USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

SHEBERGHAN GAS GENERATION ACTIVITY (SGGA)

Contract No. EPP-I-00-03-00004-00, Task Order No. AID-306-TO-12-00002

Six-Month Capacity Development Evaluation Report

(Deliverable 1-11)

May 14, 2013

Prepared by:

Advanced Engineering Associates International, Inc. (AEAI)/SGGA Project Team
1707 L Street, NW, Suite 1030, Washington, DC (USA) 20036
Telephone: 1-202-263-0601

This Six-Month Capacity Development Evaluation Report was made possible by support from the American People jointly sponsored by United States Agency for International Development (USAID) and the Government of the Islamic Republic of Afghanistan. The contents of this Six-Month Capacity Development Evaluation Report were prepared by Advanced Engineering Associates International, Inc. and are the sole responsibility of Advanced Engineering Associates International, Inc. and do not necessarily reflect the views of USAID or the United States Government.

Table of Contents

List of Tables

Acronyms and Abbreviations

AEAI	Advanced Engineering Associates International, Inc.
AGE	Afghan Gas Enterprise
ARDS	Afghan Reconstruction and Development Service
CNG	Compressed Natural Gas
DABS	Da Afghanistan Breshna Sherkat
E&P	Exploration and Production
GBU	Gas Business Unit
GIRoA	Government Islamic Republic of Afghanistan
H_2S	Hydrogen Sulfide
MEW	Ministry of Energy and Water
MoMP	Ministry of Mines and Petroleum
NHU	Northern Hydrocarbons Unit
OFR	On-Site Field Representative
PPD	Policy Planning Department
SGDP	Sheberghan Gas Development Project
SGGA	Sheberghan Gas Generation Activity
USAID	United States Agency for International Development
USG	United States Government

1 Executive Summary

This "Six-Month Capacity Development Evaluation Report" ("Feasibility Report") is part of USAID's Technical Assistance for a gas development program and a 200-MW power plant in Sheberghan, Afghanistan, which is being performed by the Sheberghan Gas Generation Activity (SGGA) in 2012 through 2015. This work is part of the United States Agency for International Development's (USAID) Technical Assistance to Afghanistan's Ministry of Mines and Petroleum (MoMP), Task Order No. AID-306-TO-12-00002.

SGGA's scope of work focuses on the support of projects and transactions relevant to the Sheberghan Gas Development Program (SGDP). The scope of this task order consists of design and implementation of a capacity enhancement program for the commercialization and modernization, and possibly corporatization, of Afghan Gas Enterprise (AGE). It further consists of a program to promote sustainability of the projects completed within the SGDP through training and mentoring of the MoMP and other relevant GIRoA institutions such as the Da Afghanistan Breshna Sherkat (DABS) and Ministry of Energy and Water (MEW), as mutually agreed to by the Government of the Islamic Republic of Afghanistan (GIRoA) and USAID.

The capacity building begins with capacity assessment and then includes the appropriate capacity building courses and evaluation to meet the needs of the SGDP.

Regarding the assessment work, with the collaboration of the president of Afghan Gas Enterprise, Eng. Sali Mohammad "Fazil" and the General Director of Oil & Gas Survey, Dr. Qutbuddin Qaeym, between November 26 and December 05 of 2012, SGGA conducted the assessment process in both organizations. Following approximately nine days of performing the capacity assessment in Sheberghan, the SGGA had collected 210 questionnaires, 198 for the Gas Business Unit ("GBU") and 12 for the On-site Field Representative ("OFR"). The results of this assessment are summarized as follows:

The main results of the assessment analysis for the OFR are:

- the average age is almost 54 years with a standard deviation of 8 years;
- all the applicants work at the AGE (67%) and OGS (33%);
- more than 90% have a bachelor's degree or more;
- at the MoMP end of the assessment 75% had a manager (or related) position;
- 67% have good English knowledge;
- 50% have computer skills; and
- more than 90% have more than 10 years of work experience.

Most of the people assessed were found to have long-term experience in the hydrocarbons sector, but with older technologies, in that sense, the capacity building program is designed to focus in the teaching and practicing of new technologies, including perhaps some computer based training.

- There are 2 well defined groups: 1) senior staff with years of experience working in the fields, with basic knowledge of English, basic computer skills, and most of them working in the AGE; 2) junior staff with basic education, a few years of experience, good English and very good computer skills.
- The experience is associated with the operation and maintenance of the wells, equipment and instruments related with the field, in that sense, there's no experience in the drilling and explorations activities. However, there are candidates with experience in drilling water wells and working with sulfur removal equipment or plants.

- It's also interesting to note that most of the candidates have experience in repairing activities (wells and machines), perhaps because most of the assets in this region have degraded and are completely depreciated.

The clear conclusion is that there are good candidates to work in the proposed GBU, but there's also a lot of required capacity building necessary: 1) teaching new technologies; 2) working with gas processing plants; 3) some English and computer skills; 4) for younger people, formal training courses and; 5) working with new materials. Detailed information of these activities can be found in the "Joint Report on Capability and Needs Assessment of MoMP."

Regarding the Capacity Development activities, SGGA conducted five training courses in the following areas: 1) basic Petroleum Engineering for Oil and Gas Engineers; 2) economic modeling of Exploration and Production (E&P) investment; 3) organizational Development; 4) gender Awareness and; 5) risk Analysis of E&P Projects. All of these trainings were conducted for the professionals of the MoMP.

The Basic Petroleum Engineering for Oil and Gas Engineers training was held January 19-24, 2013 and the main objective was to strengthen the technical skills and experience of young workers of the Ministry of Mines. According to the instructor the Rank Performance was 10[1] and for the trainees the evaluation score is 4.59,[2] where the highest value comes from the support material and the lowest one from the Participation in Class. Some suggestions for the future are: 1) work more with technical formulas; 2) require more homework; 3) provide more detail in the topics; 4) provide more additional support, as videos; 5) explore drilling and pipeline systems.

The economic modeling of E&P investment, concluded on the February 6, 2013 and the main objectives were 1) introduce to economic modeling in E&P projects (inside the hydrocarbons sector) and; 2) introduce to basic financial analysis apply to the E&P projects. According the instructor the Rank Performance was 9.0 and for the trainees 4.52 where the highest value comes from selection of subjects and the lowest one from support material. Suggestions for the future are: 1) more theoretical information; 2) more training hours; 3) more discussion of results and homework; 4) provide class material with more anticipation; 5) more lectures; 6) more time for translation; 7) more examples related with Afghanistan; and 8) more international experience.

The Organizational Development training was held February 23-27, 2013 and the main objective was to introduce MoMP employees to technical tools and the basics concept of Organizational Development. According to the instructor the Rank Performance was 10 and for the trainees 4.46 where the highest value comes from participation in class and the lowest one from the general evaluation. Suggestions for the future are: 1) the same & similar courses should be conducted to the MOMP employees because it is beneficial for them 2) the following courses should be conducted to the MOMP employees: Accounting; English language; Computer skills; Management & Administration; Survey; Proposal writing; Gender; Learning Development; Planning; Human Resources; How to develop a professional work plan and; 3) the duration of the course should be extended.

The Gender Awareness training was held March 9-13, 2013, and the main objective was improving the awareness level of MoMP employees regarding gender issues and concepts in Afghanistan. According the instructor the Rank Performance was 10 and for the trainees 4.63 where the highest value comes from the participation in class and the lowest one from the selection of subjects. Suggestions for the

[1] Between 1 to 10, 10 is excellent.
[2] (Scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor).

future are: 1) advanced levels of gender trainings; 2) more training hours; 3) trainings outside Afghanistan on gender; 4) short term courses for male and female staff; 5) periodical gender awareness trainings; 6) providing trainings on business plan and management.

The Risk Analysis in E&P Projects training was held April 2-8, 2013, and the main objectives were to introduce MoMP professionals to: 1) contract modeling in E&P projects and; 2) risk analysis in E&P projects. According to the instructor the Rank Performance was 10 and for the trainees 4.13 where the highest value comes from the support material and the lowest one from the Participation in Class. Suggestions for the future are: 1) improve this course by involving colleagues more & time should also be extended. Additional courses related to economics and management are desirable; 2) please select the most qualified trainees only; 3) there should be more case studies, because this will help to understand the course and also involvement from participants should be focused; 4) more training in other fields like law, procurement and also contracts; 5) these kinds of courses should be continued into the future; 6) the course should have some theoretical information or definition along with numerical data.

The SGDP drilling tender Bid Evaluation Committee training was held March 10, 2013 and the main objective was to prepare the MoMP SGDP drilling tender bid evaluation committee to conduct bid evaluations. This training included three parts: Summary of Afghan Procurement Law and Rules, Overview of the Tender Technical Specifications, and Review of How to Complete the Afghan Reconstruction and Development Service (ARDS) bid evaluation forms in order to complete a final report. Suggestions for the future are: 1) delineate more clearly the areas in which the committee members have discretion in seeking clarifications from bidders rather than those that are more critical pass/fail elements; and 2) focus more time on the ARDS bid evaluation report template and how to complete it.

A general overview of the trainings (not including the bid evaluation committee training) conducted by the SGGA can be found in the following tables, the first one presents the individual/hours attendance and the evaluation average made by trainees (Scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor). The second table presents the evaluation, made by trainees, of some specific issues.

Training	Female	Male	Total	Evaluation	Month
Basic Petroleum Engineering	-	68	**68**	4.59	January-13
Economic Modeling of E&P	-	124	**124**	4.52	February-13
Organizational Development	38	162	**200**	4.46	February-13
Gender Awareness	60	86	**146**	4.63	March-13
Risk Analysis of E&P Projects	-	64	**64**	4.13	April-13
Total	**98**	**504**	**602**	**4.47**	

Questions	Eval.
General	4.51
Selection Subjects	4.51
Support Material	4.56
Participation Class	4.28

Using the previous tables some conclusions can be found: 1) in average the total trainings obtained a score of 4.47,[3] where the highest value comes from the gender awareness and the lowest one form the Risk Analysis; 2) the total individual/hours is 602, from which 98 (16.3%) are from females and 504 (83.7%) from males and; 3) according the trainees, the support material received the highest score and the lowest score came from the participation in class.

2 Background

This "Six-Month Capacity Development Evaluation Report" ("Feasibility Report") is part of USAID's Technical Assistance for a gas development program and a 200-MW power plant in Sheberghan, Afghanistan, which is being performed by the SGGA in 2012 through 2015. This work is part of USAID's Technical Assistance to Afghanistan's MoMP, Task Order No. AID-306-TO-12-00002.

SGGA's scope of work focuses on the support of projects and transactions relevant to the SGDP. The scope of this task order consists of design and implementation of a capacity enhancement program for the commercialization and modernization, and possibly corporatization, of AGE. It further consists of a program to promote sustainability of the projects completed within the SGDP through training and mentoring of the MoMP and other relevant GIRoA institutions such as DABS and MEW, as mutually agreed to by GIRoA and USAID.

The capacity building begins with capacity assessment and then includes the appropriate capacity building courses and evaluation to meet the needs of the SGDP.

The development of the Sheberghan gas fields and related infrastructure, including increased electricity generation and transmission, is a shared objective of the United States Government (USG) and GIRoA. To achieve this objective, among other things, the project must implement a:

> *"Training and technical assistance and capacity enhancement to the MoMP, particularly the Afghan Gas Enterprise (AGE) (or other appropriate corporate entity), the Northern Hydrocarbons Unit (NHU) and the Policy and Planning Department (PPD), including other government or non-government entities actively involved in Sheberghan gas field development [such as power utility DABS and MEW as relevant to the activities of SGDP, including the sale/purchase of gas and power."*

In this aspect, it may be "provide technical assistance, training and capacity enhancement to the MoMP and other relevant institutions for the development and affective utilization of Afghanistan`s hydrocarbons reserves, including but not limited to the Sheberghan gas fields in Jowzjan Province in Northern Afghanistan." Also, according H.3 the contractor "shall integrate assistance to women into all aspects of development, planning, programming and implementation, as part of this program."

3 Assessment Work

Regarding the assessment with the collaboration of the president of AGE Eng. Sali Mohammad "Fazil" and the General Director of Oil & Gas Survey Dr. Qutbuddin Qaeym, between November 26 and December 05 of 2012, SGGA conducted the assessment process in both companies. Following approximately nine days completing the capacity assessment in Sheberghan, SGGA recollected 210 questionnaires, 198 for the GBU and 12 for the OFR. The results of this assessment are summarized

[3] (Scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor).

as follows:

- The main results of the assessment analysis for the OFR are: 1) the average age is almost 54 years with a standard deviation of 8 years; 2) all the applicants work at the AGE (67%) and OGS (33%); 3) more than 90% have a bachelor's degree or more; 4) at the MoMP end of the assessment 75% had a manager (or related) position; 5) 67% have good English knowledge; 6) 50% have computer skills and; 7) more than 90% have more than 10 years of work experience. Respect the technical part, most of the people assessed have long experience in the hydrocarbons sector, but with an old technology, in that sense, the capacity building program has to focus in the instruction and practicing of new technologies, and likely additional computer-based training.
- There are two well defined groups: 1) senior group, with years of experience, working in the fields, with basic knowledge of English, basic computer skills and most of them working in the SGE; 2) junior group, with basic education, few years of experience, good English and very good computer skills.
- The experience is associated to the operation and maintenance of the wells, equipment and instruments related with the field, in that sense, there is no experience in the drilling and explorations activities. There are some candidates with experience in drilling water wells and working with sulfur removal machines or plants.
- It's also interesting to note that most of the candidates have experience in repairing activities (wells and machines), perhaps because most of the assets in this region are completely depreciated.

The clear conclusion is that there are good candidates to work in the proposed GBU, but also a lot of capacity building will be necessary: 1) teaching new technologies; 2) working with processing plants; 3) some English and computer skills; 4) for younger people, formal training courses and; 5) working with new materials. Detailed information of these activities can be found in the “Joint Report on Capability and Needs Assessment of MoMP

4 Basic Petroleum Engineering for Oil and Gas Engineers

The training was held January 19-24, 2013 and the main objective was to strengthen the technical skills and experience of young workers of the MoMP.

4.1 Content of the Training

The content of the training included:

- Basic Oil and Gas Chemistry.
- Hydrogen Sulfide (H_2S) Safety Training.
- How to produce Oil and Gas.
- How to drill and complete a well.
- Well Testing Basics.
- Detailed Procedures for Bashikurd and Juma Wells.
- Compressed Natural Gas (CNG).
- Gas Sweetening.
- H_2S Recovery and Disposal.
- Gas Flow through Pipes.
- Gas Compressors.
- Case Study of Gas Development.
- Exam and Review.
- Additional Topics.
- Review of Exam Problems.
- Developed Natural Gas Systems and other topics.

The material for this training can be found in Annex 1 of this Report.

4.2 Statistics of the Training

Regarding the number of participants and the attendance, Table 1 shows the name, attendance and total hours for the participants. All attendees were male. In this training, as in all of the following ones, the MoMP Human Resources Department selected all training participants.

Table 1: Participants - Basic Petroleum Engineering for Oil and Gas Engineers

No	Name of Trainees	Gender	Day 1	Day 2	Day 3	Day 4	Day 5	Total Days	Hours Attended	Grand Total	Female	Male
1	Mohammad Tahir	Male	1	0	0	0	0	1.00	2.00	-	-	-
2	Sayed Hashim	Male	1	1	0	0	1	3.00	2.00	6.00	-	6.0
3	Ali Reza	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
4	Sohrab	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
5	Aliyar	Male	1	1	1	1	0	4.00	2.00	8.00	-	8.0
6	Mohammad Hamid	Male	1	1	0	0	1	3.00	2.00	6.00	-	6.0
7	Engineer Mullah Jan	Male	1	1	0	1	1	4.00	2.00	8.00	-	8.0
8	Hamid	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
9	Mahdi Nayab	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
10	Mohammad Hadi Asadi	Male	1	0	0	0	0	1.00	2.00	-	-	-
Total										**68.00**	**-**	**68.00**

4.3 Evaluation

After the conclusion of the training the instructors and trainees completed questionnaires regarding the evaluation of the training. The instructors were asked, among other thing, his or her perception of the Rank Performance (from 1 to 10) and the skill sets gas identify. Regarding the trainees, they completed questionnaires with the following questions: 1) In general the course was….; 2) The selection of the subjects was….; 3) The support material was….; 4) The participation of colleagues in the class room was….; and also an open question: How do you think we can improve the course? This evaluation has the following scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

According the instructor the Rank Performance was 10 and for the trainees the results are present in Table 2. The highest value comes from the support material and the lowest one from the Participation in Class. Suggestions for the future are: 1) work more with technical formulas; 2) give more

homework; 3) more detail in the topics; 4) more additional support, as videos; 5) explore drilling and pipeline systems.

Table 2: Evaluation Results - Basic Petroleum Engineering for Oil and Gas Engineers

No.	General	Selection Subjects	Support Material	Participation Class
1	4.00	4.00	5.00	5.00
2	5.00	5.00	5.00	4.00
3	4.00	5.00	4.00	4.00
4	5.00	5.00	4.00	4.00
5	5.00	5.00	5.00	5.00
6	5.00	5.00	5.00	5.00
7	4.00	4.00	5.00	4.00
8	5.00	4.00	5.00	4.00
Average	**4.63**	**4.63**	**4.75**	**4.38**

4.4 Abstract

The Basic Petroleum Engineering for Oil and Gas Engineers training was held January 19-24, 2013 and the main objective was to strengthen the technical skills and experience of young workers of the MoMP. According to the instructor the Rank Performance was 10 and for the trainees (between 1 and 5) 4.59, where the highest value came from the support material and the lowest one from the participation in class. Suggestions for the future are: 1) work more with technical formulas; 2) assign more homework; 3) provide more detail in the topics; 4) provide additional support, such as videos; 5) explore drilling and pipeline systems.

5 Economic Modeling of E&P Investment

The training was held February 2-6, 2013 and the main objectives were: 1) introduction to economic modeling in E&P projects (inside the hydrocarbons sector and; 2) introduction to basic financial analysis apply to the E&P projects.

5.1 Content of the Training

The content of the training was:

- Cash Flow Construction, in an excel file.

- Gross Revenues: Declining Curves – (Exponential, Hyperbolic, Harmonic, Prices, Well Head Prices, Capex, Opex.), Import and Export Parity Prices.
- Taxes and royalties applying to E&P.
- Discount Factors, Return on Investment (ROI), Net Cash Flow, Internal Rate of Return, Discount Return on Investment and Sensitivity Analysis.

5.2 Statistics of the Training

Regarding the number of participants and the attendance, Table 3 includes the names, attendance and total hours for the participants. Again, all attendees were male.

Table 3: Participants - Economic Modeling of E&P Investment

No	Name of Trainees	Gender	Day 1	Day 2	Day 3	Day 4	Day 5	Total Days	Hours Attended	Grand Total	Female	Male
1	Shukrullah Arzush	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
2	Rahim Khan	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
3	Ramazan Ali	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
4	Abdul Majeed Rasekh	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
5	Mohammad Mohsin Nisar	Male	1	1	1	0	1	4.00	2.00	8.00	-	8.0
6	Wafiullah	Male	1	1	1	0	1	4.00	2.00	8.00	-	8.0
7	Bashir Ahmad	Male	1	1	1	0	1	4.00	2.00	8.00	-	8.0
8	Qaisuddin Esmaty	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
9	Abdul Qayum Aria	Male	1	0	1	1	1	4.00	2.00	8.00	-	8.0
10	Mohammad Sanaullah Elyas	Male	1	1	1	1	0	4.00	2.00	8.00	-	8.0
11	Fawad Sakhizada	Male	1	1	1	1	1	5.00	2.00	10.00	-	10.0
12	Enayatullah Momand	Male	1	1	1	0	1	4.00	2.00	8.00	-	8.0
13	Ali Reza Tawakoli	Male	1	1	0	1	1	4.00	2.00	8.00	-	8.0
14	Ajmal Alime	Male	0	1	1	1	1	4.00	2.00	8.00	-	8.0
Total										**124.00**	**-**	**124.00**

5.3 Evaluation

After the conclusion of the training, the instructors and trainees completed questionnaires regarding the evaluation of the training. The instructors were asked, among other things, his or her perception of the Rank Performance (from 1 to 10) and the skill sets gas identify. Regarding the trainees, they completed a questionnaire with the following questions: 1) In general the course was….; 2) The selection of the subjects was….; 3) The support material was….; 4) The participation of colleagues in the class room was….; and also an open question: How do you think we can improve the course? This evaluation has the following scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

According the instructor the Rank Performance was nine and for the trainees the results are present in Table 4. The highest value came from the selection of subjects and the lowest one from support material. Suggestions for the future are: 1) more theoretical information; 2) more training hours; 3) more discussion of results and homework; 4) provide class material with more anticipation; 5) more lectures; 6) more time for translation; 7) more examples related to Afghanistan and; 8) more international experience.

Table 4: Evaluation Results - Economic Modeling of E&P Investment

No.	General	Selection Subjects	Support Material	Participation Class
1	4.00	4.00	5.00	5.00
2	5.00	5.00	5.00	4.00
3	4.00	4.00	5.00	5.00
4	5.00	5.00	5.00	4.00
5	5.00	5.00	5.00	5.00
6	4.00	5.00	3.00	5.00
7	4.00	5.00	3.00	4.00
8	3.00	4.00	3.00	5.00
9	5.00	5.00	5.00	5.00
10	5.00	4.00	4.00	4.00
11	5.00	5.00	4.00	5.00
12	4.00	5.00	4.00	4.00
13	5.00	4.00	5.00	4.00
14	5.00	5.00	5.00	5.00
Average	**4.50**	**4.64**	**4.36**	**4.57**

5.4 Abstract

The Economic modeling of E&P investment, was completed on February 6, 2013 and the main objectives were: 1) introduce to economic modeling in E&P projects (inside the hydrocarbons sector and; 2) introduce to basic financial analysis apply to the E&P projects. According to the instructor the Rank Performance was 9.0 and for the trainees (between 1 and 5) 4.52 where the highest value comes from selection of subjects and the lowest one from support material. Suggestions for the future are: 1) more theoretical information; 2) more training hours; 3) more discussion of results and homework; 4) provide class material with more anticipation; 5) more lectures; 6) more time for translation; 7) more examples related with Afghanistan and; 8) more international experience.

6 Organizational Development

The training was held February 23-27, 2013 and the main objective was introducing MoMP employees to technical tools and the basics concept of Organizational Development.

6.1 Content of the Training

The content of the training included:

- Organizational Development definitions.
- Purpose of Organizational Development.
- Challenges in Organizational Development.
- Design and Execution of Organizational Development.
- Examples of Organizational Development.
- Organizational Development Processes.
- Future of Organizational Development.

6.2 Statistics of the Training

Regarding the number of participants and the attendance, Table 5 includes the name, attendance and total hours for the participants. In this case MoMP staff included both male and female trainees.

Table 5: Participants - Organizational Development

No	Name of Trainees	Gender	Day 1	Day 2	Day 3	Day 4	Day 5	Total Days	Hours Attended	Grand Total	Female	Male
1	Shapayri	Female	1	1	1	1	1	5.0	2.0	**10.0**	10.0	-
2	Sayes Mehrabuddin	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
3	Nazifa	Female	1	1	1	1	0	4.0	2.0	**8.0**	8.0	-
4	Shafiqullah	Male	1	1	1	1	0	4.0	2.0	**8.0**	-	8.0
5	Hayatullah	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
6	Ahmad Wakil	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
7	Malang Shah	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
8	Farhad	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
9	Sayed Khalilullah	Male	1	1	1	0	0	3.0	2.0	**6.0**	-	6.0
10	Abdul Hameed	Male	1	1	1	0	0	3.0	2.0	**6.0**	-	6.0
11	Farida	Female	1	0	1	1	0	3.0	2.0	**6.0**	6.0	-
12	Wazhma Ghani	Female	1	1	1	1	0	4.0	2.0	**8.0**	8.0	-
13	Abdul Basheer	Male	1	1	0	1	1	4.0	2.0	**8.0**	-	8.0
14	Bostan Ali Jaheed	Male	1	1	1	1	0	4.0	2.0	**8.0**	-	8.0
15	Mir Ahmad Shaheir	Male	1	1	1	0	1	4.0	2.0	**8.0**	-	8.0
16	Mohammad Sharif Matin	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
17	Noorulhuda	Male	1	1	1	1	1	5.0	2.0	**10.0**	-	10.0
18	Mohammad Bashir	Male	1	1	0	1	1	4.0	2.0	**8.0**	-	8.0
19	Nooria Babakarkhil	Female	1	1	1	0	0	3.0	2.0	**6.0**	6.0	-
20	Jamaluddin	Male	0	1	1	1	1	4.0	2.0	**8.0**	-	8.0
21	Omid	Male	0	1	1	1	1	4.0	2.0	**8.0**	-	8.0
22	Abdul Azim Nader	Male	0	1	1	1	1	4.0	2.0	**8.0**	-	8.0
23	Ferozuddin	Male	0	1	1	1	1	4.0	2.0	**8.0**	-	8.0
24	Mohammad Hamid	Male	0	1	1	1	1	4.0	2.0	**8.0**	-	8.0
25	Ali Reza Jafari	Male	0	1	1	0	0	2.0	2.0	-	-	-
Total										**200.0**	**38.0**	**162.0**

6.3 Evaluation

After the conclusion of the training the instructors and trainees completed questionnaires regarding the evaluation of the training. The instructor was asked, among other thing, his or her perception of the Rank Performance (from 1 to 10) and the gas skill sets identified. Regarding the trainees, they completed a questionnaire with the following questions: 1) In general the course was….; 2) The selection of the subjects was….; 3) The support material was….; 4) The participation of colleagues in the class room was….; and also an open question: How do you think we can improve the course? This evaluation has the following scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

According the instructor the Rank Performance was 10 and for the trainees the results are present in Table 6. The highest value came from the participation in class and the lowest one from the general evaluation. Suggestions for the future are: 1) the same & similar courses should be conducted to the MoMP employees because it is beneficial for them 2) the following courses should be conducted to the MoMP employees: Accounting; English language; Computer skills; Management & Administration;

Survey; Proposal writing; Gender; Learning Development; Planning; Human Resources; How to develop a professional work plan and; 3) the duration of the course should be extended.

Table 6: Evaluation Results - Organizational Development

No.	General	Selection Subjects	Support Material	Participation Class
1	4.00	4.00	3.00	3.00
2	5.00	5.00	5.00	5.00
3	4.00	4.00	5.00	5.00
4	4.00	5.00	5.00	5.00
5	5.00	5.00	5.00	5.00
6	5.00	4.00	5.00	4.00
7	5.00	4.00	5.00	5.00
8	4.00	5.00	4.00	5.00
9	4.00	4.00	4.00	5.00
10	4.00	4.00	3.00	4.00
11	5.00	5.00	5.00	5.00
12	5.00	5.00	5.00	5.00
13	4.00	5.00	3.00	4.00
14	4.00	3.00	5.00	5.00
15	3.00	3.00	4.00	3.00
16	3.00	4.00	3.00	4.00
17	5.00	5.00	5.00	5.00
18	5.00	5.00	5.00	5.00
19	5.00	5.00	5.00	5.00
20	5.00	5.00	5.00	4.00
Average	**4.40**	**4.45**	**4.45**	**4.55**

6.4 Abstract

The Organizational Development training was held February 23-27, 2013, and the main objective was introducing MoMP employees to technical tools and the basics concept of Organizational Development. According to the instructor the Rank Performance was 10 and for the trainees 4.46 where the highest value comes from participation in class and the lowest one from the general evaluation. Suggestions for the future are: 1) the same and similar courses should be conducted for the MoMP employees because it is beneficial for them; 2) the following courses should be conducted to the MoMP employees: Accounting; English language; Computer skills; Management & Administration; Survey; Proposal writing; Gender; Learning Development; Planning; Human Resources; How to develop a professional work plan; and 3) the duration of the course should be extended.

7 Gender Awareness

The training was held March 9-13, 2013 and the main objective was improving the awareness level of MoMP employees regarding gender issues and concepts in Afghanistan.

7.1 Content of the Training

The content of the training included:

- Gender's Concept.
- Terminological meaning of Gender: Gender Definition; Difference between Gender and Sex; Basic Differences of Gender in Development and Women in Development; The Trilateral Roles of Gender.
- By Birth Role.
- Productive Role.
- Social Role.
- Factors that affect gender roles.
- Gender Analysis.
- Gender Difference.
- Gender Discrimination.
- Gender Injustice.

7.2 Statistics of the Training

Regarding the number of participants and the attendance, Table 7 includes the name, attendance and total hours for the participants. Again, training participants were both male and female.

Table 7: Participants - Gender Awareness

No	Trainees	Gender	Day1	Day 2	Day 3	Day 4	Day 5	Total Days	Hours Attended	Grand Total	Female	Male
1	Noorzia	Female	1	1	1	1	1	5.0	2.0	10.0	10.0	-
2	Farida Wardak	Female	1	1	0	1	1	4.0	2.0	8.0	8.0	-
3	Brishna	Female	1	1	1	1	1	5.0	2.0	10.0	10.0	-
4	Mirwais	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
5	Ahmad Hussain Rahimi	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
6	Mohammad Hussain Siddiqi	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
7	Mohammad Essa	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
8	Mehrabuddin	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
9	Mohammad Parwiz	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
10	Nooria Babakarkhail	Female	1	1	0	1	0	3.0	2.0	6.0	6.0	-
11	Tahira Tajzai	Female	1	1	1	1	1	5.0	2.0	10.0	10.0	-
12	Engineer Mukhtar	Male	1	0	0	1	1	3.0	2.0	6.0	-	6.0
13	Mohammad Sharif Faiz	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
14	Khadija Kazimi	Female	0	1	0	0	1	2.0	2.0	4.0	4.0	-
15	Wazhma Ghani	Female	0	1	0	0	1	2.0	2.0	4.0	4.0	-
16	Wida	Female	0	1	1	1	1	4.0	2.0	8.0	8.0	-
17	Nawab Khan	Male	1	1	1	1	1	5.0	2.0	10.0	-	10.0
Total										146.0	60.0	86.0

7.3 Evaluation

After the conclusion of the training the instructors and trainees completed questionnaires regarding the evaluation of the training. The instructors were asked, among other things, his or her perception of the Rank Performance (from 1 to 10) and the gas skill sets identified. Regarding the trainees, they completed a questionnaire including the following questions: 1) In general the course was….; 2) The selection of the subjects was….; 3) The support material was….; 4) The participation of colleagues in the class room was….; and also an open question: How do you think we can improve the course? This evaluation has the following scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

According the instructor the Rank Performance was 10 and for the trainees the results are present in Table 8. The highest value comes from the participation in class and the lowest one from the selection of subjects. Suggestions for the future are: 1) advanced levels of gender trainings; 2) more training hours; 3) trainings outside Afghanistan on gender; 4) short term courses for male and female staff; 5) periodical gender awareness trainings; 6) providing trainings on business plan and management.

Table 8: Evaluation Results - Gender Awareness

No.	General	Selection Subjects	Support Material	Participation Class
1	5.00	5.00	5.00	5.00
2	4.00	4.00	3.00	5.00
3	5.00	5.00	5.00	5.00
4	5.00	5.00	5.00	5.00
5	3.00	4.00	3.00	5.00
6	5.00	4.00	5.00	5.00
7	5.00	4.00	5.00	5.00
8	5.00	3.00	5.00	5.00
9	4.00	4.00	4.00	3.00
10	5.00	5.00	5.00	5.00
11	5.00	5.00	5.00	5.00
12	4.00	4.00	4.00	5.00
13	5.00	5.00	5.00	5.00
14	5.00	5.00	5.00	5.00
15	5.00	5.00	5.00	4.00
Average	**4.67**	**4.47**	**4.60**	**4.80**

7.4 Abstract

The Gender Awareness training was held March 9-13, 2013, and the main objective was improving the awareness level of MoMP employees regarding gender issues and concepts in Afghanistan. According to the instructor the Rank Performance was 10 and for the trainees 4.63 where the highest value comes from the participation in class and the lowest one from the selection of subjects. Suggestions for the future are: 1) advanced levels of gender trainings; 2) more training hours; 3) trainings outside Afghanistan on gender; 4) short term courses for male and female staff; 5) periodical gender awareness trainings; and 6) providing training on business plans and management.

8 Risk Analysis in E&P Projects

The training was held April 2-8, 2013 and the main objectives were introducing to MoMP professionals to: 1) contract modeling in E&P projects and; 2) Risk Analysis in E&P projects.

8.1 Content of the Training

The content of the training included:

- Contract Modeling in E&P projects.
- Histogram, Histogram Frequency, Mode, Median, Normal Distribution, Formulas and Exercise.
- Introduction to Likelihood and Uncertainty.
- Decision Trees.

8.2 Statistics of the Training

Regarding the number of participants and the attendance, Table 9 includes the name, attendance and total hours for the participants. In this case all training participants were male.

Table 9: Participants - Risk Analysis in E&P Projects

No.	Participants	Gender	Day 1	Day 2	Day 3	Day 4	Day 5	Days	Hours Attended	Grand Total	Female	Male
1	Sohrab	Male	1	0	0	0	0	1.00	2.00	-	-	-
2	Qaisudin	Male	1	1	0	1	1	4.00	2.00	8.0	-	8.0
3	Rahim Khan	Male	1	1	1	0	1	4.00	2.00	8.0	-	8.0
4	Abdul Majeed Rasekh	Male	1	1	1	1	1	5.00	2.00	10.0	-	10.0
5	Ramazan Ali	Male	1	0	1	1	1	4.00	2.00	8.0	-	8.0
6	Bashir Ahmad	Male	1	0	1	0	1	3.00	2.00	6.0	-	6.0
7	Hamed	Male	1	0	1	1	1	4.00	2.00	8.0	-	8.0
8	Enayatullah Momand	Male	1	1	0	0	1	3.00	2.00	6.0	-	6.0
9	Fawad Sakhizada	Male	1	1	1	1	1	5.00	2.00	10.0	-	10.0
Total										**64.0**	**-**	**64.0**

8.3 Evaluation

After the conclusion of the training the instructors and trainees completed questionnaires regarding the evaluation of the training. The instructor was asked, among other thing, his or her perception of the Rank Performance (from 1 to 10) and the gas skill sets identified. Regarding the trainees, they completed a questionnaire with the following questions: 1) in general the course was….; 2) the selection of the subjects was….; 3) the support material was….; 4) the participation of colleagues in the class room was….; and also an open question: How do you think we can improve the course? This evaluation has the following scale: 5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

According the instructor the Rank Performance was 10 and for the trainees the results are present in Table 10. The highest value comes from the support material and the lowest one from the Participation in Class. Suggestions for the future are: 1) improve this course by involving colleagues more and the

course length should also be extended; 2) please select the qualified people to join the trainings, not with a different qualification; 3) there should be more case studies, because this will help to understand the course and also involvement from participants should be focused; 4) more training in other fields like law, procurement and also contracts; 5) this kind of courses must keep continue in the future; 6) The course should have some theoretical information or definition along with numerical data.

Table 10: Evaluation Results - Risk Analysis in E&P Projects

No.	General	Selection Subjects	Support Material	Participation Class
1	5.00	5.00	4.00	3.00
2	4.00	4.00	5.00	3.00
3	4.00	4.00	5.00	3.00
4	4.00	4.00	5.00	3.00
5	4.00	5.00	5.00	3.00
6	5.00	5.00	4.00	3.00
7	4.00	3.00	5.00	3.00
8	5.00	5.00	4.00	4.00
Average	**4.38**	**4.38**	**4.63**	**3.13**

8.4 Abstract

The Risk Analysis in E&P Projects training was held April 2-8, 2013 and the main objectives were to introduce to MoMP professionals to: 1) contract modeling in E&P projects; and 2) Risk Analysis in E&P projects. According the instructor the Rank Performance was 10 and for the trainees 4.13 where the highest value comes from the support material and the lowest one from the Participation in Class. Suggestions for the future are: 1) improve this course by involving colleagues more and extending the time. Participants also desire more courses related to economics and management; 2) select only the most qualified staff to attend; 3) there should be more case studies, because this will help participants to understand the course and also involvement from participants should be focused; 4) more training in other fields like law, procurement, and also contracts; 5) these kind of courses should be provided in the future; and 6) the course should have some theoretical information or definition along with numerical data.

9 Bid Evaluation Committee Training

The training was held March 10, 2013 and the main objective was to prepare the MoMP SGDP drilling tender bid evaluation committee to conduct bid evaluations. This training was a bit unusual in that it was utilized by the trainee participants within a few days to conduct a real MoMP bid evaluation.

9.1 Content of the Training

The content of the training included three modules:

- Summary of Afghan Procurement Law and Rules.
- Overview of the Tender Technical Specifications.
- Review of How to Complete the ARDS Bid Evaluation Forms (in order to complete a final report).

9.2 Statistics of the Training

This training was targeted specifically at the MoMP SGDP Bid Evaluation Committee. In attendance were the four members of that committee: 1) Amirzad Khosti; 2) Ahmad Aimaq; 3) Eng. Mohammad Zamir; 4) Tahir Zafari; and four advisors to the committee: 1) Ali Reza Tawakoli; 2) Eng.Suharb; 3) Khondkar Saleque; and 4) Sayed hashemi.

9.3 Evaluation

Evaluation of this training was also unique. Rather than complete surveys following the training, the bid evaluation committee members were assessed directly as they conducted a real bid evaluation. Their evaluation was successful and they conducted a very strong preliminary examination that found all relevant bid deficiencies. They committee did, however, struggle to write an adequate bid evaluation report. Follow-on training will be scheduled before they reconvene for the next bid evaluation.

9.4 Abstract

The SGDP drilling tender bid evaluation committee training was held March 10, 2013, and the main objective was to prepare the bid evaluation committee to conduct a real bid evaluation immediately following the training. Scoring was not utilized as the committee deliberations were confidential. However, based upon review of the final report, suggestions for the future are: 1) delineate more clearly the areas in which the committee members have discretion in seeking clarifications from bidders rather than those that are more critical pass/fail elements; and 2) focus more time on the ARDS bid evaluation report template and how to complete it.

Annex 1: Training Material Basic Petroleum Engineering for Oil and Gas Engineers

The following training slides are provided to provide an illustration of the typical SGGA capacity development training materials. In this case, the slideshow is provided for the course: Basic Petroleum Engineering for Oil and Gas Engineers. This training session was held January 19-24, 2013 and was described in detail within pages 6-8 of this Report.

The slides will begin on the following page.

Petroleum Engineering Topics Relevant to Afghanistan

Petroleum Basics and How they Apply to Afghanistan

1. Basic Chemistry of Oil and Gas
2. H2S Safety Training
3. How do we produce Oil and Gas
4. How to Drill and complete a Well
5. Well Testing Basics
6. Detailed Procedures for Juma/Bashikurd Well
7. CNG

Practical Petroleum Engineering Topics relevent to Afghanistan

8. Gas Sweetening
   A. Scavengers
   B. Amine Plants
9. H2S Recovery – Disposal and Claus Process
10. Gas Flow through Pipes
    A. Single Phase Flow Equations
    B. Gas Gathering Flow Equations – Weymouth
11. Gas Compressors
12. Case Study of Gas Development

Unit Conversion from English

- 1 btu = 1055 joules
- 1 scf = .0283 M^3 (refers to standard conditions)
- 1 US Dollar = 51 Afghani's
- 1 psi = .068 Atmospheres (Atm)
- 14.7 psi = 1.0 Atm
- 1 Gallon = 3.78 litres

Basic Chemistry of Oil and Gas

- All oil and gas is composed of Carbon Molecules
  - Methane - C_1H_4
  - Ethane - C_2H_6
  - Propane - C_3H_8
  - Octane - C_8H_{14}
  - Note that the longer the chain the lower the volatility.
- Other Chemicals commonly found are N_2, CO_2, and H_2S

Common Chemical Reactions

- Methane plus Oxygen = Water plus Carbon Dioxide
- H_2S plus Oxygen = Sulfur Dioxide plus Water
- Sulfur Dioxide + Water = Sulfuric Acid
- H_2S plus Oxygen = Elemental Sulfur plus Water

Processed Natural Gas

- Btu between 950-1050 btu/scf
- H_2S less than 4 ppm = .04% H_2S
- $CO_2 < 3\%$
- Water less than 2.75 kg/MMBtu (1 btu =1055 joules)
- Necessary because
  - Corrosion
  - Compatible with household appliances like furnaces and water heaters
  - Compatible with electric generation power plants

Gas Sample - Jarqudak #21

Component Analyzed	Mole %
Hydrogen	0.00
Helium	0.00
Oxygen	0.00
Carbon Monoxide	0.00
Nitrogen	0.41
Carbon Dioxide	8.99
Water	.14
Methane	88.72
Ethane	1.07
Propane	.03
Butane	.06
Pentane	.02
Hexanes (plus)	.00
Hydrogen Sulfide	.56
Total	100.00
Specific Gravity	.6562
Gross Wet Btu/Scf	910.69
Gross Dry Btu/Scf	926.82

Gas Heating Value Changes When Processed

	THIS MOL%	INLET BTU/CF	MOLS PER MMCF	% RECOV	MOLS PER MMCF	RESIDUE MOL%	BTU/CF	HEATING VALUE
Water	0.14							
N2	0.41		10.80	0.00	10.80	0.42	0.00	0.00
CO2	8.99		236.89	97.00	7.11	0.28	0.00	0.00
H2S	0.56		14.76	99.96	0.01	0.00	0.00	0.00
C1	88.72	896	2337.77	0.00	2337.77	97.95	1009.70	988.97
C2	1.07	19	28.19	0.00	28.19	1.10	1768.80	19.53
C3	0.03	1	0.79	0.00	0.79	0.03	2517.50	0.78
IC4	0.03	1	0.79	0.00	0.79	0.03	3252.70	1.01
NC4	0.03	1	0.79	0.00	0.79	0.03	3262.10	1.01
IC5	0.02	1	0.53	0.00	0.53	0.02	4000.30	0.83
NC5	0.00	0	0.00	0.00	0.00	0.00	4009.60	0.00
C6+	0.00	0	0.00	0.00	0.00	0.00	5000.00	0.00
Total	100.00	918	2631.31		2386.78	99.87		1012.12
						MCF/MMS		
						905.54CF		

H_2S Safety Training

- Origins of H_2S
- Properties of H_2S
- Human Anatomy
- Effects of H_2S
- H_2S First Aid Treatment
- Detection of H_2S
- Breathing Apparatus
- Safty Practice
- Emergency Response
- Practical Exercises

Origins of H_2S

- H_2S is a naturally occurring substance. Sources include
  - Geologic Formations
  - Organic material
  - Chemically Produced
- Location of H_2S – The oil and gas industry is the largest source of H_2S
- Can occur anywhere where oil and gas is handled. Enclosed locations are especially dangerous

Properties of H_2S

- Colorless
- Odor can vary depending on concentration
- Slightly heavier that air
- Flammable

Toxicity Levels of H_2S

- Concentrations of H_2S are measured in ppm
- 1% of H_2S = 10,000 ppm
- So 100 ppm = .01% H_2S

Toxicity Levels of H_2S

H2S Exposure (ppm)	Possible Health Effects
Less than 1 ppm	You can smell it
10 ppm (8-hour OEL)	No known adverse health effects
20 to 200 ppm	Eye and respiratory tract irritation and loss of smell. Will also cause headache and nausea.
100 ppm	Immediately Dangerous to Life and Health (IDLH) IDLH refers to a hazardous atmosphere where a person without adequate respiratory protection may be fatally injured or suffer immediate, irreversible or incapacitating health effects.
500 to 700 ppm	Affects the central nervous system.After a couple of minutes, it causes loss of reasoning, loss of balance, unconsciousness and breathing to stop
700 to 1000 ppm	Immediate loss of consciousness. Permanent brain damage and DEATH will occur if you are not rescued immediately.

Occupational Exposure Limits for H_2S

Occupational Exposure Limit	Concentration	OEL Descriptions
8 hour OEL	10 ppm	A time-weighted average (TWA) maximum exposure for an eight hour work day
15 minute OEL	15 ppm	A TWA exposure limit of up to 15 minutes with a 60 minute separation between each exposure.
Ceiling OEL	20 ppm	No one should be exposed to greater than 20 ppm of H2S at any time without adequate respiratory protection.

H_2S Detection

- **ELECTRONIC MONITORS**
- **Electronic monitors use sophisticated electronics to measure the concentration of H2S and provide very accurate readings, if functioning properly. These units are designed to continuously monitor gas levels. Some units are capable of monitoring more than one gas. The purpose of these devices is to protect your safety by warning of the presence of H2S.**
- **CAUTION**
- **Electronic monitors do not think for you. You must still be alert to the dangers of H2S.**

GENERIC STEPS FOR OPERATING PERSONAL AND PORTABLE MONITORS

	STEPS	DESCRIPTION
1	POWER ON	Check batteries or AC power source
2	CALIBRATION CHECK	Function test unit with calibration gas
3	ALARM CHECK	Ensure the alarm works at the pre-set level. Most units are pre-set to alarm at 10 ppm H2S
4	MONITOR MODE	Ensure the unit is set to monitor H2S
5	POSITION UNIT	For personal monitors · place the unit in an outside pocket (make sure the sensor and alarm are not covered) · clip it to your belt, or · put the harness on For portable units · ensure proper placement between you and

Safety Practice

- **Safety Practice**
  Emergency Response
- **Buddy System**
- **Any work in a hazardous location must be carried out using the Buddy System. If one worker enters a hazardous area another person his (Buddy) will observe his work from a safe place.**
- **The buddy system is also used to ensure the safety of Breathing Apparatus wearers in H2s release incidents, fire incidents in fact in any incident where Breathing Apparatus is required to be worn.**
- **<u>Important</u>**
- **At all times where Breathing Apparatus is worn a minimum of two persons will be used**
- **At no time will one Breathing Apparatus wearer be allowed to enter the effected area**
- **Emergency Procedure**
- **If while you are working, you smell H2S or the detection system alarms:**
- **Don't panic**
- **Hold your breath**
- **Wear Breathing Apparatus if available**
- **<u>If no BA available</u>**
- **Leave the area immediately**
- **Do not attempt to rescue anyone until you have donned Breathing Apparatus**
- **Report to the emergency station**
- **Remember that at least two persons should be involved in rescue**

Safety Practice

- **Emergency Procedure**
- **If while you are working, or at the worksite, you smell H2S or the detection system operates:**
- **Don't panic**
- **Hold your breath**
- **Wear Breathing Apparatus if available**
- **If no BA available**
- **Leave the area immediately**
- **Do not attempt to rescue anyone until you have donned Breathing Apparatus**
- **Report to the emergency station**
- **Remember that at least two persons should be involved in rescue**

Safety Practice

- **<u>Rescue</u>**
- **Don Full Duration Breathing Apparatus**
- **Remove victim immediately to fresh air**
- **If breathing, keep casualty at rest administer oxygen if available**
- **If not breathing start artificial respiration immediately**
- **Request Medical assistant**
- **Keep casualty in the recovery position & keep warm**
- **If eyes are affected rinse thoroughly with water**
- **Do not leave unattended**

Safety Practice

- **H2S Safety Practice**
- **Production workers are the people most often exposed to H2S, but we must always be aware that in inhabited areas the general population should also be made aware of the possible danger.**
- **Signs**
- **For warning against the possible danger of H2S adequate warning signs must be placed wherever there are potential hazards.**
- **As well as warning about the hazard No Smoking signs must be displayed.**
- **Fences**
- **Areas of particular danger such as permanent tanks, open drainage or flair pits and wellheads should be fenced off.**
- **The fences should be installed far enough away from the hazard area to allow air to dilute the poisonous gases to a safe concentration.**
- **If barriers are not erected adequate warning signs must be placed around the area.**
- **Wind Indicators**
- **In all area where H2S is present some form of wind direction indicator are required. These can be flags, wind socks or weather vanes, these are normally in a bright high visibility.**
- **Detection**
- **Where there is a danger of H2s continual monitoring of H2s will occur. *See section: H2S Monitoring Equipment***

How do we Produce Oil and Gas

- Where is oil and gas located
  - Located in the pores of rock (not a pool)
  - Under formation pressure in rock
    - Naturally pressured reservoirs
    - Over pressured reservoirs
    - Under pressured reservoirs
- How do you produce the oil and gas
  - Darcy's Law
  - Variables associated with Darcy's Law

Darcy's Law for Radial Flow r_e

Basic equation that describes flow in oil and gas wells. Produce out of pressured formations.

$$Q = kh(p_r - p_{wf}) / 141.2\ \mu B\ Ln(r_e - r_{wf})$$

where k= permeability (milidarcy's)
h= thickness of the formation (ft)
μ= viscosity (cp)
B= Volume factor (bbl/stb)
r_e = Effective Radius (ft)
r_{wf} = Well bore Radius (ft)

Darcy's Law Example

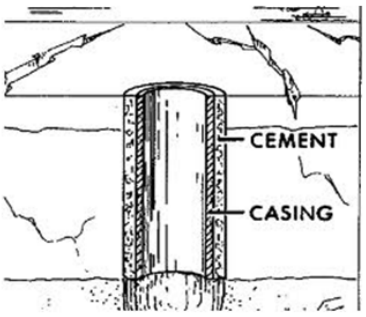
- Example
- A well is producing in a radial reservoir at a bottom hole pressure of 5,500 psi. The reservoir
- pressure is 6,000 psi. Oil viscosity is 0.25 cp and the formation volume factor is 1.5 bbl/STB.
- If the permeability of the reservoir is 20 md, the thickness is 30 ft and the drainage radius is
- 1,000 ft., at what rate will the well produce? The well bore radius is 6".
-
-
- If, by applying artificial lift method, the bottom hole pressure is reduced to 3,000 psi, at what rate will the well produce?
- *Solution*
- Using Eq. 6.3,
- $Q = (20)(30)(6,000 - 5,500) / 141.2(0.25)(1.5)\ln\left(\frac{1,000}{0.5}\right)$
  Q = 745 stb (stock tank barrels)

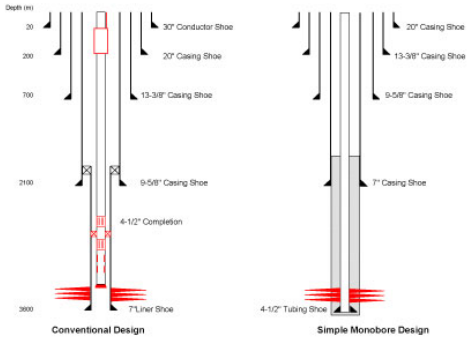
- If the bottomhole pressure is reduced to 3,000 psia, we will get,
  Q = 4,471*stbd*

How to Drill a well

- Major issue is how to get drill bit cutting out of the hole.
- Cuttings are removed with drilling mud.
- Hole integrity – The hole that is drilled is maintained with casing. Casing also prevents external blowouts.
- Completion Techniques Make Production Possible
  - Prevention of formation damage
  - Perforation of formation
  - Stimulation of formation

Casing Programs



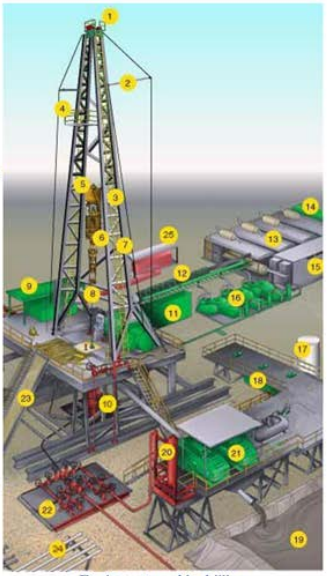


Multiple Casing Strings Protect the well from collapse in external blowouts

Drilling Rig Components

Click on the name below or a number on the graphic to see a definition and a more detailed photo of the object.

1. Crown Block and Water Table
2. Catline Boom and Hoist Line
3. Drilling Line
4. Monkeyboard
5. Traveling Block
6. Top Drive
7. Mast
8. Drill Pipe
9. Doghouse
10. Blowout Preventer
11. Water Tank
12. Electric Cable Tray
13. Engine Generator Sets
14. Fuel Tank
15. Electrical Control House
16. Mud Pumps
17. Bulk Mud Component Tanks
18. Mud Tanks (Pits)
19. Reserve Pit
20. Mud-Gas Separator
21. Shale Shakers
22. Choke Manifold
23. Pipe Ramp
24. Pipe Racks
25. Accumulator



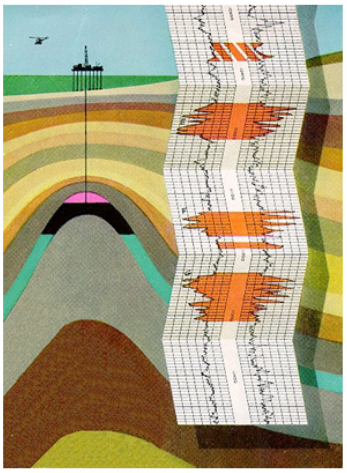
Equipment used in drilling

48. Ram BOP
49. Rathole
50. Rotary Hose
51. Rotary Table
52. Slips
53. Spinning chain
54. Stairways
55. Standpipe
56. Surface Casing
57. Substructure

Rig Components

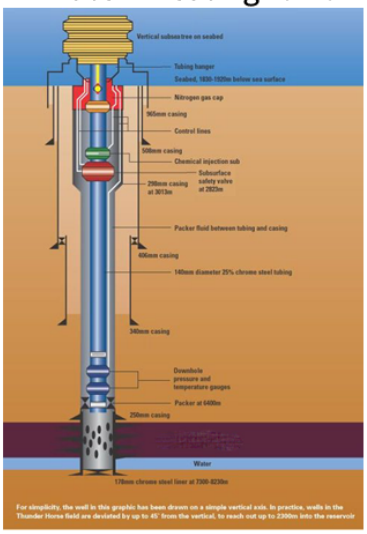
Well Logging

- Well logging is used to determine where to "complete the well"
- Electronic tools run in hole
- Primary log types are:
  - Porosity (How much oil and gas)
  - Permeability (Flow)
  - Resitivity (Oil, Water, or Gas)



Well Testing

- Well Testing is necessary to determine reserves
- Drill Stem Testing for Oil Exploration Wells



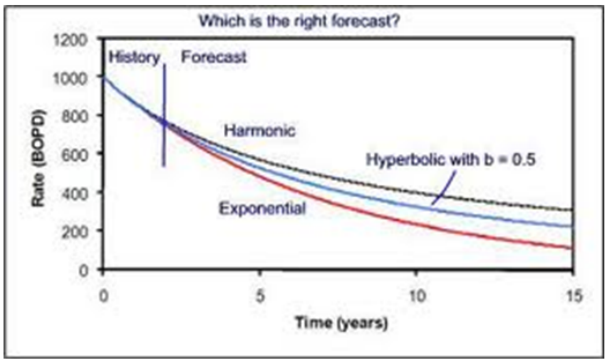
Well Testing Continued

- Well Flow Testing – multi day flow test followed by shut in and pressure build-up
  - Oil may go to a tank
  - Gas is typically flared
  - Results Pressure behavior

Pressure drawdown and build-up after shut-in gives indication as to the size of the reservoir and well productivity

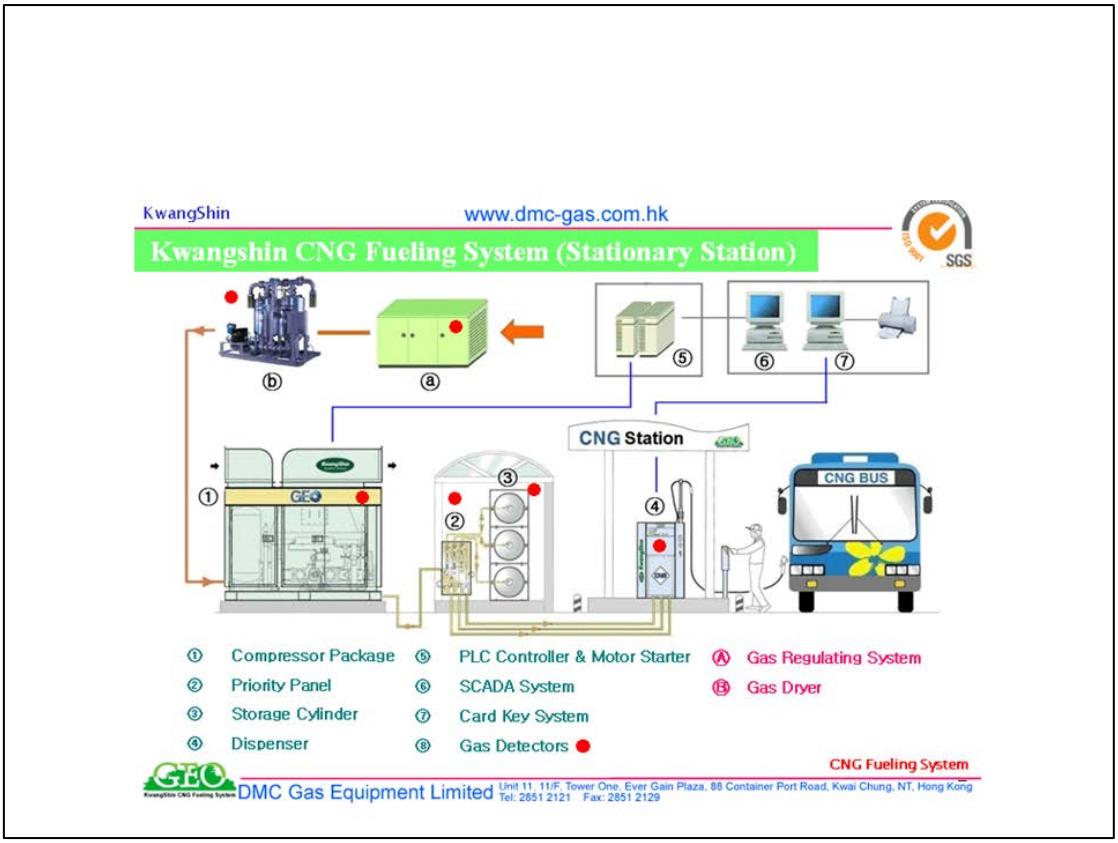
Decline Curve Analysis

- If there is extended production flow (a period of years) reserves can be estimated by extrapolating production vs time data to an estimated abandonment.



CNG

- CNG is Compressed Natural Gas
- Gas is compressed to 250 Atm (3,600 psi)


KwangShin
www.dmc-gas.com.hk
Kwangshin CNG Fueling System (Stationary Station)
SGS
CNG Station
CNG BUS
① Compressor Package
② Priority Panel
③ Storage Cylinder
④ Dispenser
⑤ PLC Controller & Motor Starter
⑥ SCADA System
⑦ Card Key System
⑧ Gas Detectors
Ⓐ Gas Regulating System
Ⓑ Gas Dryer
CNG Fueling System
DMC Gas Equipment Limited
Unit 11, 11/F, Tower One, Ever Gain Plaza, 88 Container Port Road, Kwai Chung, NT, Hong Kong
Tel: 2851 2121 Fax: 2851 2129


CNG Gas Compressor

Why CNG

- Btu is a measure of heat
- A liter of gasoline contains 31,800 Btu
- 51 Afghani/liters
- Natural Gas costs 10.2 Afghanis per M^3($200/1000 M^3)
- M^3 = 35,833 Btu/M^3
- Natural Gas Cost 3,583 Btu/Afg
- Natural Gas Cost 31,800/3,583= 8.87 Afg per GLE
- Add 15 Afg/GlE for Compression
- Total CNG Cost = 24 Afghani/GLE (vs 51)

Gas Sweetening

- Two Basic ways of Gas Sweetening
  - – H_2S Scavengers
  - – Amine Plants

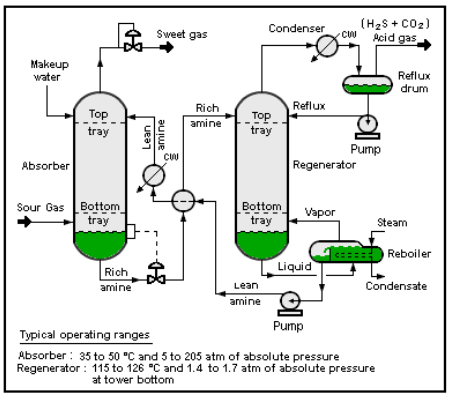
H_2S Scavengers

- Used for < 500 ppm
- Simple
- Material Absorbs H_2S

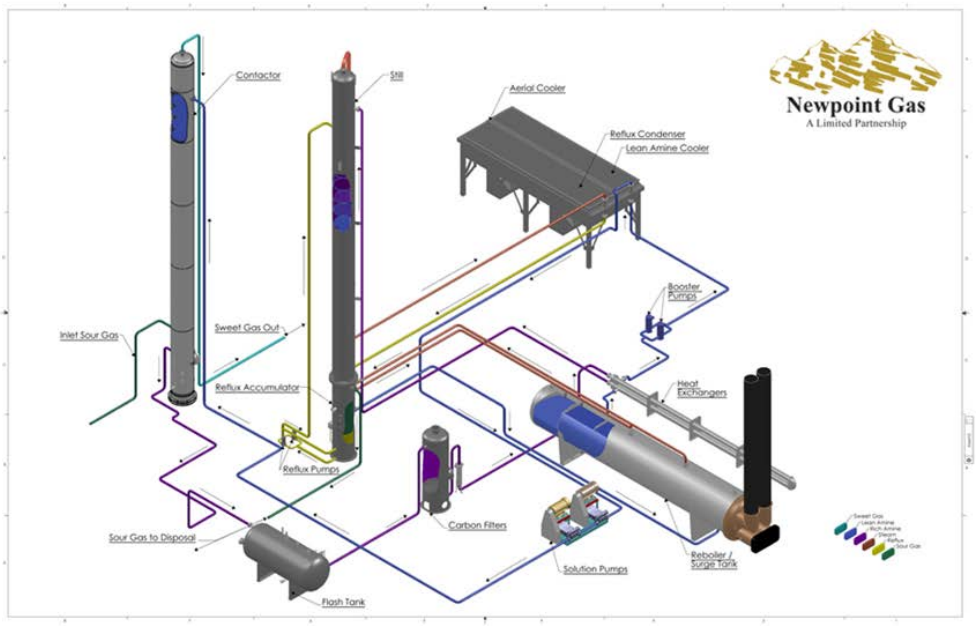
Gas Sweetening Plants (Amine)

- Amine Plants used for H_2S > 500 ppm
- Much more complicate and expensive

Basic Gas Sweetening Process



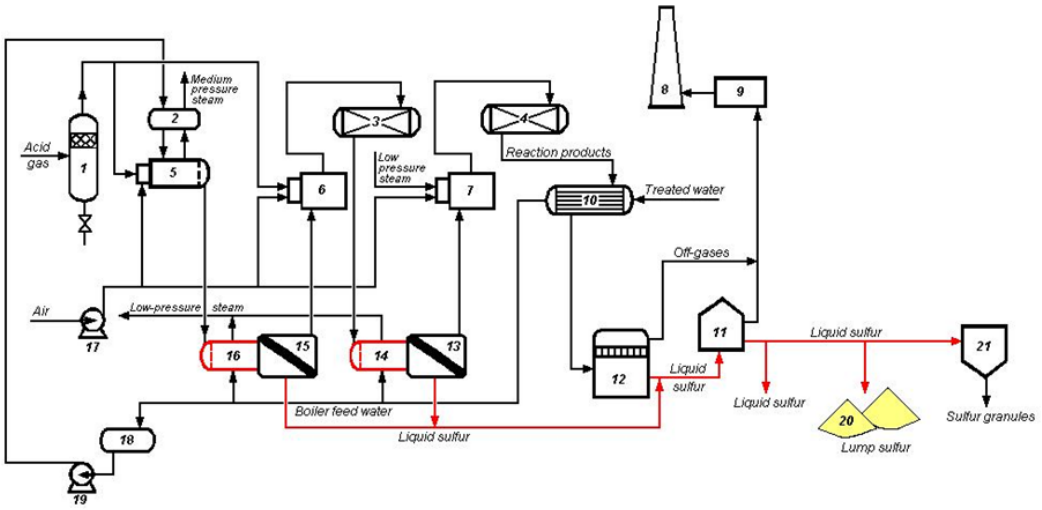
Amine Plant Flow Diagram



H_2S Disposal Options

- Disposal – High Pressure Injection
  - Expensive
  - Transportation of high level H_2S -Dangerous
  - Need a disposal well –Expensive
- Sulfur Plant
  - Expensive
  - Elemental Sulfur (S_2) made and needs to be disposed
    - Can be used for fertilizer feedstock
    - Often stockpiled

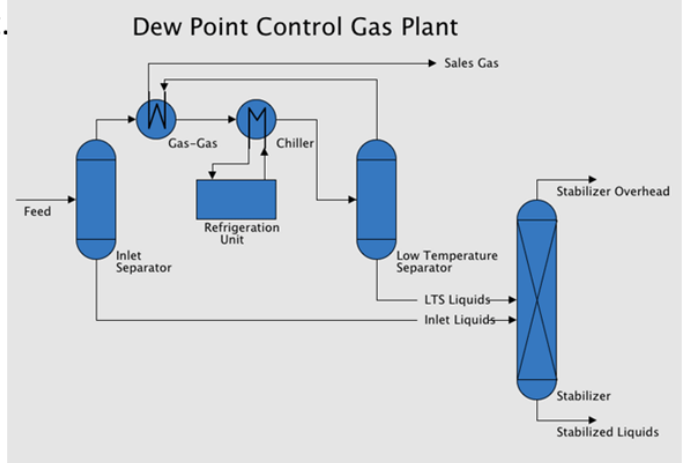
3 Stage Claus Process



1- Separator; 2 Drum of firs boiler; 3, 4 Catalytic reactor of the first and second stage 5 Furnace reactor; 6,7 Preheaters of process gases; 8 Incinerator and Stack; 9 Off-gas treating unit; 10 Economizer; 11 Sulfur pit 12,13, 15 Coagulators of sulfur; 14, 16 Sulfur Condenser; 17 Blower; 18 Hot water tank; 19 Pump 20 Lump sulfur storage; 21 Sulfur granulation unit

Refrigeration Gas Porcessing

- If heavy ends (propane, butane+) exist they must be removed because they are valuable and to make the sales gas safe for home consumptio. This is done by cooling the gas in a refrigeration plant.



Gas Flow Through Pipes

- Two types of gas flow
  - Two phase flow in gas gathering systems The Weymouth equation is considered a conservative good estimate of pressure loss in pipelines with some liquid (condensate, NGL's and water) in it.
  - Single Phase Flow in Residue Pipelines The Panhandle Equation is widly used for pipelines with only gas flow. Results is less pressure loss.

Weymouth Equation

- $P_d = ((Q*14.696/.2254D^{2.67})^2 * Z*L*G *(460+T)^2)^{.5}$
  - Where:
    - Q = flow in MMscfd
    - D = Diameter in inches (inside)
    - Z = Compressibility (.99)
    - L = Length of pipeline in miles
    - G = Gas Gravity
    - T = Temperature in degrees Fahrenheit

Weymouth Spreadsheet Example

- A Weymouth spreadsheet will be provided to calculate the pressure in a pipeline system.

Example:

A gas plant is fed gas at 50 psig from a gathering system where the first upstream pipe is 16" for 16 km. The flow rate in this line is 40 MMscfd to a pipe junction. The next line has a flow rate of 10 MMscfd and is 32 km long and 8" in diameter. The specific gravity of the gas = .8.

What is the pressure at the upstream end of the pipe?

Weymouth Spreadsheet Example Answer

- Using the spreadsheet provided the P at the junction = 91.8 psig and at the end of the line = 238.3 psig

Single Phase Flow

- Used for long distance high pressure sales (processed gas) pipelines
  - Panhandle A
  - Panhandle B

Panhandle A & B

Panhandle A

$$Q = 435.87\left(\frac{Tsc}{Psc}\right)^{1.0788}\left(\frac{P_1^2 - e^s P_2^2}{G^{0.8539}\, L_e\, T_m\, Z}\right)^{0.5394} D^{2.6182} E$$

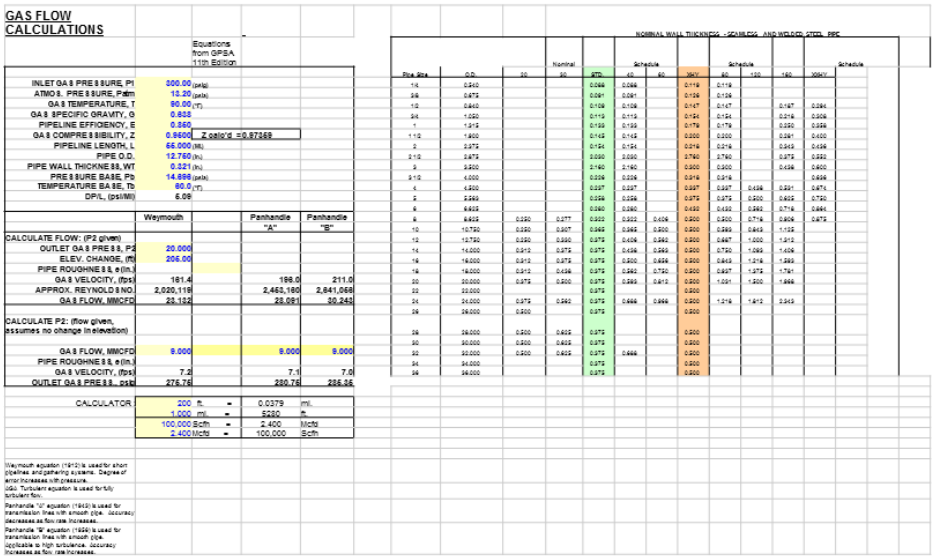
Panhandle B

$$Q = 737\left(\frac{Tsc}{Psc}\right)^{1.02}\left(\frac{P_1^2 - e^s P_2^2}{G^{0.961}\, L_e\, T_m\, Z}\right)^{0.51} D^{2.52} E$$

Parameters		
Inlet pressure (absolute)	998	psia
Outlet pressure (absolute)	913	psia
Pressure, std condition (absolute)	14.7	psia
Temperature std condition (absolute)	530	F
Mean temperature of line (absolute)	560	F
Inside diameter	18.5	in
Pipe length	10	miles
Gas relative density (air=1)	0.6	
Mean gas compressibility	0.85	
Pipeline efficiency	0.95	
Mean gas viscosity	1	cP
Elevation of exit above entrance	20	in

Flowrates (std conditions)		
Panhandle A	349505515	ft^3/day
Panhandle B	338635378	ft^3/day

Spreadsheet for Panhandle A&B Provided



GAS FLOW CALCULATIONS

Equations from GPSA 11th Edition

			Weymouth		Panhandle "A"	Panhandle "B"
INLET GAS PRESSURE, P1	998.00	(psig)				
ATMOS. PRESSURE, Patm	13.20	(psia)				
GAS TEMPERATURE, T	60.00	(°F)				
GAS SPECIFIC GRAVITY, G	0.623					
PIPELINE EFFICIENCY, E	0.950					
GAS COMPRESSIBILITY, Z	0.9600	Z calc'd = 0.87369				
PIPELINE LENGTH, L	66.000	(Mi)				
PIPE O.D.	12.750	(In.)				
PIPE WALL THICKNESS, WT	0.321	(In.)				
PRESSURE BASE, Pb	14.696	(psia)				
TEMPERATURE BASE, Tb	60.0	(°F)				
DP/L, (psi/Mi)	6.06					
CALCULATE FLOW: (P2 given)						
OUTLET GAS PRESSURE, P2	20.000					
ELEV. CHANGE, (ft)	200.00					
PIPE ROUGHNESS, e (in.)						
GAS VELOCITY, (fps)	161.4			198.0	211.0	
APPROX. REYNOLDS NO.	2,020,118			2,463,180	2,641,068	
GAS FLOW, MMCFD	23.132			28.081	30.243	
CALCULATE P2: (flow given, assumes no change in elevation)						
GAS FLOW, MMCFD	9.000			9.000	9.000	
PIPE ROUGHNESS, e (in.)						
GAS VELOCITY, (fps)	7.2			7.1	7.0	
OUTLET GAS PRESSURE, psig	276.76			280.76	286.36	

CALCULATOR				
200	ft.	=	0.0379	mi.
1.000	mi.	=	5280	ft.
100.000	Scfh	=	2.400	Mcfd
2.400	Mcfd	=	100.000	Scfh

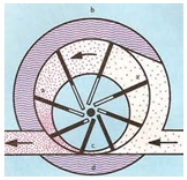
Weymouth equation (1912) is used for short pipelines and gathering systems. Degree of error increases with pressure.
USA Turbulent equation is used for fully turbulent flow.
Panhandle "A" equation (1949) is used for transmission lines with smooth pipe. Accuracy decreases as flow rate increases.
Panhandle "B" equation (1956) is used for transmission lines with smooth pipe. Applicable to high turbulence. Accuracy increases as flow rate increases.

NOMINAL WALL THICKNESS - SEAMLESS AND WELDED STEEL PIPE

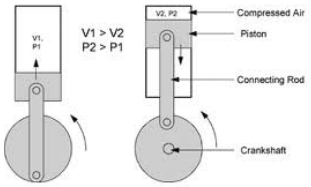
Pipe Size	O.D.	10	Nominal 30	Schedule STD.	40	60	XH	Schedule 80	120	160	XXH	Schedule
1/4	0.540			0.088	0.088		0.119	0.119				
3/8	0.675			0.091	0.091		0.126	0.126				
1/2	0.840			0.109	0.109		0.147	0.147		0.187	0.294	
3/4	1.050			0.113	0.113		0.154	0.154		0.218	0.308	
1	1.315			0.133	0.133		0.179	0.179		0.250	0.358	
1 1/4	1.660			0.140	0.140		0.191	0.191		0.250	0.382	
1 1/2	1.900			0.145	0.145		0.200	0.200		0.281	0.400	
2	2.375			0.154	0.154		0.218	0.218		0.343	0.436	
2 1/2	2.875			0.203	0.203		0.276	0.276		0.375	0.552	
3	3.500			0.216	0.216		0.300	0.300		0.438	0.600	
3 1/2	4.000			0.226	0.226		0.318	0.318			0.636	
4	4.500			0.237	0.237		0.337	0.337	0.438	0.531	0.674	
5	5.563			0.258	0.258		0.375	0.375	0.500	0.625	0.750	
6	6.625			0.280	0.280		0.432	0.432	0.562	0.718	0.864	
8	8.625	0.250	0.277	0.322	0.322	0.406	0.500	0.500	0.718	0.906	0.875	
10	10.750	0.250	0.307	0.365	0.365	0.500	0.500	0.500	0.843	1.125		
12	12.750	0.250	0.330	0.375	0.406	0.562	0.500	0.500	0.937	1.000	1.312	
14	14.000	0.312	0.375	0.375	0.438	0.593	0.500	0.750	1.093	1.406		
16	16.000	0.312	0.375	0.375	0.500	0.656	0.500	0.843	1.218	1.593		
18	18.000	0.312	0.438	0.375	0.562	0.750	0.500	0.937	1.375	1.781		
20	20.000	0.375	0.500	0.375	0.593	0.812	0.500	1.031	1.500	1.968		
22	22.000			0.375			0.500					
24	24.000	0.375	0.562	0.375	0.656	0.968	0.500	1.218	1.812	2.343		
26	26.000	0.500		0.375			0.500					
28	28.000	0.500	0.625	0.375			0.500					
30	30.000	0.500	0.625	0.375			0.500					
32	32.000	0.500	0.625	0.375	0.656		0.500					
34	34.000			0.375			0.500					
36	36.000			0.375			0.500					

Gas Compressors

- Gas Compressors are integral to the gas and oil business to move gas at high pressures (68 atm)
- Types include
  - Rotary



- Positive Displacement



Positive Displacement Compressors

- Most Compressors used in Oil and Gas production are Positive Displacement

Heat is a problem so you need to keep compression ratio's less than about 3.5

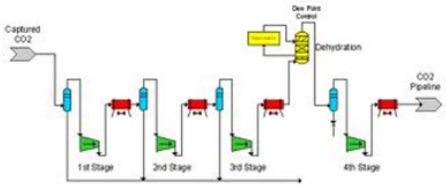
Compression ratio is P_{da}/P_{sa}

Where P_{da}= Absolute Discharge Pressure

Pda= Absolute Suction Pressure

(absolute pressure equals pressure + atmospheric pressure)

Once you exceed a compression ration of 3.5 you need cooling or the gas will get too hot. So if you want to compress large amounts you need to install interstage cooling.



Typical Positive Displacement Compressor (Self Contained Unit)

Compression Horsepower Estimation

	Discharge Pressure (PSIG)														
	25	50	75	100	150	200	250	300	400	500	600	700	800	900	1000
0	65	99	128	144	168	187	203	218	233	248	260	272	282	291	299*
10	35	63	85	104	131	149	163	175	196	214	231	235	242	250	257
20		43	62	78	106	126	139	151	170	186	199	212	225	228	232
30		29	47	62	85	107	123	133	152	167	179	191	201	211	221
40			36	50	72	90	107	121	138	152	164	175	185	194	202
50			26	41	61	78	93	106	127	141	153	163	173	181	189
60				32	53	69	83	95	118	131	143	153	162	170	178
70				25	46	61	74	86	109	123	135	145	153	161	169
80					40	54	67	78	98	117	127	137	146	153	161
90					34	49	61	72	91	109	121	131	139	147	154
100					28	44	55	66	84	100	116	125	133	141	148
150						22	35	45	60	74	86	98	110	118	124
200								30	45	58	68	78	88	96	105
250									33	46	56	65	73	81	88
300									23	36	46	54	62	69	76
350										27	38	46	53	60	67
400											30	39	46	53	60
500												26	34	41	46
600													23	30	37

Compression Example

Given: If you want to compress 1,000 M^3/day of gas from 1 atm to 68 atm how much horsepower and how many stages of compression will you need?

Answer: 1 atm = 14.7 psi

68 atm= 1,000 psi

1,000 M^3 = 35.3 MMscfd

Using the Chart, HP between 257 and 232 = 244 Hp/MMscfd and is in the 3 stage region.

Answer HP = 244*35.3= 8,613 Hp and 3 stages.

Gas Development Case Study

- Natural Gas is often produced with more heavy ends than are seen in Sheberghan Area
- Oil wells generally produce natural gas along with oil. At Kashkari there is no doubt gas although probably not enough to justify production.
- If we knew the value of the gas we could estimate if we could build facilities to capture the gas based on the project cost. Project cost can be estimated after pipeline sizes, compression required, and processing needed has been determined using some of the techniques we have discussed.
- With additional analysis we can determine the value of the gas
- An excel spreadsheet has been distributed to you that does this calculation.

Gas Development Case Study

Given: A field produces 40 MMscfd and is forecast to decline at 10% per year. The cost of gas gathering and processing is $60,000,000 dollars. The gas is worth $3.00/MMBtu and the Propane and Butane is work $1.00/gallon. The gas composition of the gas is as follows:

N2	0.44
CO2	0.68
H2S	0.00
C1	88.72
C2	6.73
C3	2.18
IC4	0.41
NC4	0.44
IC5	0.15
NC5	0.10
C6+	0.18
Total	100.00

Assume a refrigeration plant is to be installed with an efficiency of 80% propane recovery, 90 percent butane recovery and 100% on butane+

Case Study Question

Question: Using the economics spreadsheet provided what is the inlet btu of the gas, the outlet btu of the gas, and the amount of liquid produced, and how much gas remains for sale.

Extra Credit – Assuming operating costs of $1,000,000 per year, what is the financial return of the project

Case Study Answers

Answer is obtained by entering crucial values in shaded blue. The spreadsheet then provides the answers.

	USE THIS MOL%	INLET BTU/CF	MOLS PER MMCF	% RECOV	RESIDUE MOLS PER MMCF	RESIDUE MOL%	BTU/CF	HEATING VALUE	REJECT GAS MOLS/MMCF	NGL RECOV MOLS/MMCF	GAL/MOL	NGL RECOV GAL/MMCF	NGL COMP %	NGL STARTING PRICES
N2	0.44		11.46	0.00	11.46	0.45	0.00	0.00	0.00					CPG
CO2	0.68		17.79	0.00	17.79	0.70	0.00	0.00	0.00					
H2S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00			Residue Gas Price =		$3.00
C1	88.72	896	#######	0.00	2337.85	91.39	1009.70	922.77	0.00					
C2	6.73	119	177.24	0.00	177.24	6.93	1768.80	122.55		0.00	10.12	0.00	0.00	100.00
C3	2.18	55	57.50	80.00	11.50	0.45	2517.50	11.32		46.00	10.42	479.28	54.10	100.00
I C4	0.41	13	10.76	90.00	1.08	0.04	3252.70	1.37		9.69	12.38	119.90	13.53	100.00
NC4	0.44	14	11.53	90.00	1.15	0.05	3262.10	1.47		10.37	11.93	123.75	13.97	100.00
I C5	0.15	6	3.83	100.00	0.00	0.00	4000.30	0.00		3.83	13.85	53.06	5.99	100.00
NC5	0.10	4	2.53	100.00	0.00	0.00	4009.60	0.00		2.53	13.71	34.68	3.91	100.00
C6+	0.18	9	4.61	100.00	0.00	0.00	5000.00	0.00		4.61	16.32	75.30	8.50	100.00
Total	100.00	1118	#######		2558.07	100.00		1059.48	0.00	77.03		885.98	100.00	
					970.53	MCF/MMSCF					Shrink =	32.99	CF/GAL	
											Shrink =	98401	BTU/GAL	

Answer (from Processing Tab)

- Inlet btu = 1118 btu/scf
- Outlet btu = 1059 btu/scf
- Liquid Production = propane + butanes+ = 885 gallons/MMscf = .89 gallons/Mscf
- Remaining Gas = .970 * (40 MMscf – field fuel) – plant Fuel = 36,411 Mcfd
- Project Internal Rate of Return = 26.4% (From Proj. Parameter Tab

Annex 2: Questionnaires Basic Petroleum Engineering for Oil and Gas Engineers

The following nine pages contain actual end of class evaluations (surveys) to provide an illustration of the typical SGGA capacity development survey and scoring system. To remain congruent with the training materials of Annex 1, the evaluations are from the same course: Basic Petroleum Engineering for Oil and Gas Engineers. This training session was held January 19-24, 2013 and was described in detail within pages 6-8 of this Report.

The class evaluations (surveys) will begin on the following page.

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project -
Evaluation to be fill by the Trainer

Trainer: (Name) DAN BRACKWAY

Course: (Name) Petroleum Engr. Basics for Oil & Gas.

Date: From: 1/19/2013 To: 1/24/2013.

Number of Participants: 9

Number of Female Participants: 0

Number of Male Participants: 9

Rank of Performance (*): (1 to 10) 10

Skillset gaps identified:

Basics Chemistry. Natural gas & H_2S Safety.

(*) The trainer will develop one indicator of performance (from 1 to 10) for all the team trained and identify the skillset gaps after the course. This indicator will consider the following criteria: 1) participation of people in the course; 2) average understanding level of the training course materials ; 3) average understanding level of the practical work and; 4) the average level of performance of the team relative to other groups trained.

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project -
Evaluation to be fill by the Trainees

Course: (Name) (PEB) drilling and rehabilation

Date: From: 19 Jan To: 27 Jan 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☐5 ☑4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☐5 ☑4 ☐3 ☐2 ☐1

3. The support material were:

☑5 ☐4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was:

☑5 ☐4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

Working more on formula and also give some homework to participants will be a good improvement for trainees.

I would like to thank the providers of this course and especial thanks to Mr. Brookway.

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project -
Evaluation to be fill by the Trainees

Course: (Name) Basic petroleum Engineering

Date: From: 13 January To: 27 January 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☑5 ☐4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☑5 ☐4 ☐3 ☐2 ☐1

3. The support material were:

☑5 ☐4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was:

☐5 ☑4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

I would like to appreciate for successful running of this course. the topics which have been covered were very useful but for some topics specially for equations and spread sheet we need more time and excersise. thanks.

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project - Evaluation to be fill by the Trainees

Course: (Name) Petroleum Engineering

Date: From: 19 Jan To: 27 Jan 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☐5 ☑4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☑5 ☐4 ☐3 ☐2 ☐1

3. The support material were:

☐5 ☑4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was:

☐5 ☑4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

It should be better if you conduct another course for more details of the Topic

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project -
Evaluation to be fill by the Trainees

Course: (Name) Drilling of wells & well testing

Date: From: January 09, 2013 To: January 28, 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☑5 ☐4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☑5 ☐4 ☐3 ☐2 ☐1

3. The support material were:

☐5 ☑4 ☐3 ☐2 ☐1

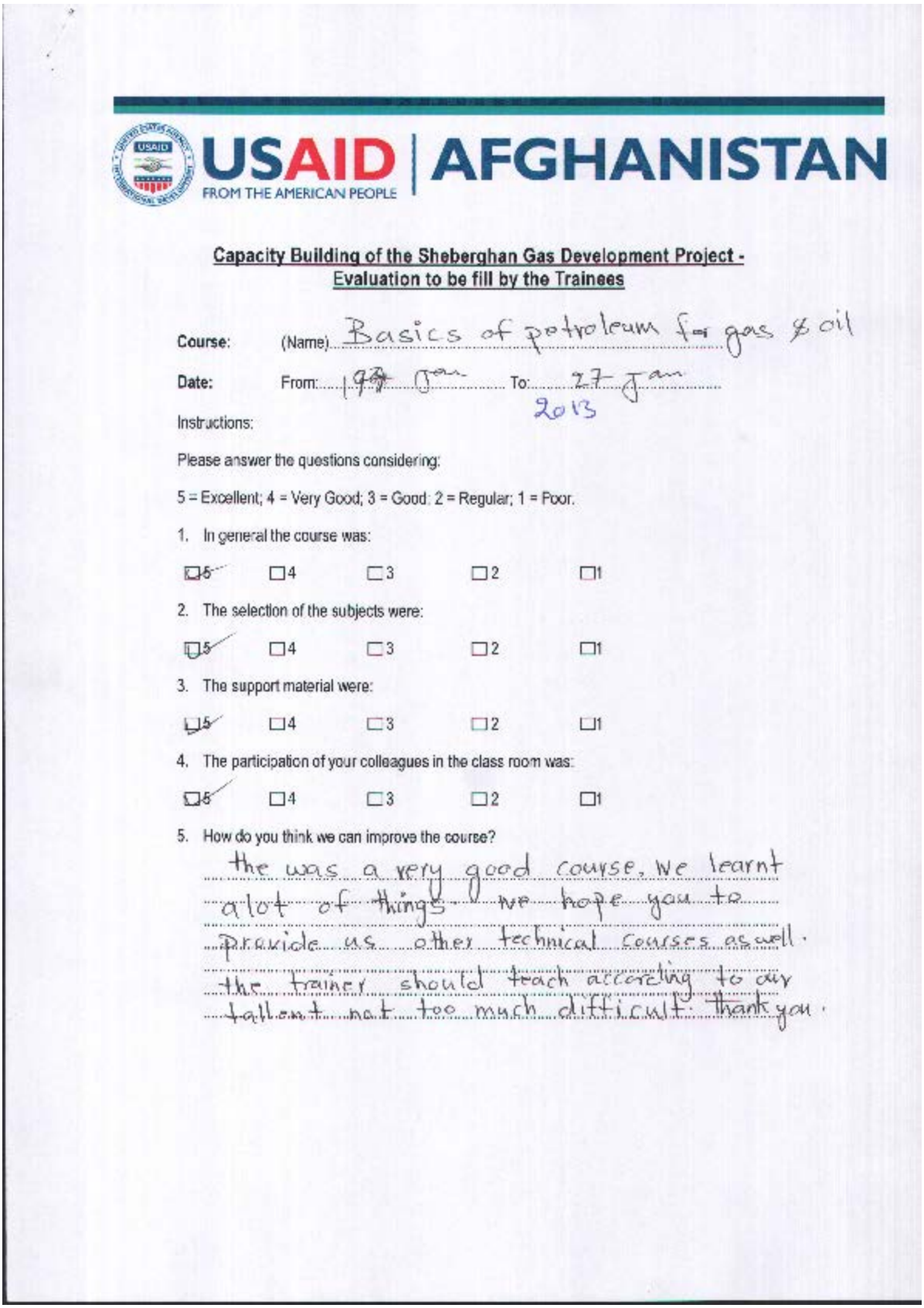
4. The participation of your colleagues in the class room was:

☐5 ☑4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

Course was overall very gd. It can be more improve by including more field related equations and solving them in graph. And also if videos related to the are played it will also help. There should be more detail about drilling of well. For example well logs. Basics should not be there and more details about spread sheets.

Examination



USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project -
Evaluation to be fill by the Trainees

Course: (Name) Basics of petroleum for gas & oil

Date: From: 19 Jan To: 27 Jan 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☑5 ☐4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☑5 ☐4 ☐3 ☐2 ☐1

3. The support material were:

☑5 ☐4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was:

☑5 ☐4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

the was a very good course, we learnt alot of things. we hope you to provide us other technical courses as well. the trainer should teach according to our talent not too much difficult. thank you.

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project -
Evaluation to be fill by the Trainees

Course: (Name) oil and gas introductory drilling well

Date: From 19 January 2013 To: 27/1/2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☑5 ☐4 ☐3 ☐2 ☐1

2. The selecton of the subjects were:

☑5 ☐4 ☐3 ☐2 ☐1

3. The support material were:

☑5 ☐4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was:

☑5 ☐4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

The course is very good for us. we learn more then about drilling, Pipline, Gas ~~transmit~~ transmission. it's excellent course holds we in each parts of well testing drilling etc. The meterial is useful for us.

USAID FROM THE AMERICAN PEOPLE | AFGHANISTAN

Capacity Building of the Sheberghan Gas Development Project - Evaluation to be fill by the Trainees

Course: (Name) Eng. Mullah Jan

Date: From: 19 Jan To: 27 Jan 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☐5 ☑4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☐5 ☑4 ☐3 ☐2 ☐1

3. The support material were:

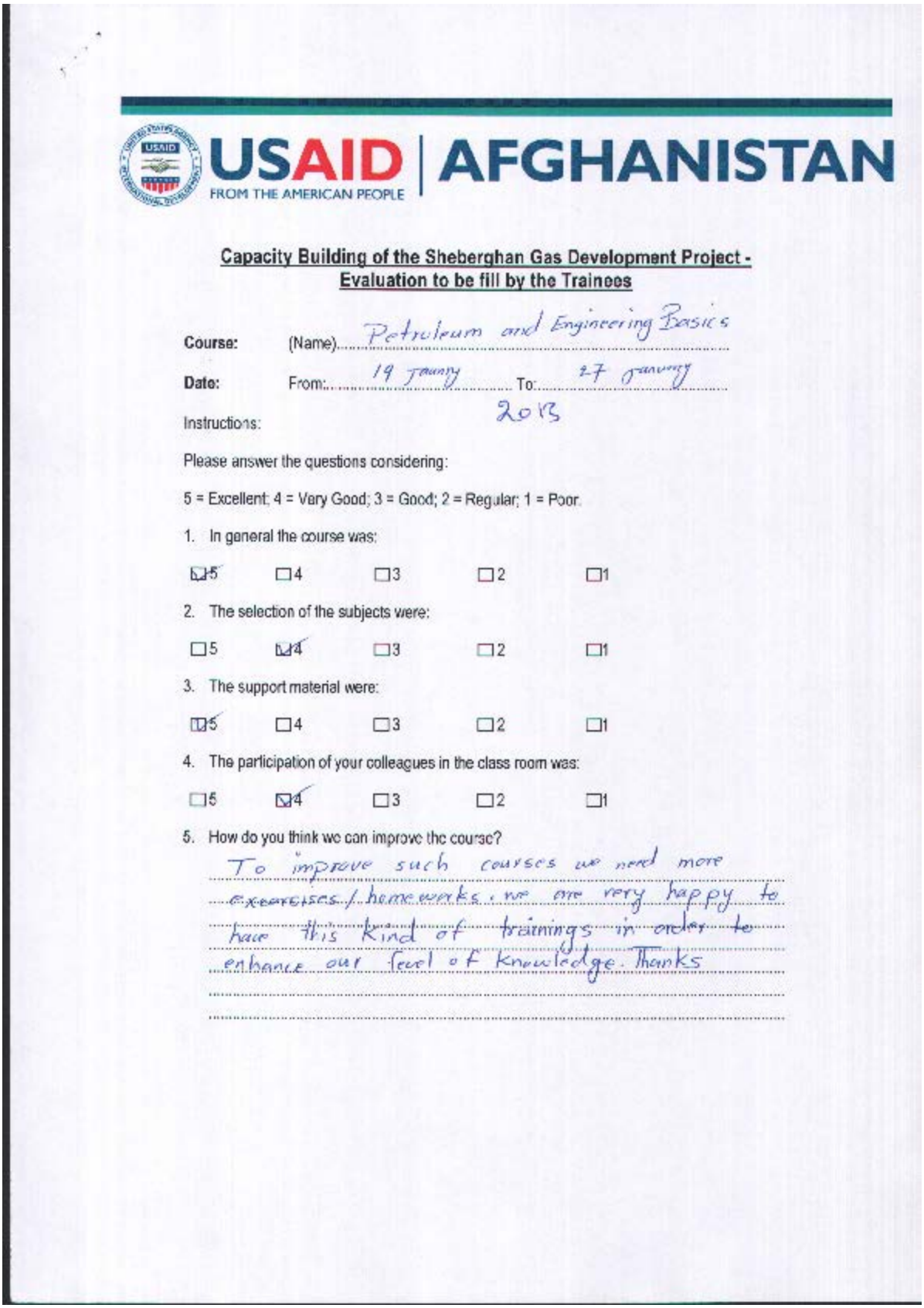
☑5 ☐4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was

☐5 ☑4 ☐3 ☐2 ☐1

5. How do you think we can improve the course?

It was a great training for us and we would like to have the same trainings in future as well. The time of course shold be more than now.



USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Capacity Building of the Sheberghan Gas Development Project - Evaluation to be fill by the Trainees

Course: (Name) Petroleum and Engineering Basics

Date: From: 19 January To: 27 January 2013

Instructions:

Please answer the questions considering:

5 = Excellent; 4 = Very Good; 3 = Good; 2 = Regular; 1 = Poor.

1. In general the course was:

☑5 ☐4 ☐3 ☐2 ☐1

2. The selection of the subjects were:

☐5 ☑4 ☐3 ☐2 ☐1

3. The support material were:

☑5 ☐4 ☐3 ☐2 ☐1

4. The participation of your colleagues in the class room was:

☐5 ☑4 ☐3 ☐2 ☐1

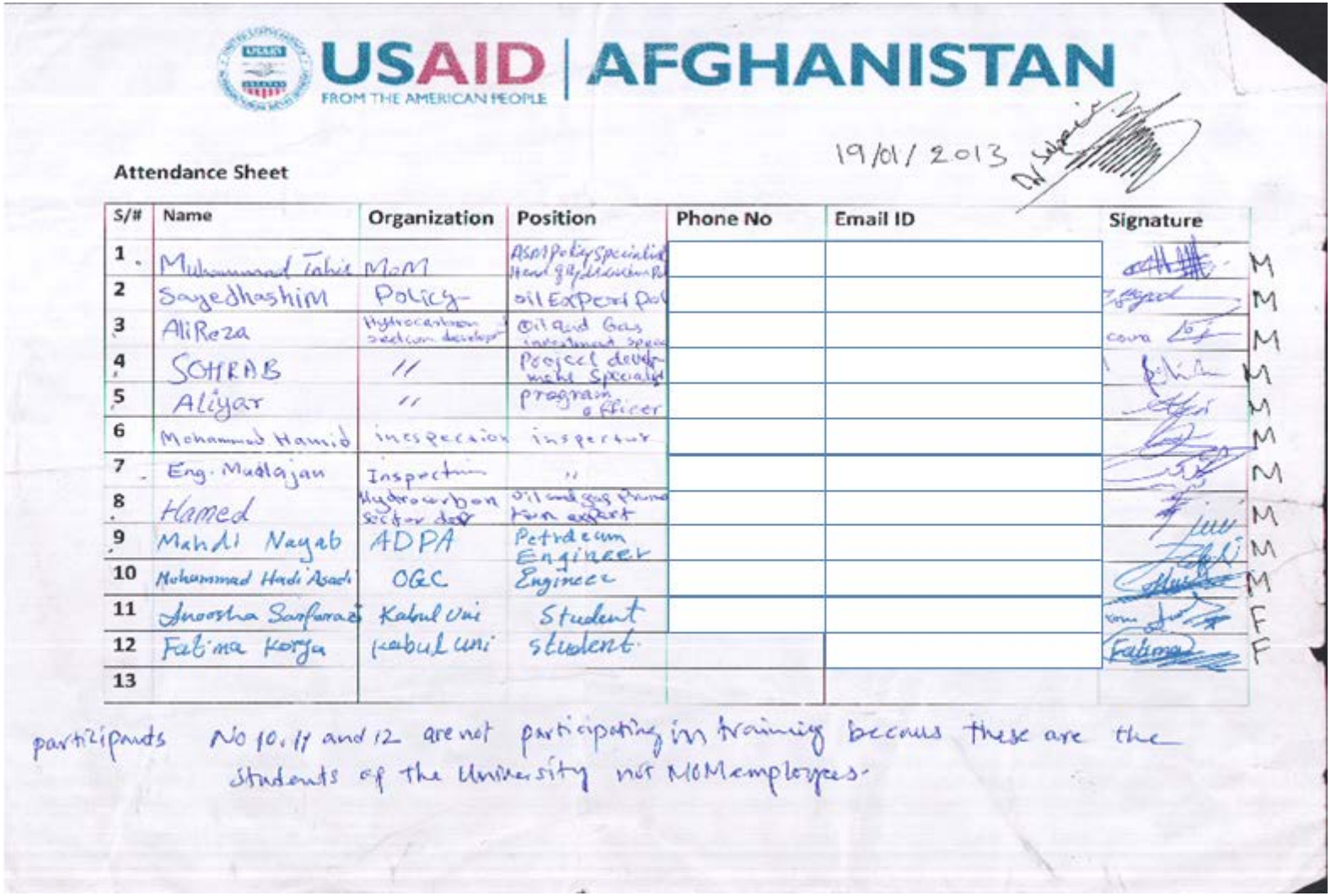
5. How do you think we can improve the course?

To improve such courses we need more exercises / homeworks. we are very happy to have this kind of trainings in order to enhance our level of knowledge. Thanks

Annex 3: Attendance Sheets Basic Petroleum Engineering for Oil and Gas Engineers

The following five pages contain actual class attendance sign-in sheets to provide an illustration of typical SGGA capacity development student tracking. To remain congruent with the training materials of Annexes 1 and 2, the sign-in sheets are provided from the same course: Basic Petroleum Engineering for Oil and Gas Engineers. This training session was held January 19-24, 2013 and was described in detail within pages 6-8 of this Report.

The class attendance sign-in sheets will begin on the following page.



USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

19/01/2013

Attendance Sheet

S/#	Name	Organization	Position	Phone No	Email ID	Signature	
1	Muhammad Tahir	MoM	ASO/Policy Speciali Head of Exploration Pol				M
2	Sayedhashim	Policy	oil Expert Pol				M
3	AliReza	Hydrocarbon section develop	Oil and Gas investment spec			cava	M
4	SOHRAB	//	Project develop ment Specialist				M
5	Aliyar	//	program officer				M
6	Mohammad Hamid	inspecaion	inspector				M
7	Eng. Mudajan	Inspection	//				M
8	Hamed	Hydrocarbon sector dep	Oil and gas pharma tion expert				M
9	Mahdi Nayab	ADPA	Petroleum Engineer				M
10	Muhammad Hadi Asadi	OGC	Engineer				M
11	Anoosha Sarfaraz	Kabul Uni	Student				F
12	Fatima Kerja	Kabul Uni	student			Fatima	F
13							

participants No 10, 11 and 12 are not participating in training because these are the students of the University not MOM employees.

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Attendance Sheet Petroleum Engineering 20/01/2013

S/#	Name	Organization	Position	Phone No	Email ID	Signature
1	Ali Reza Tawakoli	MOM	investment specialist			
2	Hamed Shadman	MOM	oil/gas Program expert			
3	M. Mahdi	ADPA	Petroleum Engineer			
4	Sohrab	MOM	project development energy			
5	Aliyar	IPD	program officer			
6	Sayedhashim	Policy	oil Expert			
7	Mohammad Hamid	inspection	inspector Engineer			
8	Mullah Jan	inspection	inspector Engineer			
9						
10						
11						
12						
13						

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Attendance Sheet Training: Basics of oil & Gas Date: 21/01/2013

S/#	Name	Organization	Position	Phone No	Email ID	Signature
1	SoHRAB	MoM	oil & gas promotion Experts			
2	M. Mahdi	ADPA	petroleum Engineer			
3	Ali Reza Tawakoli	MoM	investment specialist			
4	Aliyar	IPD	program officer			
5	Hamed shadman	MoM	oil & gas promotion expert			
6						
7						
8						
9						
10						
11						
12						
13						

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Attendance Sheet **Training:** Basics of oil & Gas **Date:** 22/01/2013

S/#	Name	Organization	Position	Phone No	Email ID	Signature
1	M. Mahdi	ADPA	Petroleum Engineer			
2	Hamed shadman	MoM	oil & gas promotion experts			
3	Ali Reza Tawakoli	MoM	investment specialist			
4	SOHRAB	MoM	project development energy			
5	Aliyas	IPD	program officer			
6	Mullah Jan	inspection	inspector Engineer			
7						
8						
9						
10						
11						
12						
13						

USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

Attendance Sheet

Introduction to petroleum Engineering 27/01/2013

S/#	Name	Organization	Position	Phone No	Email ID	Signature
1	mohammad Hanif					
2	Sayedhashim	Policy	oil Expert			
3	Mulla. Jan					
4	Ali Reza	IPD				
5	Hamed	IPD				
6	SOHRAB	//	//			
7	M.Mahdi	ADPA	Petroleum engineer			
8						
9						
10						
11						
12						