. Name and provide ID of the EPS node & in resource Manager Field, select OBS element.
5. If you want to change hierarchy it can be done using arrow keys.

## **2.3 Creating project in primavera**

1. Select file menu bar, and click New
2. Click EPS in create new project window
3. Specify project ID and project name
4. Select Finish to create a new project

## **2.4 Work Break down structure**

Within a project, activities can be grouped, filtered, planned, and organized by Work breakdown structure (WBS). The WBS segregates the deliverables of a project and presents a hierarchy of activities and work packages in an ascending level of detail. A properly planned WBS plays a pivotal role in implementing and exercising project controls.

## **2.5 WBS in Primavera**

1. Select project from main menu bar and then click on WBS.
2. Select Add from the command bar to add a new level of WBS
3. Use arrow key for adjustment

## **2.6 Roles**

Roles are the specific sets of action/duties and/or skills that a resource performs on an activity/task assigned to that resource for example a mechanical engineer, quality inspector or a carpenter. Moreover, a resource may have the role of an Engineer and a Manager. This shows that roles are primarily assigned on the basis of skills possessed by a resource.

A set of roles may be created that can be assigned to resources and activities in all projects in the enterprise. There is possibility of assigning a vast variety of roles and organizing them in a hierarchy for handy management followed by suitable assignment of these roles to different resources. The set of roles that can be assigned to an activity defines the skills and expertise demanded by a specific activity. Unique prices can also be set for different roles according to the activities in order to ensure efficient and accurate cost planning and management.

There is a possibility of assigning roles on temporary basis while going through the planning stages of the project to find out in what way certain resources impact the schedule. As soon as the team is done with planning phase, roles can be replaced with the resources which fit the requisite role skill level. Five proficiency levels can be assigned to roles: Master, Expert, Skilled, Proficient and Inexperienced. Roles are assigned in the Resource Details window or using the Roles dialog box.

## 2.7 Roles in Primavera

1. Click on Enterprise from menu bar, and then select Roles.
2. Click Add button to add Roles.
3. Add Role ID and role Name.
4. Hierarchy is adjustable which can be done using arrow keys.
5. In description detail window, enter the description of Role's Responsibility.
6. Select Prices Tab to enter price of each Role.
7. Select Rate type field to add the Rate.
8. Select Role Limits tab to fix the limit of Each Role.
9. Click Add to insert unit/time for the role over time.
10. In Effective date/time field, double click and select date from Calendar.
11. In Maximum Units/Time field, click and enter max work units per time for each role.
12. Close the window after Assigning Roles.

## 2.8 Resources

Resources include the human resources, equipment and materials which perform and/or assist the work to be done on activities across projects. Resources tend to be re-used among different activities and/or in projects. In the Project Management module, a resource pool may be created that manifests the resource structure of an organization. The said resource pool supports the assignment of resources to activities. The module under discussion enables us to differentiate amongst three categories of resources, namely; labor, material, and non-labor resources. **Labor and non-labor** resources are time-based. However, the material resources such as consumable items use different units of measure which can be specified by the user depending upon the nature and specifications of material under question. The user has the liberty to create and assign customized resource calendars that define resource's roles. If a resource uses Timesheets, the

user may assign a login name and password to the resource. It is advisable to define a master list of resources comprising of the resources critical to completion of a project. After this, grouping of resources may be done to create a resource pool that is easily accessible.

Resources are different from expenses. Resources can be time-based and tend to extend across multiple activities and/or projects, expenses on the other hand are one-time expenditures for non-reusable items required by activities. [4]

## 2.9 Resources in Primavera

1. Enable New Resource Wizard by selecting the Edit button down the menu bar, click on User Preferences. Then select the “Assistance” tab & check the box. This will enable wizard.
2. Proceed to Project down the menu tab, choose Resource Assignments or Resources from Directory bar.
3. Choose Add button on the command bar.
4. Enter Resource ID along with the Name and Click Next.
5. Specify the type of resource (labor, non-labor, or material).
6. Enter the unit price, default units per day & maximum units per day for the new resource.
7. Enter the office telephone & email (optional but advisable).
8. Assign “Roles” to the new resource. Multiple roles can be assigned, but first proficiency of the resource may be identified when performing the role, and designate the “Primary Role” for the resource.
9. Select the resource calendar. The user has an option to choose from a list of existing calendars. However he also has the liberty to create a new calendar.
10. Identify whether to “auto-compute actual” for the resource.
11. Enter information for the Progress Reporter.

## 2.10 Activity

An activity is a unit of work which is undertaken while going through the course of a project. Often there expenses and resource assignments associated with an activity. It can be subdivided

into activity steps. Normally every activity has a parent WBS object, but WBS objects are not required to have activity children. [4]

### 2.10.1 Activity Types

An Activity may be assigned one of the following default Activity Types using the drop down box in the Project Defaults tab:

- Finish Milestone
- Level of Effort
- Resource Dependent
- Start Milestone
- Task Dependent
- WBS Summary

#### Task Type Description

Sr #	Task Type	Description
1	<b>Task Dependent</b>	These Activity Types have duration and will only calculate the duration using the assigned calendar even when one or more resources are assigned to an activity. Moreover, this type of activity is dependent on a specific task for its initiation or completion.
2	<b>Resource Dependent</b>	These Activity Types have duration and will calculate the duration only using the calendar assigned to the activity when NO resources are assigned to the activity. These activities acknowledge Resource Calendars when resources are assigned. They acknowledge the Activity calendar to calculate the Early Start date.
3	<b>Level of Effort LOE</b>	This type of activity spans from the start or finish of one or more predecessor activities to the start or finish of one or more successor activities which are linked by relationships.
4	<b>Start Milestone</b>	Start Milestone has a start date but no finish date. This activity is scheduled at the beginning of a time period and may not be assigned Resources. It is just a point in time.
5	<b>Finish Milestone</b>	Finish Milestone has a finish date but no start date. It is scheduled at the end of a time period and may not be assigned Resources.

		Changing a milestone from Start to Finish would not affect a schedule when all the tasks are on one calendar but would move the milestone from the start of a day to the finish of the previous day.
6	<b>WBS Summary</b>	This Activity type calculates in the same way as P3 and SureTrak WBS activities. Moreover, this activity behaves as an umbrella in the Gantt Chart on all the activities in one WBS element.

**Table 2.1: Task Type Description**

## 2.11 Schedule

The project schedule is a tool that shows what work is to be performed, which resources of an organization will be tasked with the undertaking of this work and the timelines following which the said work will be performed. The project schedule is expected to reflect the whole of work associated with making the project complete on/in time.

It can be said that driving without any idea of how one is going to reach his/her destination is the same as working on a project without a schedule. Regardless of the size or scope of a project, schedule is a vital part of project management. The schedule shows when an activity should be done, which activity has already been completed, and the sequence in which things should be finished.

Quoting the previous example, drivers have quite accurate tools at hand which they can use. Scheduling, however, is not an exact process. It's a mix of different things in parts, which join together to produce a schedule. It is part estimation, part prediction, and part "educated guessing". A schedule is reviewed on regular basis because of the uncertainty that is inherent in a schedule, and often a schedule sees revisions during the course of a project. It continues to unfold with the passage of a project, rising of changes and occurrence of risks. Schedule

transforms the project from vision to a time-framed plan. Schedules aid in doing the following as well:

- Provision of a basis to monitor and control project activities.
- Determination of how best a resource can be allocated such that the project goal/s are achieved.
- Assessment of how the project will be impacted by time delays.
- Pinpointing the areas where more than needed resources are available so that they may be allocated to other suitable places where they are more needed..
- Provision of a basis to track project progress.

#### 2.11.1 Schedule Inputs

Different inputs are required to schedule the project.

**Personal and Project Calendars** - Understanding working days, shifts, and resource availability proves crucial to completion of a project schedule.

**Description of Project Scope** – It can determine key start and end dates, main assumptions that lie behind the plan along with key constraints and restrictions.

Stakeholder expectations may also be included, which will often determine project milestones.

**Project Risks** – These should be clearly understood so as to make sure there's sufficient extra time to tackle identified risks – and unidentified risks (risks are identified employing thorough Risk Analysis).

**Lists of Activities and Resource Requirements** – It's important to determine if any constraints have been left that are to be considered while the schedule is being developed. A clear understanding of the resource capability and experience– along with the company holidays and staff vacations – will affect the schedule. A project manager must bear in mind the deadlines and resource availability issues which can cause the schedule to be less flexible. [3]

### 2.11.2 Scheduling Tools

Presented below are some tools and techniques for combining these inputs to develop the schedule:

**Schedule Network Analysis** – It is graphical representation of the activities in a project, time needed to complete them, and the sequence in which they should be done. Different Project Management soft-wares are used to create these analyses for example Gantt Charts and PERT Charts are common formats.

**Critical Path Analysis** – It is the process of looking at all the activities that must be completed, and calculating the 'best line' – or critical path – to take so that the project may be completed in minimum possible time. This method finds out the earliest and latest possible start and finish times for project activities, and it performs an estimation of the dependencies among them to create a schedule of critical activities and dates.

**Schedule Compression** – It is a tool that aids in shortening the total duration of a project by cutting-down the time allotted for certain activities. It's done to meet time constraints, while adhering to the original scope of the project. Two methods can be used here:

**Crashing** – While crashing, more resources are assigned to an activity, thus decreasing the time to complete an activity. This is based on the assumption that the time saved will offset the added resource costs.

**Fast-Tracking** – Fast tracking is about the rearrangement of activities in such a way that more parallel work may be made possible. This means that activities/tasks that were originally to be done one after another will now be done at the same time. However, it must be kept in mind that this approach increases the risk that you'll miss things, or fail to address changes. [3]

## 2.12 Project Review

Once the outlined of basic schedule has been established, it should be to make sure that the timing for each activity is aligned with the necessary resources. Here are tools commonly used to do this:

**'What if' Scenario Analysis** – This method compares and measures the effects of different scenarios on a project. You use simulations to determine the effects of various adverse, or harmful, assumptions – such as resources not being available on time, or delays in other areas of the project. You can then measure and plan for the risks posed in these scenarios. [5]

**Resource Leveling** – Here, you rearrange the sequence of activities to address the possibility of unavailable resources, and to make sure that excessive demand is not put on resources at any point in time. If resources are available only in limited quantities, then you change the timing of activities so that the most critical activities have enough resources. [5]

**Critical Chain Method** – This also addresses resource availability. You plan activities using their latest possible start and finish dates. This adds extra time between activities, which you can then use to manage work disruptions.

**Risk Multipliers** – Risk is inevitable, so you need to prepare for its impact. Adding extra time to high-risk activities is one strategy. Another is to add a time multiplier to certain tasks or certain resources to offset overly optimistic time estimation.

After the initial schedule has been reviewed, and adjustments made, it's a good idea to have other members of the team review it as well. Include people who will be doing the work – their insights and assumptions are likely to be particularly accurate and relevant.

## 2.13 6 Steps to Successful Schedules

Creating a comprehensive schedule is one of the more difficult activities that project managers face. Schedule creation is often considered more art than science, and results often support this. What is often more frustrating is that team members often find themselves on one team with a project manager that creates and manages schedules a particular way and on another team with a project manager with a different approach.

Following are the 6 steps for creating a successful schedule:

### 2.13.1 Step 1: Define the Schedule Activities

Take your Work Breakdown Structure (WBS) work packages and decompose them further into schedule activities. Take each WBS work package, and decide what activities

are required to create that package. For example, if your work package is "configure new computer hardware," your schedule activities might include "set up network configuration," "install the video card," "install applications," and then "set up mail client." [6]

#### 2.13.2 Step 2: Sequence the Activities

Remember back in grade school where you were given a bunch of pictures and you had to figure out their order. You had to decide which picture represented the 1<sup>st</sup> activity, the 2<sup>nd</sup> activity and so on? Well, that is exactly what the second step is all about. In the second step we sequence the schedule activities by simply placing them in the order in which they need to happen. For example, perhaps we need to install the video card first, then set up the network configuration, install applications and then finally set up the mail client. In some cases two or more activities can be done simultaneously. Perhaps we can set up the mail client while other applications are being installed. This step is where we look at the different types of schedule dependencies such as finish-to-start, start-to-start, finish-to-finish, and start-to-finish to figure out how each of these activities relate to each other. [6]

#### 2.13.3 Estimate the Resources Needed for the Activity

The third step involves estimating what resources will be required to accomplish each activity. This includes estimating needed team resources, financial resources, and equipment. These resource needs should be selected for each activity prior to estimating the duration of each activity which is the next step.

#### 2.13.4 Step 4: Estimating the Duration of Each of the Activities

This step requires you and your team to analyze how long it will take to accomplish each of the activities. These estimates can be quantified through the following tools: Expert Judgment: by conferring with someone who is familiar or experienced in what it takes to accomplish a particular activity. Analogous Estimating: a top-down estimation approach is taken by looking at similar projects within your organization for estimates on how long a particular activity should take. Parametric Estimating: basically this is scaling an estimate. For example, perhaps you know it takes on average 10 minutes to install a software application. If the "install applications" activity includes the installation of 6

applications, you can use parametric estimation to estimate that it will take approximately 6 times 10 minutes, or 60 minutes to install all the applications. Three point estimation: sometimes referred to as PERT analysis, is a great tool for estimating activity durations. You basically take a weighted average of a pessimistic, expected, and optimistic estimate for the activity duration. This estimate is in the form of  $(\text{Pessimistic} + 4 \times (\text{Expected}) + \text{Optimistic}) / 6$

#### 2.13.5 Step 5: Schedule Development

This step is the process where the sequence of activities, resources needed for the activities, and the duration of each activity is used to optimize the overall project schedule. Tools used in this process include critical path method, schedule compression, what-if scenario analysis, resource leveling, and critical chain methods. Each of these topics could have one or more articles dedicated to it, so we will not go into the detail of each. Once the schedule is developed, it should be base lined to provide a snapshot of the original schedule plan of the plan.

#### 2.13.6 Step 6: Monitoring and Controlling the Schedule

The final step is monitoring and controlling the schedule. This step is performed throughout the life of the project and ensures that the work results lines up with the schedule plan. Schedule control requires the use of progress reporting, schedule change control systems, such as the use of project change requests, performance management, and variance analysis to determine if additional action is required to get the schedule back in line with the plan.

### 2.14 Earned Value

Earned value project/performance management (EVPM) is a project management technique for measuring project performance and progress in an objective manner. It has the ability to combine measurements of the project management triangle:

- Scope
- Schedule, and
- Costs

In a single integrated system, Earned Value Management is able to provide accurate forecasts of project performance problems, which is an important contribution for project management.

Primavera P6 has the functionality to measure project performance according to cost and schedule using Earned Value measurement techniques.

**2.14.1 Steps to Calculate Earned Value in Primavera**

1. Add Activities, Tie Logic, Set Percent (%) complete to Physical.
2. Add Resource Assignments.
3. Maintain Baseline and Assign to Project.
4. Customize Columns for Analysis.
5. Update Physical Percent (%) complete.
6. Update Resource Actual units (Or Expenses).
7. Schedule Project, Advance Data Date.
8. Analyze Earned Value.

**a. Actual Cost (ACWP)**

Actual Cost (ACWP) is the actual total cost incurred on the activity as of the project data date. ACWP is the same as the Actual Total Cost.

- $ACWP = Actual\ Labor\ Cost + Actual\ Non-Labor\ Cost + Actual\ Material\ Cost + Actual\ Expense\ Cost$

**b. Budget at Completion (BAC)**

This is always the Total cost from the Baseline, calculated using the Baseline Budgeted Values or Baseline At Completion values depending upon the 'Earned Value Calculation' setting (Admin, Admin Preferences, Earned Value).

If the 'Earned Value Calculation' is set to 'Budgeted Values with Planned dates' or 'Budgeted Values with Current Dates':

- $BAC = BL\ Budgeted\ Labor\ Cost + BL\ Budgeted\ Non-Labor\ Cost + BL\ Budgeted\ Material\ Cost + BL\ Budgeted\ Expense\ Cost.$

If the 'Earned Value Calculation' is set to 'At Completion Values with Current Dates':

- $BAC = BL\ at\ Completion\ Labor\ Cost + BL\ At\ Completion\ Non-Labor\ Cost + BL\ At\ Completion\ Material\ Cost + BL\ At\ Completion\ Expense\ Cost.$

**c. Cost Performance Index (CPI)**

A CPI greater than 1 means that Earned Value is greater than the actual amount spent.  
A CPI of less than 1 means that the Earned Value is less than the actual amount spent.

- $CPI = EV / Actual\ Cost$

#### **d. Cost Variance (CV)**

Cost Variance is the difference between the Earned Value and the actual cost of that activity.

- $CV = EV - Actual\ Cost$

#### **e. Earned Value Cost (BCWP or EV)**

Earned Value Cost (EV) is the portion of the budgeted total cost of the activity that is actually completed as of the project data date. Also known as the Budgeted Cost of Work Performed for the activity. The method for computing the performance percent complete depends on the Earned Value technique selected for the activity's WBS.

- $EV = BAC * Performance\ \% \ Complete$

#### **f. Estimate at Completion (EAC)**

EAC is the estimated cost at completion for the activity.

- $EAC = Actual\ Cost + ETC.$

#### **g. Estimate to Complete (ETC)**

Estimate to Complete is the estimated cost left to complete on the activity. The calculation can be customized at the WBS level (On the 'Earned Value' tab in the WBS view). It can be computed as either:

- $ETC = Remaining\ Total\ Cost\ for\ the\ activity$
- $ETC = PF * (BAC - EV)$

Where 'PF' is a multiplier to weight the ETC calculation. This can be either '1', '1/CPI' or '1/(SPI \* CPI)' or user defined amount.

#### **h. Planned Value Cost (BCWS or PV)**

Planned Value Cost (PV) is the portion of the budgeted total cost of the activity that is scheduled to be completed as of the project data date according to the baseline dates. Also known as the Budgeted Cost of Work Scheduled for the activity. The Schedule % Complete specifies how much of the activity's original duration has been completed so far based on the baseline dates.

- $PV = BAC * Schedule\ \% \ Complete$

#### **i. Schedule Performance Index (SPI)**

A SPI greater than 1 mean that Earned Value is greater than the Planned Value. A SPI of less than 1 mean that the Earned Value is less than the Planned Value.

- $SPI = EV / PV$

# Chapter 3

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## Project

The project has been undertaken keeping in view the growing demand of gas in different areas of Pakistan. Gas is a source of energy that is crucial to the survival of domestic as well as the industrial sector. However, it is unfortunate that a lot of the areas in Pakistan are facing lack of preliminary infrastructure for gas commissioning. However, SNGPL is always committed to exploring new avenues and going to the length and breadth of this country in order to serve the masses. In this regard, feasibility studies are conducted for areas without the infrastructure of gas commissioning. These studies are then forwarded to the quarters concerned for approval and other formal procedures to be completed.

One such project is the Supply of gas to Chak no 04 Rasala, where there is no infrastructure installed. In order to provide the supply of gas to the residents of this area and the adjoining areas as well, SNGPL is going to undertake the Project.

The management of SNGPL, after going through all the legal formalities and obtaining the required approvals has allowed to initiate, plan and execute the project of Supply of gas to Chak no 04 Rasala. To ensure successful supply of gas to the said location, supply main of 1.5 KM will be laid from the downstream of Bhalarkay SMS and 4" dia TBS will be installed to regulate the gas supplied.

### 3.1 Project Title

SUPPLY OF GAS TO CHAK NO 04 RASALA

### 3.2 Significance with company's business drivers

The importance of this project lies with the following business drivers of SNGPL. Moreover the project is also significant to the residents of the area being served.

1. **Company Assets:** The laying of gas pipeline in the said area will increase the total assets of the Company. Along with assets, the area and community being served and the number

of consumers will also increase. All these factors will contribute positively to the profitability of the Company..

2. **Obedience of Company's Mission:** Providing uninterrupted and environment friendly energy source to all door steps in chosen areas through continuous expansion of its network is in accordance with the Company's mission statement.

### **3.3 Project Objectives**

#### **3.3.1 Success Factors**

The following points shed light on the success factors of the project:

1. To ensure smooth and un-interrupted supply of gas to consumers.
2. To satisfy the safety standards as per company policy.
3. Effective and Efficient customer services.
4. Awareness of end users about the just, safe and economic use of gas.

### **3.4 External Dependencies**

1. No Objection Certificates required for ditching of ground and laying of pipeline under the roads and streets.
2. Manpower required for ditching of ground and laying of pipeline.
3. Inspection of Welding by external Inspector to ensure that safety and quality standards are being met.

### **3.5 Stakeholder Analysis& Management**

Stakeholder Management includes the processes required to identify people, groups or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project and to develop appropriate management strategies for effectively engaging stakeholder in project decisions and execution

Stakeholder analysis is imperative to the discovery of primary and key stakeholders that require efficient and constant communication. Moreover, these stakeholders have to be managed closely so as to ensure that the project meets its envisioned cost and time baselines and meets its logical end in shape of benefitting the general public of Chak no 04 Rasala. The table given below

shows identified stakeholders, their importance to the project, their responsibility towards the project and their impact on the project. The table also tells in few words about how to manage these stakeholders

Sr.No	Stakeholder	Power	Interest	Priority
1	Local Government	High	High	Manage Closely
2	MNA's of SKP	High	High	Manage Closely
3	Regional Manager	High	High	Manage Closely
4	Sr. General Manager	High	High	Manage Closely
5	General Public	Low	Low	Monitor

**Table 3.1: Stakeholders**

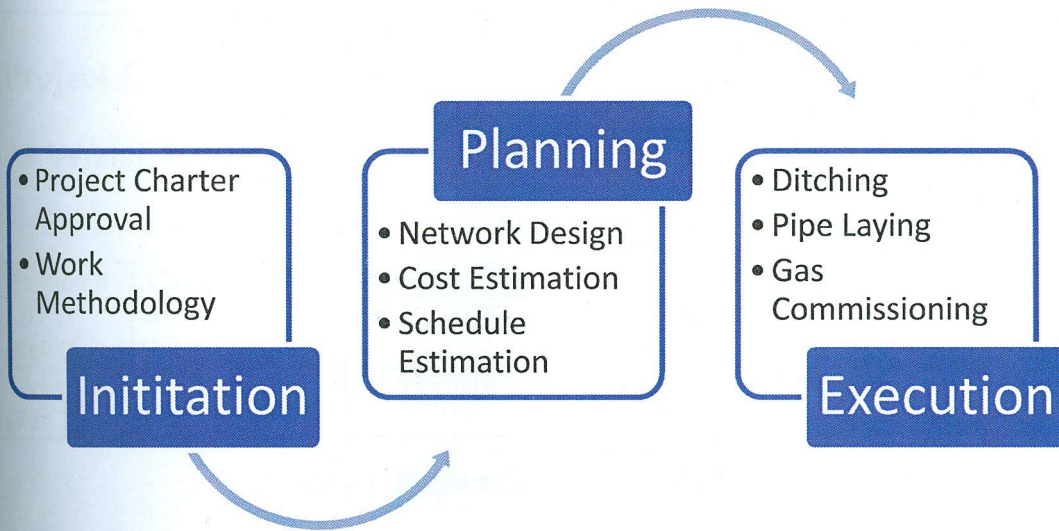
### 3.6 Project Documents

Following project documents will be prepared for the demonstration of this project.

1. Project Charter.
2. Project Scope Statement.
3. Resource Sheet.
4. Work Breakdown Structure (WBS).
5. Network Diagram.
6. Screenshots from Primavera P6 during working
7. Reports from Primavera P6 & and progress of project and elaboration

### 3.7 Implementation Strategy

The initiation, planning and execution of the project have been summarized as follows. The following graphic representation contains main steps to be followed for the successful completion of this project.



**Figure 3.1: Implementation Strategy**

First of all, the approval of Project Charter is sought from the quarters concerned after which the Work Methodology will be built up. The work methodology will, inter alia, take into account the technical factors, limitations and demands of the project.

Based upon these, the Network Design will be created and got technically vetted from the operations department and then approved from the Competent Authorities. After the Network Design has been granted approval, the process of Cost and Schedule Estimation will begin. This estimation will be made purely in line with the approved Network Design. However, due contingencies will also be kept in mind.

After the above stated planning has been completed, only then will execution be effected. The main steps in execution will include Ditching and Pipe Laying. The ditching and Pipe laying will be strictly according to the approved Network Design so as to avoid any untoward incident. In case any unforeseen scenario comes up, and the Network Design cannot be adhered to for a specific portion, then only the approving authority will be able to make changes in the Network Design. The Project Team may, however, brief the approving authority with its findings and possible alternatives.

# Chapter 4

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## Project Charter

### 4.1 Version History

Version #	Completed By	Revision Date	Approved By	Approval Date	Reason
1.0 (Rev 0)	Mr.Kashif	16-12-2016	SGM-D,MNA	18-02-2016	First version of project charter
1.1 (Rev 1)	Mr.Awais	22-12-2016	SGM-D,MNA	22-02-2016	Increased network length

*Table 4.1: Project Charter version history*

### 4.2 Introduction

As per PMI PMBOK, the document issued by the project initiator that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities is called the project charter. The project charter documents the necessary information required by decision maker(s) to endorse the project for financial support. The project charter should include the requirements, scope, rationalization, and resource commitment. It is created during the initiating phase of the project.

### 4.3 Project Objectives

The sole objective of this project is provision of gas supply to the locality of Chak No 4 Rasala by laying supply main and feeder main.

### 4.4 High Level Requirements

Laying of 6" dia supply mains and Town Border Station (TBS) followed by feeder mains is essential to supply gas to said locality.

### 4.5 Success Criteria

Success factors of the selected project are as follows:

1. To ensure smooth and un-interrupted supply of gas to consumers.
2. To meet the safety standards as per company policy.
3. Effective customer services.
4. Awareness of end users about the safe and economic use of supplied gas

#### 4.6 Estimated Timeline

After getting approval, 4 to 6 week for laying of 6” dia supply mains, 2 week for installation of TBS and 8 week for laying of feeder mains is estimated duration. Total estimated duration is 3 months.

#### 4.7 High Level Risks

- 1- If the network design does not meet the requirements, low pressure may be faced in the locality.
- 2- If the quality standards are not ensured, network may corrode rapidly resulting in gas losses by leakages.
- 3- Rapid industrialization in the area may cause under sizing of supply main resulting in low pressure issues.
- 4- Issuance of NOC’s from third parties may delay execution of project.
- 5- Political influence of MNAs may result in significant change of scope.

#### 4.8 Constraints & Assumptions

- 1- Due to political influence, project duration has been shortened to 3 months.
- 2- Laying of feeder mains has been executed in only few areas.
- 3- Ensuring of quality standards is mandatory.
- 4- Due to limited area covered, local public may protest against company

#### 4.9 Project Milestones

Sr. #	Milestone	Planned Target Date
1	Commissioning of Supply Main	18-05-2017
2	Commissioning of TBS	06-06-2017
3	Commissioning of Feeder Main	06-06-2017
4	Accomplishing of Remote Data Communication	07-06-2017

5	Commissioning of Gas supply to consumer	15-06-2017
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**Table 4.2: Milestones**

#### 4.10 Stakeholder

Sr.No	Stakeholder	Power	Interest	Priority
1	Local Government	High	High	Manage Closely
2	MNA's of SKP	High	High	Manage Closely
3	Regional Manager	High	High	Manage Closely
4	Sr. General Manager	High	High	Manage Closely
5	General Public	Low	Low	Monitor

**Table 4.3: Stakeholders**

#### 4.11 Project Budget Estimates

This section provides estimated budget required to execute this project meeting the requisite requirements and standards

Sr. #	Budget Item	Total (PKR)
1	Initiation & Planning	1,13,000
2	Supply Main	3,727,299
3	TBS Installation	1,711,855
4	Feeder Main	4,868,568
5	Corrosion protection unit	2,022,004
6	Remote Communication	205,900
7	New Domestic Connection	25,400
	Estimated Cost:	12,631,988
	17% Sales Tax:	2,147,437
	Total with GST:	14,779,425
	Contingency Reserve (5%):	738,971
	Project Cost:	15,518,396

**Table 4.4: Budget Estimate**

#### 4.12 Project Organization

This section describes the key roles planning and executing the project

Name	Role	Responsibilities
Mr. Awais Ahmad	Project Manager	Person who performs the day-to-day management of the project and has specific

		responsibility for managing the project within the approved time and cost.
Mr.Kashif Saddique	Project Coordinator	A person responsible for coordinating and reporting with officials
Mr.Hassan Anwar	Change Manager	Person who is responsible for managing the change process mechanism
SNGPL, Govt.	Project Sponsor	The sponsor is responsible for providing budget, required materials and services during the project

**Table 4.5: Key Roles**

### 4.13 Project Charter Approval

The undersigned acknowledge that they have reviewed the project charter and authorize and fund the project. Changes to this project charter will be coordinated with and approved by the undersigned or their designated representatives

Signature:

Name: 

Role: Project Co-ordinator

Dated: \_\_\_\_\_

Signature:

Name:  22/12/16

Role: Regional Manager (SICP)

# Chapter 5

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## Project Scope Statement

### 5.1 Version History

Version #	Completed By	Revision Date	Approved By	Approval Date	Reason
1.0 (Rev 0)	Mr.Kashif	16-12-2016	SGM-D,MNA	18-02-2016	First version of project charter
1.1 (Rev 1)	Mr.Awais	22-12-2016	SGM-D,MNA	22-02-2016	Increased network length

*Table 5.1: Version History*

### 5.2 Introduction

As per PMI PMBOK, the document issued by the project initiator that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities is called the project charter. The project charter documents the necessary information required by decision maker(s) to endorse the project for financial support. The project charter should include the requirements, scope, rationalization, and resource commitment. It is created during the initiating phase of the project.

### 5.3 Project Scope Description

In order to provide gas supply to Chak # 4 Rasala under development project of Federal Government a project is underway, the project will ensure natural and green fuel to the village population on economic prices in order to improve the life style of said locality. For this, laying of 6" Supply main will be carried out from the downstream of SMS Bhalarkay. For the provision of natural gas and to meet the increasing energy demand of people, in collaboration of SNGPL with the Federal Govt. the project is designed to cater the energy needs of locality.

The primary objective is the provision of uninterrupted gas supply as per mission statement of our company. This project will contribute to the betterment of life style of people. The project will also result in increase of gas sale and company assets resulting increased profit of the company.

Supply mains are operated at high pressure and feeder mains at lower. To regulate the gas supply, Town Border Station will also be installed.

#### 5.4 Acceptance Criteria

The project should have the following features.

- 1- The laying of supply mains should be as per SOP defined in SNGPL Manual.
- 2- TBS capacity should be enough to cater the load requirement of the locality.
- 3- The network should be corrosion protected.
- 4- Inlet pressure for TBS through supply main should be above 60 psig.
- 5- Gas Supply to the tail end consumers should be ensured.

#### 5.5 Project Deliverables

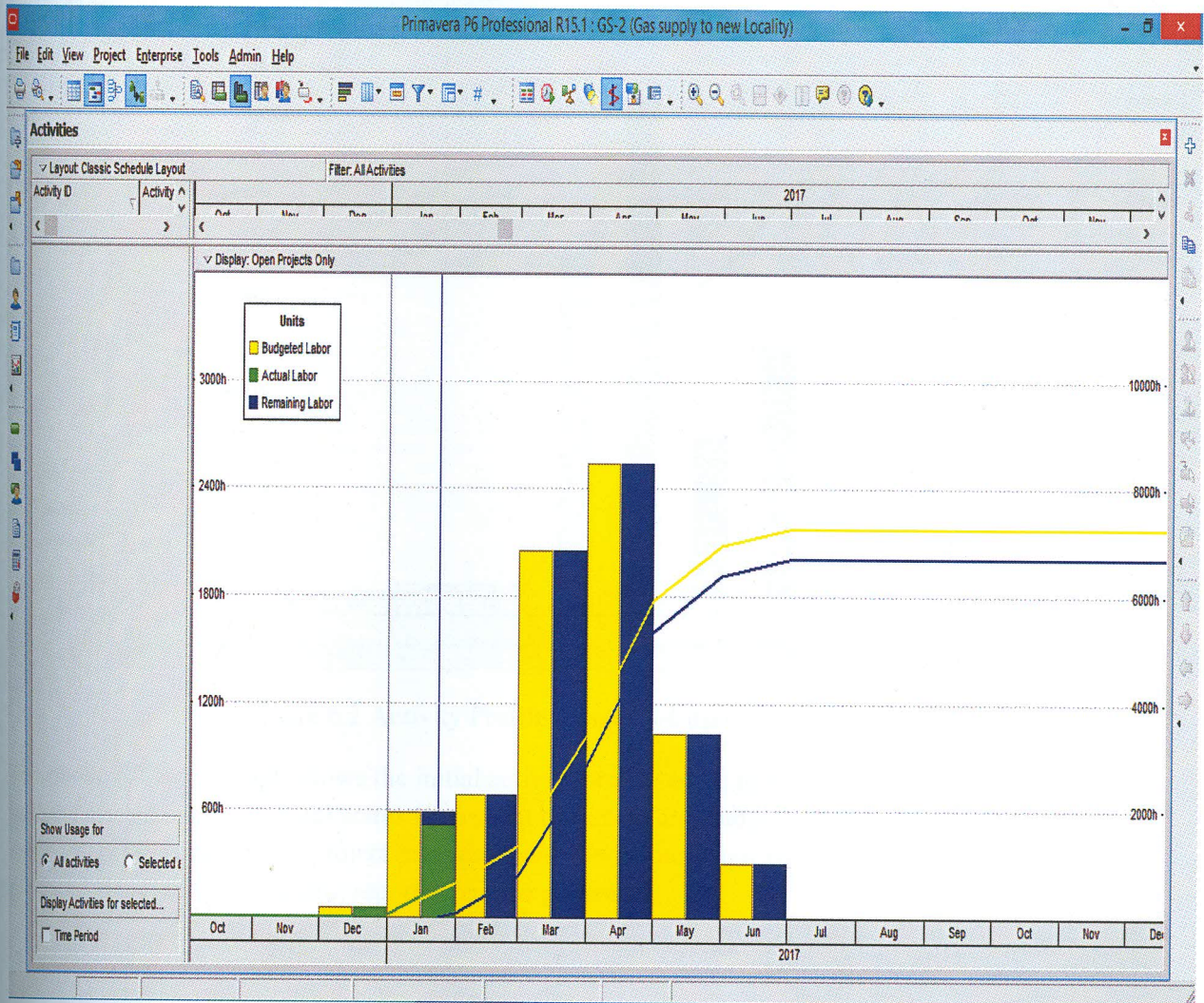
Name	Description
6" dia Supply Main	1.5 Km supply main laying will be carried out at high pressure
Town Border Station (TBS)	4" dia TBS of capacity 150 MCF/hr will be installed to supply regulated supply to feeder main
Feeder Main	Low pressure lines to supply gas to consumers
Consumer Meter Station (CMS)	Measurement Facility

**Table 5.2: Project Deliverables**

# Chapter 6

## Primavera P6 Actual Working & Progress

### 6.1 Activity Usage Profile (S-Curve UNIT)



**Figure 6.1 Activity Profile Usage (S-Units)**

The above S-Curve Graph shows the initial activity profile usage in terms of units. The project has just started and the current status shows that the actual and budgeted labors are in line with each other. However, as the project progresses and deviations occur (which are part and parcel of projects) then more meaningful reports could be generated.

## 6.2 Activity Usage Profile (S-Curve Cost)

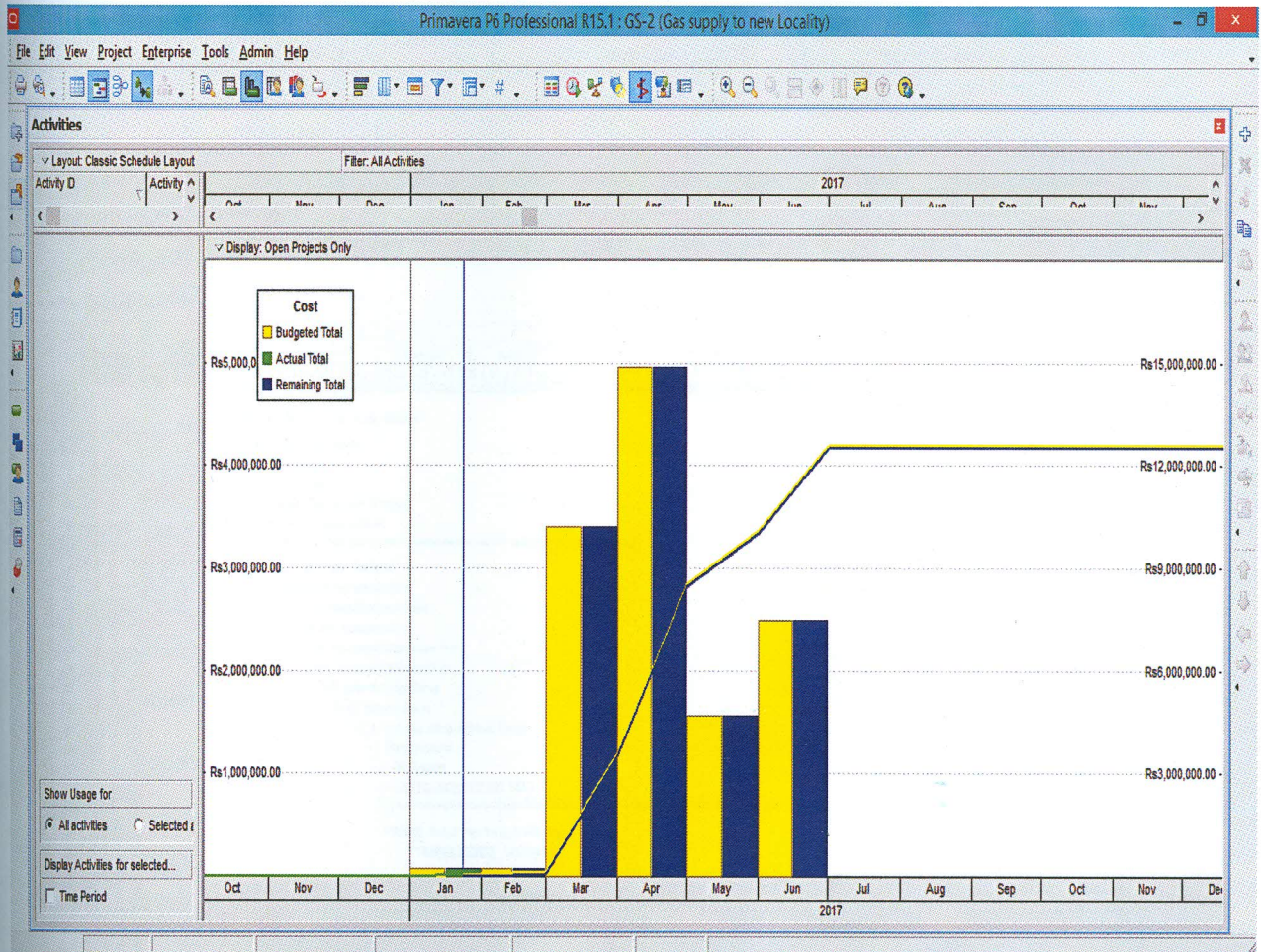


Figure 6.2 Activity Profile Usage (S-Cost)

The above S-Curve Graph shows the initial activity profile usage in terms of cost. The project has just started and the current status shows that the actual and budgeted labors are in line with each other. However, as the project progresses and deviations occur (which are part and parcel of projects) then more meaningful reports could be generated.

### 6.3 Gantt Chart

Presented below is the Gantt chart of all the activities in this project. The Gantt Chart presents a comprehensive overview of the activities in terms of duration, completion, WBS Summary etc.

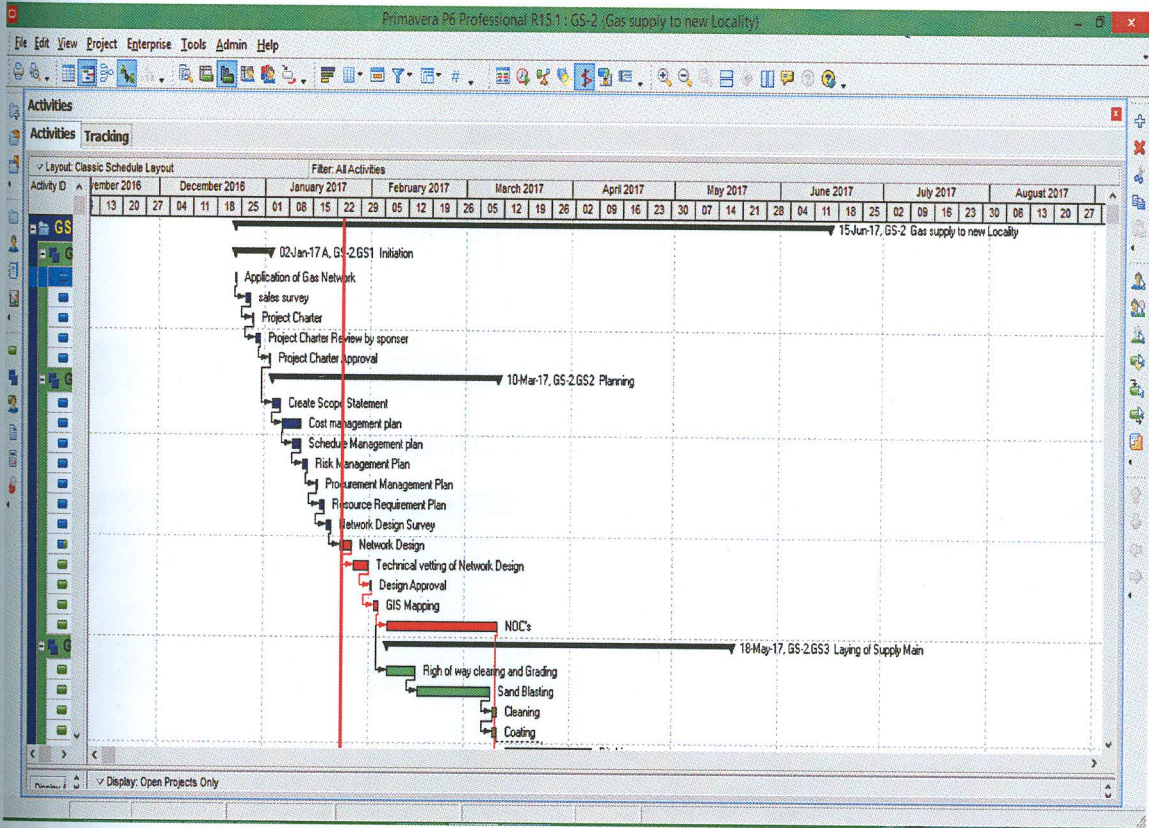


Figure 6.3 Gantt Chart

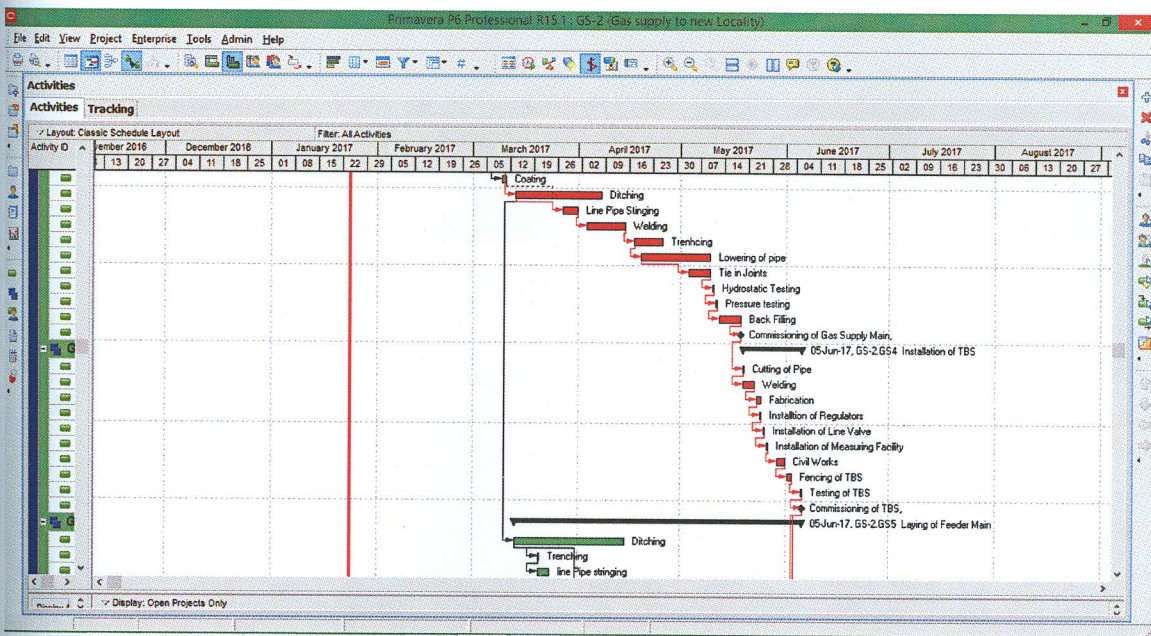


Figure 6.3a Gantt Chart

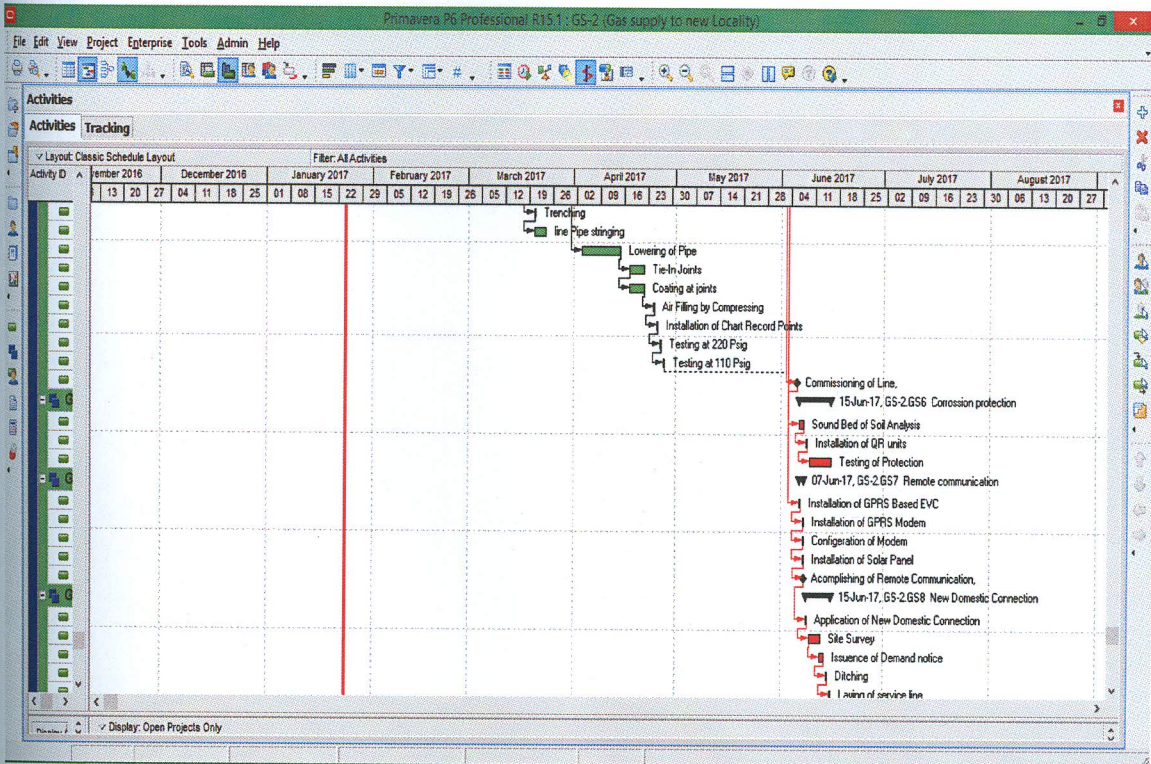


Figure 6.3c Gantt Chart

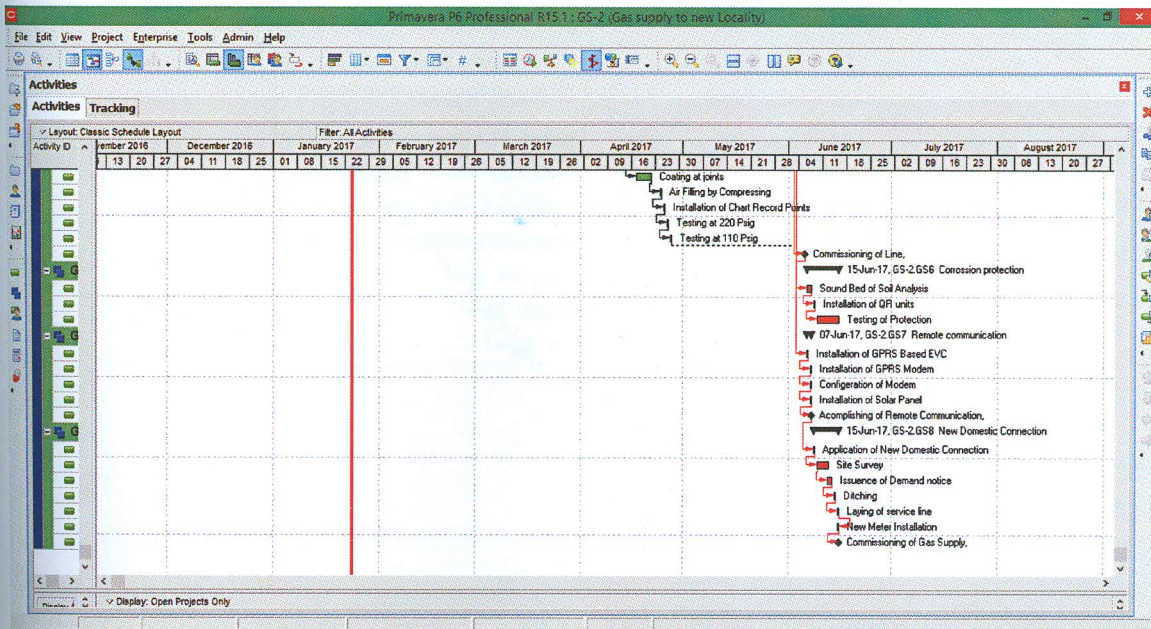


Figure 6.3d Gantt Chart

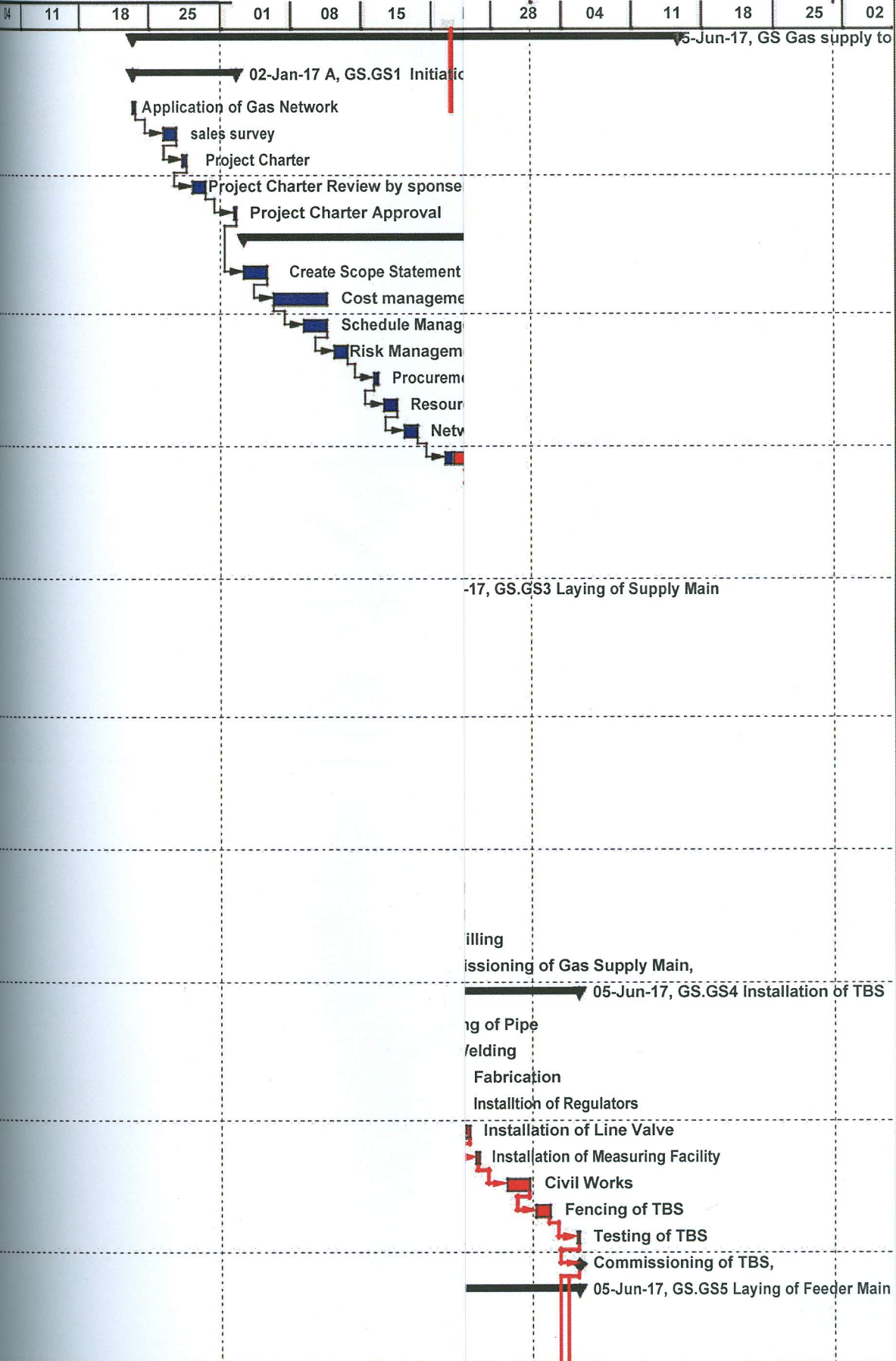


December 2016

January 2017

June 2017

July 2017



Actual Level of Effort
  Remaining Work
  Critical Remaining Work



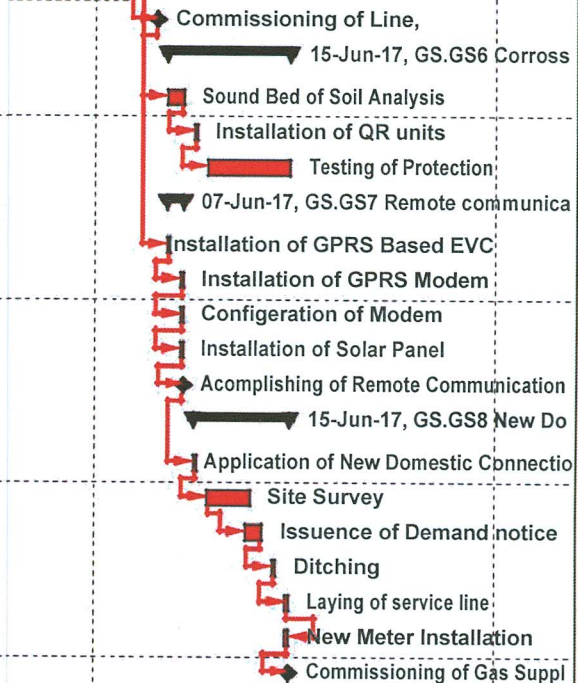
December 2016

January 2017

June 2017

July 2017

11	18	25	01	08	15	21	28	04	11	18	25	02
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Actual Level of Effort    Remaining Work    ◆

Actual Work              Critical Remaining Work    ▼

### 6.4 Primavera Activity Details

The screenshots given below show the activity details on selected parameters to present an overview of the activities in the project.

Primavera P6 Professional R15.1 - GS-2 (Gas supply to new Locality)

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Actual Total Cost	Budgeted Total Cost	Remaining Total Cost	Cost Variance	Schedule Variance	Total Float
GS-2	Gas supply to new Locality	125	103	0.82%	23-Dec-16 A	15-Jan-17	R\$76,760.00	R\$12,584,623.00	R\$12,505,843.00	R\$0.00	R\$844.00	0
GS-2.GS1	Initiation	7	0	100%	23-Dec-16 A	02-Jan-17 A	R\$13,744.80	R\$13,744.80	R\$0.00	R\$0.00	R\$0.00	0
A1470	Application of Gas Network	1	0	100%	23-Dec-16 A	23-Dec-16 A	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0
A1480	sales survey	2	0	100%	26-Dec-16 A	27-Dec-16 A	R\$2,400.00	R\$2,400.00	R\$0.00	R\$0.00	R\$0.00	0
A1490	Project Charter	1	0	100%	28-Dec-16 A	28-Dec-16 A	R\$2,643.20	R\$2,643.20	R\$0.00	R\$0.00	R\$0.00	0
A1500	Project Charter Review by sponsor	2	0	100%	29-Dec-16 A	30-Dec-16 A	R\$1,800.00	R\$1,800.00	R\$0.00	R\$0.00	R\$0.00	0
A1510	Project Charter Approval	1	0	100%	02-Jan-17 A	02-Jan-17 A	R\$6,901.60	R\$6,901.60	R\$0.00	R\$0.00	R\$0.00	0
GS-2.GS2	Planning	49	34	61.22%	03-Jan-17 A	10-Mar-17	R\$65,035.20	R\$104,756.00	R\$35,723.00	R\$0.00	R\$944.00	0
A1050	Create Scope Statement	3	0	100%	03-Jan-17 A	05-Jan-17 A	R\$14,899.20	R\$14,899.20	R\$0.00	R\$0.00	R\$0.00	0
A1060	Cost management plan	3	0	100%	06-Jan-17 A	11-Jan-17 A	R\$10,449.60	R\$10,449.60	R\$0.00	R\$0.00	R\$0.00	0
A1070	Schedule Management plan	3	0	100%	05-Jan-17 A	11-Jan-17 A	R\$12,849.60	R\$12,849.60	R\$0.00	R\$0.00	R\$0.00	0
A1080	Risk Management Plan	2	0	100%	12-Jan-17 A	13-Jan-17 A	R\$8,406.40	R\$8,406.40	R\$0.00	R\$0.00	R\$0.00	0
A1090	Procurement Management Plan	1	0	100%	16-Jan-17 A	16-Jan-17 A	R\$4,283.20	R\$4,283.20	R\$0.00	R\$0.00	R\$0.00	0
A1100	Resource Requirement Plan	2	0	100%	17-Jan-17 A	18-Jan-17 A	R\$8,566.40	R\$8,566.40	R\$0.00	R\$0.00	R\$0.00	0
A1518	Network Design Survey	2	0	100%	19-Jan-17 A	20-Jan-17 A	R\$2,400.00	R\$2,400.00	R\$0.00	R\$0.00	R\$0.00	0
A1520	Network Design	4	3	25%	23-Jan-17 A	26-Jan-17	R\$3,180.80	R\$12,723.20	R\$9,542.40	R\$0.00	R\$944.00	0
A1521	Technical vetting of Network Design	3	3	0%	27-Jan-17	31-Jan-17	R\$0.00	R\$3,600.00	R\$3,600.00	R\$0.00	R\$0.00	0
A1530	Design Approval	1	1	0%	01-Feb-17	01-Feb-17	R\$0.00	R\$4,984.20	R\$4,984.20	R\$0.00	R\$0.00	0
A1531	GIS Mapping	2	2	0%	02-Feb-17	03-Feb-17	R\$0.00	R\$4,672.00	R\$4,672.00	R\$0.00	R\$0.00	0
A1540	NDC's	25	25	0%	06-Feb-17	10-Mar-17	R\$0.00	R\$16,925.00	R\$16,925.00	R\$0.00	R\$0.00	0
GS-2.GS3	Laying of Supply Main	74	74	0%	06-Feb-17	18-May-17	R\$0.00	R\$3,691,815.00	R\$3,691,815.00	R\$0.00	R\$0.00	0
A1110	Righ of way clearing and Grading	7	7	0%	06-Feb-17	14-Feb-17	R\$0.00	R\$30,156.00	R\$30,156.00	R\$0.00	R\$0.00	10
A1120	Sand Blasting	16	16	0%	15-Feb-17	03-Mar-17	R\$0.00	R\$26,883.20	R\$26,883.20	R\$0.00	R\$0.00	10
A1130	Cleaning	2	2	0%	09-Mar-17	10-Mar-17	R\$0.00	R\$6,400.00	R\$6,400.00	R\$0.00	R\$0.00	10
A1140	Coating	2	2	0%	09-Mar-17	10-Mar-17	R\$0.00	R\$9,108.00	R\$9,108.00	R\$0.00	R\$0.00	10
A1150	Ditching	20	20	0%	13-Mar-17	07-Apr-17	R\$0.00	R\$93,376.00	R\$93,376.00	R\$0.00	R\$0.00	0

Figure 6.4a Primavera Activity Details

Primavera P6 Professional R15.1 - GS-2 (Gas supply to new Locality)

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Actual Total Cost	Budgeted Total Cost	Remaining Total Cost	Cost Variance	Schedule Variance	Total Float
A1150	Ditching	20	20	0%	13-Mar-17	07-Apr-17	R\$0.00	R\$93,376.00	R\$93,376.00	R\$0.00	R\$0.00	0
A1160	Line Pipe Stringing	5	5	0%	27-Mar-17	31-Mar-17	R\$0.00	R\$3,234,500.00	R\$3,234,500.00	R\$0.00	R\$0.00	0
A1170	Welding	10	10	0%	03-Apr-17	14-Apr-17	R\$0.00	R\$124,369.00	R\$124,369.00	R\$0.00	R\$0.00	0
A1180	Trenching	7	7	0%	17-Apr-17	25-Apr-17	R\$0.00	R\$28,000.00	R\$28,000.00	R\$0.00	R\$0.00	0
A1190	Lowering of pipe	15	15	0%	19-Apr-17	09-May-17	R\$0.00	R\$88,020.00	R\$88,020.00	R\$0.00	R\$0.00	0
A1191	Tie in Joints	5	5	0%	03-May-17	09-May-17	R\$0.00	R\$36,170.00	R\$36,170.00	R\$0.00	R\$0.00	0
A1200	Hydrostatic Testing	1	1	0%	10-May-17	10-May-17	R\$0.00	R\$3,056.00	R\$3,056.00	R\$0.00	R\$0.00	0
A1210	Pressure testing	1	1	0%	11-May-17	11-May-17	R\$0.00	R\$3,776.00	R\$3,776.00	R\$0.00	R\$0.00	0
A1220	Back Filling	5	5	0%	12-May-17	19-May-17	R\$0.00	R\$8,001.60	R\$8,001.60	R\$0.00	R\$0.00	0
A1230	Commissioning of Gas Supply Main	0	0	0%	19-May-17	19-May-17	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0
GS-2.GS4	Installation of TBS	12	12	0%	19-May-17	05-Jun-17	R\$0.00	R\$1,703,926.00	R\$1,703,926.00	R\$0.00	R\$0.00	0
A1240	Cutting of Pipe	1	1	0%	19-May-17	19-May-17	R\$0.00	R\$37,716.00	R\$37,716.00	R\$0.00	R\$0.00	0
A1250	Welding	2	2	0%	19-May-17	22-May-17	R\$0.00	R\$7,152.00	R\$7,152.00	R\$0.00	R\$0.00	0
A1260	Fabrication	2	2	0%	23-May-17	24-May-17	R\$0.00	R\$35,101.60	R\$35,101.60	R\$0.00	R\$0.00	0
A1261	Installation of Regulators	1	1	0%	24-May-17	24-May-17	R\$0.00	R\$156,816.00	R\$156,816.00	R\$0.00	R\$0.00	0
A1270	Installation of Line Valve	1	1	0%	25-May-17	25-May-17	R\$0.00	R\$11,850.00	R\$11,850.00	R\$0.00	R\$0.00	0
A1280	Installation of Measuring Facility	1	1	0%	26-May-17	26-May-17	R\$0.00	R\$1,202,320.80	R\$1,202,320.80	R\$0.00	R\$0.00	0
A1290	Civil Works	3	3	0%	29-May-17	31-May-17	R\$0.00	R\$20,000.00	R\$20,000.00	R\$0.00	R\$0.00	0
A1300	Fencing of TBS	2	2	0%	01-Jun-17	02-Jun-17	R\$0.00	R\$230,000.00	R\$230,000.00	R\$0.00	R\$0.00	0
A1310	Testing of TBS	1	1	0%	05-Jun-17	05-Jun-17	R\$0.00	R\$2,579.20	R\$2,579.20	R\$0.00	R\$0.00	0
A1320	Commissioning of TBS	0	0	0%	05-Jun-17	05-Jun-17	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0
GS-2.GS5	Laying of Feeder Main	51	51	0%	13-Mar-17	03-Jun-17	R\$0.00	R\$4,817,268.00	R\$4,817,268.00	R\$0.00	R\$0.00	0
A1328	Ditching	25	25	0%	13-Mar-17	14-Apr-17	R\$0.00	R\$106,760.00	R\$106,760.00	R\$0.00	R\$0.00	27
A1330	Trenching	1	1	0%	20-Mar-17	20-Mar-17	R\$0.00	R\$1,280.00	R\$1,280.00	R\$0.00	R\$0.00	60
A1340	line Pipe stringing	4	4	0%	20-Mar-17	23-Mar-17	R\$0.00	R\$12,900.00	R\$12,900.00	R\$0.00	R\$0.00	60
A1350	Lowering of Pipe	10	10	0%	03-Apr-17	14-Apr-17	R\$0.00	R\$4,618,680.00	R\$4,618,680.00	R\$0.00	R\$0.00	27
A1360	Tie-In Joints	5	5	0%	17-Apr-17	21-Apr-17	R\$0.00	R\$60,116.00	R\$60,116.00	R\$0.00	R\$0.00	27

Figure 6.4b Primavera Activity Details



Activity ID	Activity Name	Original Duration	Schedule Variance	Cost Variance	Cost Performance Index	Schedule Performance Index	D
<b>GS Gas supply to new Locality</b>			1500.00)	PKR0.00	1.00	0.99	2
<b>GS.GS1 Initiation</b>			KR0.00	PKR0.00	1.00	1.00	
A1470	Application of Gas Network		KR0.00	PKR0.00	0.00	0.00	
A1480	sales survey		KR0.00	PKR0.00	1.00	1.00	
A1490	Project Charter		KR0.00	PKR0.00	1.00	1.00	
A1500	Project Charter Review by spons		KR0.00	PKR0.00	1.00	1.00	
A1510	Project Charter Approval		KR0.00	PKR0.00	1.00	1.00	
<b>GS.GS2 Planning</b>			500.00)	PKR0.00	1.00	0.99	
A1050	Create Scope Statement		KR0.00	PKR0.00	1.00	1.00	
A1060	Cost management plan		KR0.00	PKR0.00	1.00	1.00	
A1070	Schedule Management plan		KR0.00	PKR0.00	1.00	1.00	
A1080	Risk Management Plan		KR0.00	PKR0.00	1.00	1.00	
A1090	Procurement Management Plan		KR0.00	PKR0.00	1.00	1.00	
A1100	Resource Requirement Plan		KR0.00	PKR0.00	1.00	1.00	
A1518	Network Design Survey		KR0.00	PKR0.00	1.00	1.00	
A1520	Network Design		500.00)	PKR0.00	1.00	0.86	
A1521	Technical vetting of Network Des		KR0.00	PKR0.00	0.00	0.00	
A1530	Design Approval		KR0.00	PKR0.00	0.00	0.00	
A1531	GIS Mapping		KR0.00	PKR0.00	0.00	0.00	
A1540	NOC's		KR0.00	PKR0.00	0.00	0.00	
<b>GS.GS3 Laying of Supply Main</b>			KR0.00	PKR0.00	0.00	0.00	
A1110	Righ of way clearing and Grading		KR0.00	PKR0.00	0.00	0.00	
A1120	Sand Blasting		KR0.00	PKR0.00	0.00	0.00	
A1130	Cleaning		KR0.00	PKR0.00	0.00	0.00	
A1140	Coating		KR0.00	PKR0.00	0.00	0.00	
A1150	Ditching		KR0.00	PKR0.00	0.00	0.00	
A1160	Line Pipe Stinging		KR0.00	PKR0.00	0.00	0.00	
A1170	Welding		KR0.00	PKR0.00	0.00	0.00	
A1180	Trenhcing		KR0.00	PKR0.00	0.00	0.00	
A1190	Lowering of pipe		KR0.00	PKR0.00	0.00	0.00	
A1191	Tie in Joints		KR0.00	PKR0.00	0.00	0.00	
A1200	Hydrostatic Testing		KR0.00	PKR0.00	0.00	0.00	
A1210	Pressure testing		KR0.00	PKR0.00	0.00	0.00	
A1220	Back Filling		KR0.00	PKR0.00	0.00	0.00	
A1230	Commissioning of Gas Supply M		KR0.00	PKR0.00	0.00	0.00	
<b>GS.GS4 Installation of TBS</b>			KR0.00	PKR0.00	0.00	0.00	
A1240	Cutting of Pipe		KR0.00	PKR0.00	0.00	0.00	
A1250	Welding		KR0.00	PKR0.00	0.00	0.00	
A1260	Fabrication		KR0.00	PKR0.00	0.00	0.00	
A1261	Installtion of Regulators		KR0.00	PKR0.00	0.00	0.00	
A1270	Installation of Line Valve		KR0.00	PKR0.00	0.00	0.00	
A1280	Installation of Measuring Facility		KR0.00	PKR0.00	0.00	0.00	
A1290	Civil Works		KR0.00	PKR0.00	0.00	0.00	
A1300	Fencing of TBS		KR0.00	PKR0.00	0.00	0.00	
A1310	Testing of TBS		KR0.00	PKR0.00	0.00	0.00	
A1320	Commissioning of TBS		KR0.00	PKR0.00	0.00	0.00	
<b>GS.GS5 Laying of Feeder Main</b>			KR0.00	PKR0.00	0.00	0.00	
A1328	Ditching		KR0.00	PKR0.00	0.00	0.00	
A1330	Trenching		KR0.00	PKR0.00	0.00	0.00	

Actual Level of Effort Remaining Work   
 Actual Work Critical Remaining Work



Activity ID	Activity Name	Original Duration	Schedule Variance	Cost Variance	Cost Performance Index	Schedule Performance Index
A1340	line Pipe stringing		PKR0.00	PKR0.00	0.00	0.00
A1350	Lowering of Pipe		PKR0.00	PKR0.00	0.00	0.00
A1360	Tie-In Joints		PKR0.00	PKR0.00	0.00	0.00
A1370	Coating at joints		PKR0.00	PKR0.00	0.00	0.00
A1380	Air Filling by Compressing		PKR0.00	PKR0.00	0.00	0.00
A1390	Installation of Chart Record Poin		PKR0.00	PKR0.00	0.00	0.00
A1400	Testing at 220 Psig		PKR0.00	PKR0.00	0.00	0.00
A1410	Testing at 110 Psig		PKR0.00	PKR0.00	0.00	0.00
A1420	Commissioning of Line		PKR0.00	PKR0.00	0.00	0.00
<b>GS.GS6 Corrossion protection</b>			PKR0.00	PKR0.00	0.00	0.00
A1430	Sound Bed of Soil Analysis		PKR0.00	PKR0.00	0.00	0.00
A1440	Installation of QR units		PKR0.00	PKR0.00	0.00	0.00
A1450	Testing of Protection		PKR0.00	PKR0.00	0.00	0.00
<b>GS.GS7 Remote communication</b>			PKR0.00	PKR0.00	0.00	0.00
A1650	Installation of GPRS Based EVC		PKR0.00	PKR0.00	0.00	0.00
A1660	Installation of GPRS Modem		PKR0.00	PKR0.00	0.00	0.00
A1670	Configeration of Modem		PKR0.00	PKR0.00	0.00	0.00
A1680	Installation of Solar Panel		PKR0.00	PKR0.00	0.00	0.00
A1690	Acomplishing of Remote Commu		PKR0.00	PKR0.00	0.00	0.00
<b>GS.GS8 New Domestic Connecti</b>			PKR0.00	PKR0.00	0.00	0.00
A1550	Application of New Domestic Co		PKR0.00	PKR0.00	0.00	0.00
A1560	Site Survey		PKR0.00	PKR0.00	0.00	0.00
A1570	Issuence of Demand notice		PKR0.00	PKR0.00	0.00	0.00
A1580	Ditching		PKR0.00	PKR0.00	0.00	0.00
A1590	Laying of service line		PKR0.00	PKR0.00	0.00	0.00
A1600	New Meter Installation		PKR0.00	PKR0.00	0.00	0.00
A1610	Commissioning of Gas Supply		PKR0.00	PKR0.00	0.00	0.00

Actual Level of Effort Remaining Work 
  
 Actual Work Critical Remaining Work

Primavera P6 Professional R15.1 - GS-2 (Gas supply to new Local ty)

File Edit View Project Enterprise Tools Admin Help

Activities Tracking

Layout: Classic Schedule Layout Filter: All Activities

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Actual Total Cost	Budgeted Total Cost	Remaining Total Cost	Cost Variance	Schedule Variance	Total Float
A1350	Lowering of Pipe	10	10	0%	03-Apr-17	14-Apr-17	R\$0.00	R\$4,616,680.00	R\$4,616,680.00	R\$0.00	R\$0.00	27
A1360	Tie-In Joints	5	5	0%	17-Apr-17	21-Apr-17	R\$0.00	R\$60,116.00	R\$60,116.00	R\$0.00	R\$0.00	27
A1370	Coating of joints	5	5	0%	17-Apr-17	21-Apr-17	R\$0.00	R\$10,200.00	R\$10,200.00	R\$0.00	R\$0.00	27
A1380	Air Filling by Compressing	1	1	0%	24-Apr-17	24-Apr-17	R\$0.00	R\$1,380.00	R\$1,380.00	R\$0.00	R\$0.00	27
A1390	Installation of Chart Record Points	1	1	0%	25-Apr-17	25-Apr-17	R\$0.00	R\$150.00	R\$150.00	R\$0.00	R\$0.00	27
A1400	Testing at 220 Psi	1	1	0%	26-Apr-17	26-Apr-17	R\$0.00	R\$3,368.80	R\$3,368.80	R\$0.00	R\$0.00	27
A1410	Testing at 110 Psi	1	1	0%	27-Apr-17	27-Apr-17	R\$0.00	R\$2,328.60	R\$2,328.60	R\$0.00	R\$0.00	27
A1420	Commissioning of Line	0	0	0%	05-Jun-17	05-Jun-17	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0
GS-2.GS6	Corrosion protection	8	8	0%	05-Jun-17	15-Jun-17	R\$0.00	R\$2,022,004.90	R\$2,022,004.90	R\$0.00	R\$0.00	0
A1430	Sound Bed of Soil Analysis	2	2	0%	06-Jun-17	07-Jun-17	R\$0.00	R\$3,200.00	R\$3,200.00	R\$0.00	R\$0.00	0
A1440	Installation of QR units	1	1	0%	08-Jun-17	08-Jun-17	R\$0.00	R\$2,003,800.00	R\$2,003,800.00	R\$0.00	R\$0.00	0
A1450	Testing of Protection	5	5	0%	09-Jun-17	15-Jun-17	R\$0.00	R\$15,004.00	R\$15,004.00	R\$0.00	R\$0.00	0
GS-2.GS7	Remote communication	2	2	0%	08-Jun-17	07-Jun-17	R\$0.00	R\$205,900.40	R\$205,900.40	R\$0.00	R\$0.00	0
A1650	Installation of GPRS Based EVC	1	1	0%	06-Jun-17	06-Jun-17	R\$0.00	R\$1,200.00	R\$1,200.00	R\$0.00	R\$0.00	0
A1660	Installation of GPRS Modem	1	1	0%	07-Jun-17	07-Jun-17	R\$0.00	R\$201,200.00	R\$201,200.00	R\$0.00	R\$0.00	0
A1670	Configuration of Modem	1	1	0%	07-Jun-17	07-Jun-17	R\$0.00	R\$1,200.40	R\$1,200.40	R\$0.00	R\$0.00	0
A1680	Installation of Solar Panel	1	1	0%	07-Jun-17	07-Jun-17	R\$0.00	R\$2,300.00	R\$2,300.00	R\$0.00	R\$0.00	0
A1690	Accomplishing of Remote Communication	0	0	0%	07-Jun-17	07-Jun-17	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0
GS-2.GS8	New Domestic Connectio	8	8	0%	08-Jun-17	15-Jun-17	R\$0.00	R\$25,400.00	R\$25,400.00	R\$0.00	R\$0.00	0
A1550	Application of New Domestic Conne	1	1	0%	08-Jun-17	08-Jun-17	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0
A1560	Site Survey	2	2	0%	09-Jun-17	12-Jun-17	R\$0.00	R\$2,400.00	R\$2,400.00	R\$0.00	R\$0.00	0
A1570	Issuance of Demand notice	2	2	0%	12-Jun-17	13-Jun-17	R\$0.00	R\$3,200.00	R\$3,200.00	R\$0.00	R\$0.00	0
A1580	Ditching	1	1	0%	14-Jun-17	14-Jun-17	R\$0.00	R\$800.00	R\$800.00	R\$0.00	R\$0.00	0
A1590	Laying of service line	1	1	0%	15-Jun-17	15-Jun-17	R\$0.00	R\$5,900.00	R\$5,900.00	R\$0.00	R\$0.00	0
A1600	New Meter Installation	1	1	0%	15-Jun-17	15-Jun-17	R\$0.00	R\$13,100.00	R\$13,100.00	R\$0.00	R\$0.00	0
A1610	Commissioning of Gas Supply	0	0	0%	15-Jun-17	15-Jun-17	R\$0.00	R\$0.00	R\$0.00	R\$0.00	R\$0.00	0

Figure 6.4c Primavera Activity Details

## 6.4 Primavera Activity-wise EVM

Presented below is a Primavera P6 generated report called Activity wise EVM. The report shows details of EVM parameters on an activity. Tabulated against each activity are its Budgeted Cost of Work Performed, Budgeted Cost of Work Scheduled, Actual Cost of Work Performed, Budget At Completion, Estimate to Complete, Estimate at Completion etc. Such reports prove really beneficial for progress review meetings, scrutinizing things when something goes wrong at an activity.



**AC-01 Activity Earned Value**

WBS	Activity ID	Activity Name	Activity Status	BCWS	BCWP	ACWP
	<b>SNGPL</b>	<b>Sui Northern Gas Pipelines LTD</b>				
	<b>GS</b>	<b>Gas supply to new Locality</b>				
	<b>GS.GS1</b>	<b>Initiation</b>				
	A1470	Application of Gas Network	Completed	PKR0.00	PKR0.00	PKR0.00
	A1480	sales survey	Completed	PKR2,400.00	PKR2,400.00	PKR2,400.00
	A1490	Project Charter	Completed	PKR2,643.20	PKR2,643.20	PKR2,643.20
	A1500	Project Charter Review by sponsor	Completed	PKR1,800.00	PKR1,800.00	PKR1,800.00
	A1510	Project Charter Approval	Completed	PKR6,901.60	PKR6,901.60	PKR6,901.60
	<b>Subtotal</b>			<b>PKR13,744.80</b>	<b>PKR13,744.80</b>	<b>PKR13,744.80</b>
	<b>GS.GS2</b>	<b>Planning</b>				
	A1050	Create Scope Statement	Completed	PKR14,899.20	PKR14,899.20	PKR14,899.20
	A1060	Cost management plan	Completed	PKR10,449.60	PKR10,449.60	PKR10,449.60
	A1070	Schedule Management plan	Completed	PKR12,849.60	PKR12,849.60	PKR12,849.60
	A1080	Risk Management Plan	Completed	PKR8,406.40	PKR8,406.40	PKR8,406.40
	A1090	Procurement Management Plan	Completed	PKR4,283.20	PKR4,283.20	PKR4,283.20
	A1100	Resource Requirement Plan	Completed	PKR8,566.40	PKR8,566.40	PKR8,566.40
	A1518	Network Design Survey	Completed	PKR2,400.00	PKR2,400.00	PKR2,400.00
	A1520	Network Design	In Progress	PKR3,680.80	PKR3,180.80	PKR3,180.80
	A1521	Technical vetting of Network Design	Not Started	PKR0.00	PKR0.00	PKR0.00
	A1530	Design Approval	Not Started	PKR0.00	PKR0.00	PKR0.00
	A1531	GIS Mapping	Not Started	PKR0.00	PKR0.00	PKR0.00



BAC	ETC	EAC	VAC
PKR0.00	PKR0.00	PKR0.00	PKR0.00
PKR2,400.00	PKR0.00	PKR2,400.00	PKR0.00
PKR2,643.20	PKR0.00	PKR2,643.20	PKR0.00
PKR1,800.00	PKR0.00	PKR1,800.00	PKR0.00
PKR6,901.60	PKR0.00	PKR6,901.60	PKR0.00
PKR13,744.80	PKR0.00	PKR13,744.80	PKR0.00
PKR14,899.20	PKR0.00	PKR14,899.20	PKR0.00
PKR10,449.60	PKR0.00	PKR10,449.60	PKR0.00
PKR12,849.60	PKR0.00	PKR12,849.60	PKR0.00
PKR8,406.40	PKR0.00	PKR8,406.40	PKR0.00
PKR4,283.20	PKR0.00	PKR4,283.20	PKR0.00
PKR8,566.40	PKR0.00	PKR8,566.40	PKR0.00
PKR2,400.00	PKR0.00	PKR2,400.00	PKR0.00
PKR12,723.20	PKR9,542.40	PKR12,723.20	PKR0.00
PKR3,600.00	PKR3,600.00	PKR3,600.00	PKR0.00
PKR6,328.20	PKR6,328.20	PKR6,328.20	PKR0.00
PKR7,360.00	PKR7,360.00	PKR7,360.00	PKR0.00



AC-01 Activity Earned Value

WBS Activity ID	Activity Name	Activity Status	BCWS	BCWP	ACWP
A1540	NOC's	Not Started	PKR0.00	PKR0.00	PKR0.00
<b>Subtotal</b>			PKR65,535.20	PKR65,035.20	PKR65,035.20
<b>GS.GS3</b>	<b>Laying of Supply Main</b>				
A1110	Righ of way clearing and Grading	Not Started	PKR0.00	PKR0.00	PKR0.00
A1120	Sand Blasting	Not Started	PKR0.00	PKR0.00	PKR0.00
A1130	Cleaning	Not Started	PKR0.00	PKR0.00	PKR0.00
A1140	Coating	Not Started	PKR0.00	PKR0.00	PKR0.00
A1150	Ditching	Not Started	PKR0.00	PKR0.00	PKR0.00
A1160	Line Pipe Stinging	Not Started	PKR0.00	PKR0.00	PKR0.00
A1170	Welding	Not Started	PKR0.00	PKR0.00	PKR0.00
A1180	Trenhcing	Not Started	PKR0.00	PKR0.00	PKR0.00
A1190	Lowering of pipe	Not Started	PKR0.00	PKR0.00	PKR0.00
A1191	Tie in Joints	Not Started	PKR0.00	PKR0.00	PKR0.00
A1200	Hydrostatic Testing	Not Started	PKR0.00	PKR0.00	PKR0.00
A1210	Pressure testing	Not Started	PKR0.00	PKR0.00	PKR0.00
A1220	Back Filling	Not Started	PKR0.00	PKR0.00	PKR0.00
A1230	Commissioning of Gas Supply Main	Not Started	PKR0.00	PKR0.00	PKR0.00
<b>Subtotal</b>			PKR0.00	PKR0.00	PKR0.00
<b>GS.GS4</b>	<b>Installation of TBS</b>				
A1240	Cutting of Pipe	Not Started	PKR0.00	PKR0.00	PKR0.00



BAC	ETC	EAC	VAC
PKR21,875.00	PKR21,875.00	PKR21,875.00	PKR0.00
PKR113,740.80	PKR48,705.60	PKR113,740.80	PKR0.00
PKR35,700.00	PKR35,700.00	PKR35,700.00	PKR0.00
PKR26,883.20	PKR26,883.20	PKR26,883.20	PKR0.00
PKR6,400.00	PKR6,400.00	PKR6,400.00	PKR0.00
PKR9,900.00	PKR9,900.00	PKR9,900.00	PKR0.00
PKR109,216.00	PKR109,216.00	PKR109,216.00	PKR0.00
KR3,234,500.00	KR3,234,500.00	KR3,234,500.00	PKR0.00
PKR128,329.00	PKR128,329.00	PKR128,329.00	PKR0.00
PKR28,000.00	PKR28,000.00	PKR28,000.00	PKR0.00
PKR99,900.00	PKR99,900.00	PKR99,900.00	PKR0.00
PKR38,150.00	PKR38,150.00	PKR38,150.00	PKR0.00
PKR4,640.00	PKR4,640.00	PKR4,640.00	PKR0.00
PKR5,360.00	PKR5,360.00	PKR5,360.00	PKR0.00
PKR8,001.60	PKR8,001.60	PKR8,001.60	PKR0.00
PKR0.00	PKR0.00	PKR0.00	PKR0.00
KR3,734,979.80	KR3,734,979.80	KR3,734,979.80	PKR0.00
PKR39,300.00	PKR39,300.00	PKR39,300.00	PKR0.00



**AC-01 Activity Earned Value**

WBS

Activity ID	Activity Name	Activity Status	BCWS	BCWP	ACWP
A1250	Welding	Not Started	PKR0.00	PKR0.00	PKR0.00
A1260	Fabrication	Not Started	PKR0.00	PKR0.00	PKR0.00
A1261	Installation of Regulators	Not Started	PKR0.00	PKR0.00	PKR0.00
A1270	Installation of Line Valve	Not Started	PKR0.00	PKR0.00	PKR0.00
A1280	Installation of Measuring Facility	Not Started	PKR0.00	PKR0.00	PKR0.00
A1290	Civil Works	Not Started	PKR0.00	PKR0.00	PKR0.00
A1300	Fencing of TBS	Not Started	PKR0.00	PKR0.00	PKR0.00
A1310	Testing of TBS	Not Started	PKR0.00	PKR0.00	PKR0.00
A1320	Commissioning of TBS	Not Started	PKR0.00	PKR0.00	PKR0.00
<b>Subtotal</b>			<b>PKR0.00</b>	<b>PKR0.00</b>	<b>PKR0.00</b>
<b>GS.GS5</b>	<b>Laying of Feeder Main</b>				
A1328	Ditching	Not Started	PKR0.00	PKR0.00	PKR0.00
A1330	Trenching	Not Started	PKR0.00	PKR0.00	PKR0.00
A1340	line Pipe stringing	Not Started	PKR0.00	PKR0.00	PKR0.00
A1350	Lowering of Pipe	Not Started	PKR0.00	PKR0.00	PKR0.00
A1360	Tie-In Joints	Not Started	PKR0.00	PKR0.00	PKR0.00
A1370	Coating at joints	Not Started	PKR0.00	PKR0.00	PKR0.00
A1380	Air Filling by Compressing	Not Started	PKR0.00	PKR0.00	PKR0.00
A1390	Installation of Chart Record Points	Not Started	PKR0.00	PKR0.00	PKR0.00
A1400	Testing at 220 Psig	Not Started	PKR0.00	PKR0.00	PKR0.00
A1410	Testing at 110 Psig	Not Started	PKR0.00	PKR0.00	PKR0.00
A1420	Commissioning of Line	Not Started	PKR0.00	PKR0.00	PKR0.00



BAC	ETC	EAC	VAC
PKR10,320.00	PKR10,320.00	PKR10,320.00	PKR0.00
PKR35,101.60	PKR35,101.60	PKR35,101.60	PKR0.00
PKR158,400.00	PKR158,400.00	PKR158,400.00	PKR0.00
PKR11,850.00	PKR11,850.00	PKR11,850.00	PKR0.00
KR1,202,320.80	KR1,202,320.80	KR1,202,320.80	PKR0.00
PKR20,000.00	PKR20,000.00	PKR20,000.00	PKR0.00
PKR230,000.00	PKR230,000.00	PKR230,000.00	PKR0.00
PKR4,563.20	PKR4,563.20	PKR4,563.20	PKR0.00
PKR0.00	PKR0.00	PKR0.00	PKR0.00
KR1,711,855.60	KR1,711,855.60	KR1,711,855.60	PKR0.00
PKR106,760.00	PKR106,760.00	PKR106,760.00	PKR0.00
PKR1,280.00	PKR1,280.00	PKR1,280.00	PKR0.00
PKR12,800.00	PKR12,800.00	PKR12,800.00	PKR0.00
KR4,626,600.00	KR4,626,600.00	KR4,626,600.00	PKR0.00
PKR60,116.00	PKR60,116.00	PKR60,116.00	PKR0.00
PKR10,200.00	PKR10,200.00	PKR10,200.00	PKR0.00
PKR1,380.00	PKR1,380.00	PKR1,380.00	PKR0.00
PKR150.00	PKR150.00	PKR150.00	PKR0.00
PKR4,160.80	PKR4,160.80	PKR4,160.80	PKR0.00
PKR3,121.60	PKR3,121.60	PKR3,121.60	PKR0.00
PKR0.00	PKR0.00	PKR0.00	PKR0.00



AC-01 Activity Earned Value

WBS Activity ID	Activity Name	Activity Status	BCWS	BCWP	ACWP
<b>Subtotal</b>			PKR0.00	PKR0.00	PKR0.00
<b>GS.GS6</b>	<b>Corrosion protection</b>				
A1430	Sound Bed of Soil Analysis	Not Started	PKR0.00	PKR0.00	PKR0.00
A1440	Installation of QR units	Not Started	PKR0.00	PKR0.00	PKR0.00
A1450	Testing of Protection	Not Started	PKR0.00	PKR0.00	PKR0.00
<b>Subtotal</b>			PKR0.00	PKR0.00	PKR0.00
<b>GS.GS7</b>	<b>Remote communication</b>				
A1650	Installation of GPRS Based EVC	Not Started	PKR0.00	PKR0.00	PKR0.00
A1660	Installation of GPRS Modem	Not Started	PKR0.00	PKR0.00	PKR0.00
A1670	Configuration of Modem	Not Started	PKR0.00	PKR0.00	PKR0.00
A1680	Installation of Solar Panel	Not Started	PKR0.00	PKR0.00	PKR0.00
A1690	Acomplishing of Remote Communication	Not Started	PKR0.00	PKR0.00	PKR0.00
<b>Subtotal</b>			PKR0.00	PKR0.00	PKR0.00
<b>GS.GS8</b>	<b>New Domestic Connection</b>				
A1550	Application of New Domestic Connection	Not Started	PKR0.00	PKR0.00	PKR0.00
A1560	Site Survey	Not Started	PKR0.00	PKR0.00	PKR0.00
A1570	Issuance of Demand notice	Not Started	PKR0.00	PKR0.00	PKR0.00
A1580	Ditching	Not Started	PKR0.00	PKR0.00	PKR0.00
A1590	Laying of service line	Not Started	PKR0.00	PKR0.00	PKR0.00



BAC	ETC	EAC	VAC
KR4,826,568.40	KR4,826,568.40	KR4,826,568.40	PKR0.00
PKR3,200.00	PKR3,200.00	PKR3,200.00	PKR0.00
KR2,003,800.00	KR2,003,800.00	KR2,003,800.00	PKR0.00
PKR15,004.00	PKR15,004.00	PKR15,004.00	PKR0.00
KR2,022,004.00	KR2,022,004.00	KR2,022,004.00	PKR0.00
PKR1,200.00	PKR1,200.00	PKR1,200.00	PKR0.00
PKR201,200.00	PKR201,200.00	PKR201,200.00	PKR0.00
PKR1,200.40	PKR1,200.40	PKR1,200.40	PKR0.00
PKR2,300.00	PKR2,300.00	PKR2,300.00	PKR0.00
PKR0.00	PKR0.00	PKR0.00	PKR0.00
PKR205,900.40	PKR205,900.40	PKR205,900.40	PKR0.00
PKR0.00	PKR0.00	PKR0.00	PKR0.00
PKR2,400.00	PKR2,400.00	PKR2,400.00	PKR0.00
PKR3,200.00	PKR3,200.00	PKR3,200.00	PKR0.00
PKR800.00	PKR800.00	PKR800.00	PKR0.00
PKR5,900.00	PKR5,900.00	PKR5,900.00	PKR0.00



**AC-01 Activity Earned Value**

WBS	Activity ID	Activity Name	Activity Status	BCWS	BCWP	ACWP
	A1600	New Meter Installation	Not Started	PKR0.00	PKR0.00	PKR0.00
	A1610	Commissioning of Gas Supply	Not Started	PKR0.00	PKR0.00	PKR0.00
	<b>Subtotal</b>			PKR0.00	PKR0.00	PKR0.00
	<b>Subtotal</b>			PKR79,280.00	PKR78,780.00	PKR78,780.00
	<b>Subtotal</b>			PKR79,280.00	PKR78,780.00	PKR78,780.00
	<b>Total</b>			PKR79,280.00	PKR78,780.00	PKR78,780.00



BAC	ETC	EAC	VAC
PKR13,100.00	PKR13,100.00	PKR13,100.00	PKR0.00
PKR0.00	PKR0.00	PKR0.00	PKR0.00
PKR25,400.00	PKR25,400.00	PKR25,400.00	PKR0.00
R12,654,193.80	R12,575,413.80	R12,654,193.80	PKR0.00
R12,654,193.80	R12,575,413.80	R12,654,193.80	PKR0.00
R12,654,193.80	R12,575,413.80	R12,654,193.80	PKR0.00

## 6.5 Primavera EVM Report (Complete Project)

After activity-wise EVM reports, we are presenting the EVM report for the complete project. As of now, the project is in its initial phase, and only such activities have been completed that are primarily concerned with planning. Because of this, there is not much variation in the project.

### EP-02 EPS, Project Earned Value

Project ID	Project Name	BCWS	BCWP	ACWP	BAC	ETC	EAC	VAC
SNGPL	Sui Northern Gas Pipelines LTD	PKR79,280.00	PKR78,780.00	PKR78,780.00	R12,654,193.80	12,575,413.80	R12,654,193.80	PKR0.00
GS	Gas supply to new Locality	PKR79,280.00	PKR78,780.00	PKR78,780.00	R12,654,193.80	12,575,413.80	R12,654,193.80	PKR0.00
Energy	Energy Services	R1,353,069.73	R1,345,994.20	R1,485,149.36	KR3,638,923.54	R2,318,697.95	KR3,803,847.31	KR164,923.77)
NRG00870	Baytown, TX - Offline Maintenance Work	PKR0.00	PKR0.00	PKR0.00	PKR70,664.20	PKR70,664.20	PKR70,664.20	PKR0.00
NRG00950	Red River - Refuel Outage	KR369,383.45	KR367,318.55	KR391,521.67	KR1,198,056.25	KR847,267.91	KR1,238,789.58	PKR40,733.32)
NRG00800	Sunset Gorge - Routine Maintenance Work	PKR92,259.86	PKR92,259.86	PKR97,259.19	PKR92,259.86	PKR0.00	PKR97,259.19	(PKR4,999.33)
NRG00940	Sillersville - Refuel Outage	PKR0.00	PKR0.00	PKR67,500.00	KR1,093,963.87	R1,093,963.87	KR1,161,463.87	PKR67,500.00)
NRG00820	Johnstown - Routine Maintenance Work	PKR0.00	PKR0.00	PKR0.00	PKR75,960.00	PKR75,960.00	PKR75,960.00	PKR0.00
NRG00910	Driftwood - Refuel Outage	KR891,426.41	KR886,415.79	KR928,868.50	KR1,108,019.36	KR230,841.98	KR1,159,710.48	PKR51,691.12)
Enterprise	All Initiatives	R6,261,682.74	R6,030,563.69	R6,293,152.02	R39,689,969.30	33,559,537.10	R39,852,689.12	KR162,719.82)
E&C	Engineering & Construction	R1,422,681.46	R1,399,483.92	R1,448,986.25	R14,173,341.90	12,769,299.11	R14,218,285.36	PKR44,943.46)
EC00515	City Center Office Building Addition	KR122,360.00	KR113,423.04	KR124,027.71	PKR734,195.20	KR621,004.24	PKR745,031.94	PKR10,836.74)
EC00530	Nesbid Building Expansion	PKR0.00	PKR0.00	PKR0.00	PKR550,470.40	PKR550,470.40	PKR550,470.40	PKR0.00
EC00501	Haifang Corporate Park	KR197,644.25	KR198,277.84	KR191,767.19	PKR636,980.80	KR428,379.44	PKR620,146.63	PKR16,834.17
EC00610	Harbour Pointe Assisted Living Center	KR641,038.12	KR629,787.38	KR650,946.02	KR4,550,500.56	R3,926,430.84	KR4,577,376.86	PKR26,876.30)
EC00620	Juniper Nursing Home	KR461,639.09	KR457,995.66	KR482,245.34	KR3,605,744.44	R3,147,563.69	KR3,629,809.03	PKR24,064.58)
EC00630	Saratoga Senior Community	PKR0.00	PKR0.00	PKR0.00	PKR4,095,450.50	R4,095,450.50	PKR4,095,450.50	PKR0.00
Manufacturing	Manufacturing	R1,949,599.30	R1,803,585.05	R1,889,992.00	KR5,326,970.46	R3,431,200.84	KR5,321,192.84	PKR5,777.62
MFG00772	Cordova - Plant Expansion & Modernization System	KR441,519.62	KR403,673.55	KR436,490.62	KR1,261,288.47	KR821,513.31	KR1,258,003.93	PKR3,284.53

RS-01 Resource Details

Resource ID	Resource Name	Primary Role	Default Units / Time
SNGPL	Sui Northern Gas pipelines Ltd		8/d
PM	Project Manager		8/d
Weld	Weldor		8/d
MNA	MNA of the loacolity		8/d
pa	paper		8/d
SV	Sales survayor		8/d
TS	Technical survayor		8/d
local	local people		8/d
RM	Regional Manager		8/d
SGMD	Sr.General Manager Distribution		8/d
PC	Project cordinator		8/d
PL	Planner		8/d
De	Designer		8/d
CO	Computer operator		8/d
Dope	Dopeman		8/d
cl	Clerk		8/d
di	Difichers		8/d
W/H	Weldor Helper		8/d
D/H	Dope Helper		8/d
F	Fitter		8/d
WP	Welding Plant		8/d
BP	Boring Pump		8/d
comp	Compressor		8/d
AV	Aduco Valve 6" dia		8/d
colatar	colatar		8/d
fanges	Flanges R.F 6" dia		8/d

Resource ID	Resource Name	Primary Role	Default Units / Time
Bolts	Stud Bolts		8/d
S. Tee	6" dia Reducing tee		8/d
6" pipe	6" dia MS Pipe		8/d
End cap	6" dia End cap MS		8/d
6" Elbow 90	6" Dia MS Elbow 90		8/d
6" Elbow 45	6" dia Elbow MS 45		8/d
4" dia Ms Pipe	4" Dia MS Pipe		8/d
2 "Dia MS Pipe	2" dia MS Pipe		8/d
2" Elbow 90	2 " Dia MS elbow 90		8/d
2" dia Elbow 45	2" dia Ms elbow 45		8/d
Reducer 4x2	Ms Reducer 4x2		8/d
1" dia Pipe	Ms Pipe 1" dia		8/d
4" Elbow 90	4" dia Elbow 90		8/d
4" Elbow 45	4" dia Elbow 45		8/d
0.75 " dia pipe	0.75 " dia pipe		8/d
0.75 " elbow 90	0.75 " dia elbow		8/d
0.75 S.Tee	Service Tea		8/d
1" dia S. Tee	1" dia Service Tee		8/d
Tape inner 4"	CP tape Inner 4 "		8/d
Tape outer 4"	CP tape Outer 4"		8/d
Primer	Primer		8/d
Elect 5/32	Electrode 5/32		8/d
Elect 1/8	Electrode 1/8		8/d
Regulators	2 " dia regulators apperval 101		8/d
sensing	sensing tubes		8/d
valve pit	valve pit cover		8/d

Resource ID	Resource Name	Primary Role	Default Units / Time
Flang	flanges 4" dia R/F		8/d
P. Valve	Plug Valve		8/d
TR unit	Corrosion protection unit		8/d
AI	Angle Iron		8/d
fenc	Chain Link fencing		8/d
Meter 23 M	Meter Roomet 23000		8/d
CO2	Co2 Cylinders		8/d
Gloves	Welding Gloves		8/d
Met	Meter G4		8/d
Bricks	Bricks		8/d
Cement	cement bags		8/d
Modem	GPRS Modem		8/d
Solar Panel	Solar Panel		8/d
Grindr	Grinder		8/d
Cr Surveyor	Corrosion surveyor		8/d
Mason	Mason		8/d
Mason H	Mason Helper		8/d
Paint	Painter	Trades	8/d
Help	Helper		8/d
Craneoprft	Crane operator		8/d
Blasting	Sand Blasting Machine		8/d
Crane	Crane		8/d
computer	computer )		8/d
DesEng	Design Engineer	Engineer	
FieldEng	Field Engineer	Engineer	8/d
CorrEng	Corrosion Engineer	Engineer	8/d

RS-01 Resource Details

Resource ID	Resource Name	Primary Role	Default Units / Time
Operator	Operator	Trades	
FieldEngAsst	Field Eng-Assistant	Engineer	8/d
Dy.foreman	Dy.foreman metering		8/d
Sub-Eng	Sub-Engineer		8/d
Concrete-Sub	Concrete Foundation Subcontractor		8/d
E&C Resources	E&C Resources		8/d
Trades	Trades		8/d
INSP	Inspections		22/d
Cretefinisher	Concrete Finisher	Trades	
Hydro	Hydroblaster		22/d
OPTGP	Operations Test Group		8/d
Elec	Electrician	Trades	8/d
Exc	Excavator	Trades	8/d
Floor	Floor and Carpet Layer	Trades	8/d
IrnWrk	Ironworker	Trades	8/d
GenLabor	Laborer-Construction	Trades	8/d
Plumb	Plumber	Trades	8/d
RCarp	Rough Carpenter	Trades	8/d
FCarp	Finish Carpenter	Trades	8/d
Elev Inst	Elevator Installer	Trades	8/d
Test resource	New Resource Name		8/d
Test Resource Child	New Resource Name-1		8/d
Purchasing	Purchasing Department		8/d
Project Controls	Project Controls	Management	8/d
Engineering	Engineering Department		8/d
FieldEngSnr	Field Eng-Senior	Engineer	8/d

## 6.7 Primavera Activity Status Report

Attached herewith is an activity report generated using Primavera P6 that shows the activity name, original duration, remaining duration etc.

SS

Activity ID

---

NGPL	Sui Northern Gas Pipelines LTD
GS	Gas supply to new Locality
GS.GS1	Initiation
A1470	
A1490	
A1510	
A1480	
A1500	

---

Subtotal

GS.GS2	Planning
A1090	
A1530	
A1080	
A1100	
A1531	
A1518	
A1050	
A1060	
A1070	
A1521	
A1520	
A1540	

---

Subtotal

GS.GS3	Laying of Supply Main
A1230	
A1200	
A1210	
A1130	
A1140	
A1160	
A1220	
A1191	
A1110	
A1180	

S

Activity ID

---

A1170  
A1190  
A1120  
A1150

---

Subtotal

GS.GS4                      Installation of TBS

A1320  
A1240  
A1270  
A1280  
  
A1310  
  
A1261  
  
A1250  
A1260  
A1300  
A1290

---

Subtotal

GS.GS5                      Laying of Feeder Main

A1420  
A1330  
A1380  
A1390  
  
A1400  
A1410  
A1340  
A1360  
A1370  
A1350  
A1328

---

Subtotal

GS.GS6                      Corrossion protection

A1440

S  
Activity ID

A1430

A1450

Subtotal

GS.GS7 Remote communication

A1690

A1650

A1660

A1670

A1680

Subtotal

GS.GS8 New Domestic Connection

A1610

A1550

A1580

A1590

A1600

A1560

A1570

Subtotal

Subtotal

Subtotal

total

## 6.8 Primavera WBS Summary

Gas supply to new Locality  
Report Date 24-Jan-17 18:16

Project Start 23-Dec-16  
Project Finish 15-Jun-17

### WB-02 WBS Summary

User's Notes:

WBS Code	WBS Name	Status	Est. Weight	Project Phase
SNGPL	Sui Northern Gas Pipelines LTD	Active	1.0	
GS	Gas supply to new Locality	Active	1.0	
GS.GS1	Initiation	Active	1.0	
GS.GS2	Planning	Active	1.0	
GS.GS3	Laying of Supply Main	Active	1.0	
GS.GS4	Installation of TBS	Active	1.0	
GS.GS5	Laying of Feeder Main	Active	1.0	
GS.GS6	Corrossion protection	Active	1.0	
GS.GS7	Remote communication	Active	1.0	
GS.GS8	New Domestic Connection	Active	1.0	
Energy	Energy Services	Active	1.0	
NRG00870	Baytown, TX - Offline Maintenance Work	Active	1.0	
NRG00950	Red River - Refuel Outage	Active	1.0	
NRG00800	Sunset Gorge - Routine Maintenance Work	Active	1.0	
NRG00940	Sillersville - Refuel Outage	Active	1.0	

# Oracle Primavera

## 6.9 Primavera S-Curve

An S Curve is defined as a display of cumulative costs, labor hours or other quantities plotted against time. The name derives from the S-like shape of the curve, flatter at the beginning and end and steeper in the middle, which is typical of most projects.

The S-Curve of the project under discussion is attached herewith. Progress has been updated till 24-January-2017. Till this date all the activities are on schedule and in budget. The green color represents the actual labor that has been consumed, blue color represents remaining labor that will be consumed by the activity once it's completed, yellow color represents the budgeted/planned labor.

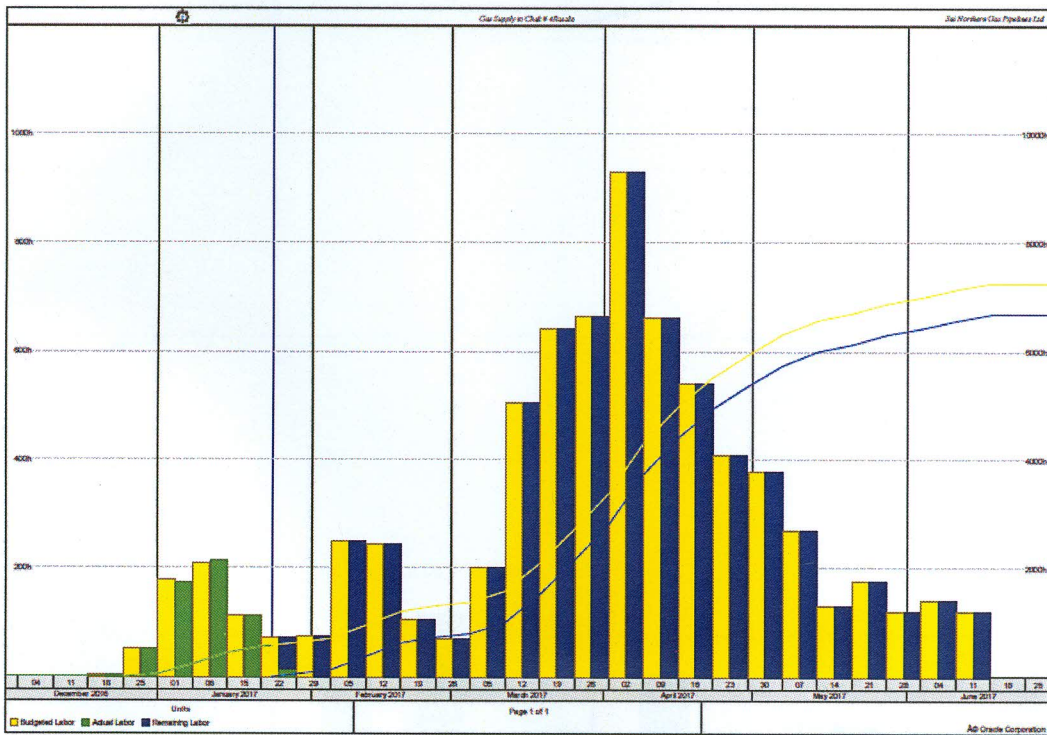
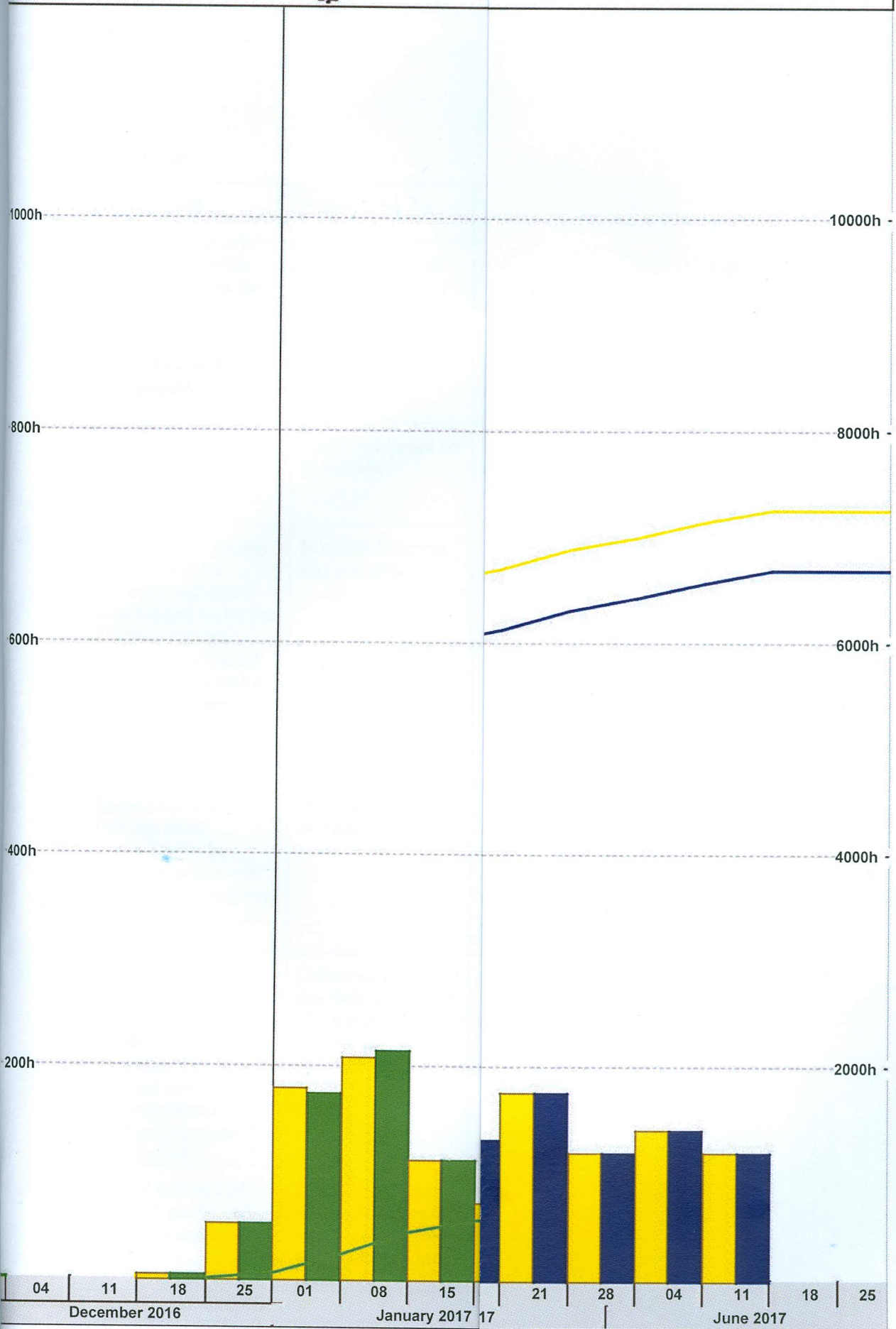


Figure 6.5 Primavera S-Curve



Units  
 Budgeted Labor Actual Labor Remaining Labor

### Issues Log:

Sr. No	Issue Faced	Probable Reason	Solution	Remarks
1	Could not run the virtual machine for P6	The files were not added into the VM Ware	Added VM Ware files stored on the computer through Lab Technicians help	Problem was resolved
2	Could not add responsible manager	OBS was not defined	Defined new OBS to add a new responsible manager	Problem was resolved
3	Certain Activities were appearing in a yellow colored background	Torch was turned on by mistake	Turned the torch off and the problem was resolved.	Problem was resolved
4	Changed the already set dates of an activity and then started and ended the activity but the baseline bar (under the activity duration bar) in the graph area did not move according to the new dates	Schedule/Progress was not updated	Trainer guided to update progress and then check	Problem was resolved.
5	Could not add new details about activities in the Layout section and could not change the sequence of already added details	Didn't know the procedure to do so	Trainer guided to right click any column in the layout section and then add columns and adjust their display priorities accordingly.	Problem was resolved.
6	The changes being made to the project and activities already created in the P6 module in the last lecture were not getting effect (and not getting updated in the project.)	Unknown. (May be any technical bug or glitch was causing the problem)	Closed all from the File menu and then reopened the desired project.	Problem was resolved.
7	Could not load the activity profile and resource usage.	Didn't know about the toggle button to turn on/off Activity profile and resource usage.	Trainer guided.	Problem was resolved.

8	Could not get the measure units for recourses	Didn't get the where the option is located	Consulted with a friend	Problem was resolved
9	Could not get how to add the progress of activities	I just forgot that , problems faced during practical implementation	Consulted with a friend and also watched tutorial on You tube	Issue was rectified
10	Could not get how to add the generate S-curve.	I just forgot that , problems faced during practical implementation	Consulted with a friend and also watched tutorial on You tube	Issue was rectified
11	Wrong entering of budgeted units	I entered first wrong budgeted units of resources	Consulted with Notes taken during lecture	Issue resolved
12	Cost of activities was not showing how it was actually planned	Imported P6 file after downloading it from email on another laptop.	Defined Currency in the new laptop as it was not defined in it	Issue resolved
13	P6 software installed on new laptop wasn't working	Database was not added	Re-installed following instructions from worthy fellow and online instructions	Issue resolved
14	Could not import project.	Unknown	Closed all, Imported again.	Issue Resolved
15	Could not change the units being shown on S-Curve window	No prior knowledge	Trainer guidance	Issue resolved.
16	Shaded portion was showing in the Gantt Chart window	Unknown	Research on internet and fellow consultation revealed curtain was turned on; so turned it off.	Issue resolved.
17	Complete activity name/wbs summary name was not visible in Gantt Chart window	Character limit was turned on.	Trainer guidance.	Issue was resolved.
18	Activity Resource Usage button was not available in the toolbar	Priorly deleted.	Trainer guided to press "More Buttons" option in the toolbar and add any desired button.	Issue Resolved
19	Some of the desired columns were not visible while report generation	Columns were not selected in the Configure Selected Subject Areas	Friend guidance, internet sources	Issue resolved.

## **Conclusion**

It goes without saying that working on this software opened new avenues of thinking for us. It introduced us to a plethora of new concepts and ideas. Some of which we have passed on to the senior management in our organizations. And the organizations have taken our advices seriously. For instance, in Project Management Unit of FESCO-WAPDA, (organization of group member Engr. Awais Brar), a department named Project Scheduling has **actually** started working on this. The scheduling of a couple of new Grid Station Construction projects is being done o Primavera as a test case. If the experiment results successful then its scope will be expanded.

Coming towards the current project, on which it has been implemented, the management of SNGPL seems quite satisfied with the working of its project in Primavera P6. Activity costs and schedules are quite easy to monitor and update. It is hoped that the implementation of this project on Primavera will greatly improve the efficiency of the project.

## **Recommendations**

The degree of freedom and ease Primavera affords to its user speaks volumes about the project-friendliness of this software and how beneficial it can be to the projects in Pakistan. As in our country, projects face countless problems, so this software will greatly help in reducing many of them; thereby reducing the stress of project managers and improving their efficiency as they will be able to concentrate on more important things on hand.

Keeping in view the foregoing, we recommend students, project managers and individuals seeking careers in project management to get hands-on experience of this user friendly and project friendly software. Afterwards, they should implement this on the projects and reap the fruits of such an amazing tool.

## References:

[1] SNGPL Annual Financial Report

[2] <http://www.sngpl.com.pk>

[3] Oracle Primavera P6 Version 8: Project and Portfolio Management by Elaine Britt Krazer,  
Daniel L. Williams, PhD

[4] PMBOK 5<sup>th</sup> Edition

[5] [https://community.oracle.com/community/oracle-applications/primavera/primavera\\_p6\\_enterprise\\_project\\_portfolio\\_management](https://community.oracle.com/community/oracle-applications/primavera/primavera_p6_enterprise_project_portfolio_management)

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