



**Norad**



THE NORWEGIAN PETROLEUM DIRECTORATE, NORAD, YPFB, MHE, UMSA

# Petroleum Industry Training

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Basic training for Bolivia in the Petroleum Industry  
2012

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**04.01.2012**

# Basic training for Bolivia in the Petroleum Industry 2012

## 1. Background

The Ministry of Hydrocarbons and Energy (MHE) and YPFB wanted to offer relevant employees basic education and training in selected core competence subjects. Such education and training is also available to UMSA enabling them to offer relevant students the same content as part of their petroleum studies. In 2011 6 modules were taught twice and the results quite good. For 2012 only one set of 10 modules will be done and the course contents to be expanded with four new modules, HSE, seismic acquisition and interpretation, reservoir engineering and production and Field development and transportation.

The courses are designed as modules for participants with limited or only general knowledge of the subjects. However, based on experiences from course activities and feedback from participants, selected disciplines can be extended with more advanced content to be agreed with YPFB.

## 2. Methodology

The content will be delivered as classroom lectures extended with cases designed for group work. Duration of each course will typically be 5 full working days. At the end of each course participants will respond to a questionnaire testing level of learning. Those meeting a minimum score or better will receive a course certificate confirming participation and passed examination.

## 3. Scope of work – schedule for 2012 (week no) in parenthesis

The list of courses to be offered includes the following:

1. Petroleum geology & Exploration
2. Drilling and well completion
3. Seismic acquisition and interpretation
4. Reservoir engineering and HC production
5. Field development and transportation
6. Planning and economics
7. HSE, with focus on environment and what is required for oil and gas operations
8. Oil Sim

## 4. Responsibilities

### **OfD/NPD is responsible for and covers expenses related to:**

- defining course content
- preparing course material
- providing qualified teachers for each course
- travel, board and lodging for teachers/OfD personnel
- provision of food and beverage to participants including lunch and coffee breaks
- provision of professional simultaneous translation

### **YPFB is responsible for and covers expenses related to:**

Selecting and appointing course participants  
Cover the cost for local transportation and other living expenses if appropriate

### **UMSA is responsible for and cover expenses related to:**

Provision of good quality class room and audio/visual facilities at Cota Cota  
Selection of students and cost for their travel, lodging and local transportation  
Issue a diploma at the end of each course

### **MHE is responsible for and will cover the cost for:**

Selecting and appointing course participants  
Cover the cost for local transportation and other living expenses if appropriate  
If required, provide teaching facilities in El Centro

## **Management and coordination**

The parties appoint a steering committee consisting of:

- one member from and appointed by YPFB, Tania Torres Sandoval
- one member from and appointed by MHE, Isabel Chopitea
- one member from and appointed by UMSA, Ing. Hermas Herrera Callejas
- two members from and appointed by OfD, Trond Augdal, Geir Ytreland

The committee meets on a quarterly basis

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Classroom venue: UMSA at Cota Cota Address:



## 5 Detailed time table:

The courses will be held once a month from February to December 2012. Each module will have a day class and an afternoon/evening class for the ministry people and others who have problems attending during the day,

- |  |         |
|--|---------|
| • Course 1. Basic OilSim, Value chain.                     | Week 7  |
| • Course 2. Petroleum Geology and Reservoir Geology.       | Week 12 |
| • Course 3. Drilling and well operations                   | Week 17 |
| • Course 4. Seismic acquisition and seismic interpretation | Week 21 |
| • Course 5. Field development and Transportation           | Week 24 |
| • Course 6. Petroleum Economy and planning                 | Week 28 |
| • Course 7. Environment and policies                       | Week 32 |
| • Course 8. Petroleum Engineering and production           | Week 37 |
| • Course 9. OilSim competition                             | Week 41 |

The time schedule is:

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- 0830-1330. Lectures
- 1330-1430 Lunch
- 1430-1630 Exercises/Lectures
- 1730-2100 Evening lectures MHE/other ministries

Friday afternoon from 1330-1430; exams, tests, summing up, discussions  
1430 end of course week.

## 6 Material

Six lecture books will be provided.

- The Oil and gas Industry from A-Z
- Petroleum geology
- Reservoir Evaluation
- Drilling
- Maintenance
- Field Development
- English-Spanish technical dictionary.

In addition a dictionary Spanish-English-Spanish will be provided, a 4GB memory stick, access to training modules on internet for additional studies, course material and snacks, soft drinks and coffee for the breaks. Handouts will be distributed electronically.

Additional course modules will hopefully be available in both English and Spanish in 2012 and planned to be ready by lecture start.

Due to workloads in the Ministry and the YPFB an afternoon schedule has been planned for; a normal session from 0830 to ca 1430 and another session from 1730-2130 for the MHE personnel and other ministry participants.



**Detailed plan**

Course 1. Basic OilSim, Value chain .

Week 7

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Course 2. Petroleum Geology and Reservoir Geology.

Week 12

Team 1	Team 2	Team 1 + 2	
<b>geology</b>			
	0900-1000	Introduction to the courses and schedule	
Monday	1015-1330	General Geology, The Earth structure, processes	Team 1
	1330	Lunch	
	1730-2130	General Geology, The Earth structure, processes	Team 2
	0900-1330	Time scale - minerals -rocks	Team 1
Tuesday	1330	Lunch	
	1430-1700	exercises: minerals	both
	1700-2100	Time scale - minerals -rocks	Team 2
	0900-1330	Plate tectonics - stratigraphy	Team 1
Wednesday		Stratigraphy (bio, chrono, magneto, litho) - sed basins	
	1330	Lunch	
	1440-1700	exercises: rocks 1	both
	1730-2130	Plate tectonics - stratigraphy	Team 2
	0900-1330	Generation of hydrocarbons: Oil and coal and kerogen	Team 1
Thursday		Basin analysis	
	1330	Lunch	
	1440-1700	exercises: rocks 2	both
1730	2130	Generation of hydrocarbons: Oil and coal and kerogen and basin analysis	Team 2
	0900-1330	Geology of South America	Team 1
Friday		Geology of Bolivia	
	1330	Lunch	
	1440-1700	exercises: minerals and rocks	both
	1730-2130	Geology of South America and Bolivia	Team 2
8-10 Saturday	0800-1700	Field trip	both
	0900-1330	Prospecting methods, seismic, gravity & magnetic	Team 1
Monday		Well logging and trap types	
	1330	Lunch	
	1730-2130	Prospecting methods, well logging, traps	Team 2
	0900-1200	test and discussion	both
Tuesday	1330	Lunch	
	1730-2130	test and discussion	both



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Course 3. Drilling and well operations

Week 17

Time	Monday	Tuesday	Wednesday	Thursday	Friday
09:00 - 09:30	Course Introduction	Monday Exercises	Tuesday exercises	Wednesday repetition	Thursday exercises
09:30 - 10:30	The Drilling Location	Rig equipment	Safety Culture	Geology introduction	Drill string
10:30 - 10:45	Morning Coffee	Morning Coffee	Morning Coffee	Morning Coffee	Morning Coffee
10:45 - 13:00	Drilling Rigs Intro to Rig equipment	Critical Rig equipment Rig Inspection and maintenance	Safety Culure Hezard recognition	Formation pressures Borehole Stability	Directional drilling and surveying Applications.
13:00 - 14:00	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14:00 - 15:30	Oil Well Drilling	Risk Management Driling rig hazards	Sustainable operations EIS	Well design Casing program,	Drilling Fluids, Solids Control Hole Cleaning
15:30 - 16:00	Break & change class room	Break & change class room	Break	Break & change class room	Break & change class room
16:30 - 17:30	Exercise Oil Well Drilling	Rig Equipment Exercise	HSE Exercise	Well Design Exercise	Drilling technology exercise

	Monday	Tuesday	Wednesday
09:00 - 09:30	Friday Exercises	Monday exercises	Tuesday exercises
09:30 - 10:30	Casing	Well Completion	Course Repetition
10:30 - 10:45	Morning Coffee	Morning Coffee	Morning Coffee
10:45 - 13:00	Cement	Well Completion	Course Repetition & Questiones Course evaluation



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13:00 - 14:00	LUNCH	LUNCH	LUNCH
14:00 - 15:30	Well heads	Drilling Program. Work processes	Well Budgets Examin: 14:00 - 16:00
15:30 -16:00	Break & change class room	Break & change class room	
16:30 - 17:30	Exercise casing and cement	Exercise well completion	

### Week 1 Drilling and completion evening course

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
17:30-1830	Course Introduction	Monday Exercises	Tuesday exercises	Wednesday repetition	Thursday exersises	09:00 - 09:30
18:30-19:30	The Drilling Location	Rig Equipm	Geology	Drill string	Casing & Cement	09:30 - 10:30
19:30-20:30	Oil Well Drilling	Safety critical equipment	Well Design	Drilling fluid	Drilling Program	10:30 - 10:45
20:30-21:30	Oil Well Drilling Exercise	Exercise,	Well Design Exercise	Drilling technology exercise	Exercise casing and cement	10:45 - 13:00

Time	Monday	Tuesday
16:00 - 16:30	Well Head	Monday Exercises
16:30 - 17:30	Completion	Repetition Course evaluation
17:30 - 18:30	Completion	Examin (18:00 - 19:00)
18:30 - 19:00	Completion Exercise	

Course 4 Seismic acquisition and seismic interpretation

Week 22

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Course 5 Field development and Transportation

Week 26

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Course 6 Petroleum Economy and planning

Week 33

Monday	0800-1100	Intro and Economic fundamentals	Team 1
	1115-1330	Intro and Economic fundamentals	
	1330	Lunch	
	1730-2130	Intro and Economic fundamentals	Team 2
Tuesday	0800-1100	A Moving target	
	1115-1330	A Moving target	
	1330	Lunch	
	1730-2130	A Moving target	
Wednesday	0800-1100	Economics of Exploration Investments	Team 1
	1115-1330	Economics of Exploration Investments	
	1330		
	1730-2130	Economics of Exploration Investments	Team 2
Thursday	0800-1100	Economic of Development	Team-1
	1115-1330	Economic of Development	
	1330	Lunch	
	1730-2130	Economic of Development	Team 2
Friday	0800-1100	Tax systems and agreements	Team-1
	1115-1330	Tax systems and agreements	
	1330	Lunch	
	1730-200	Tax systems and agreements	Team-2

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Course 7 Environment and policies

Week 38

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Course 8 Petroleum Engineering and production

Week 44

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Course 9 OilSim competition

Week48

Monday	0800-1100	Intro to Oil Sim	
	1115-1330	Exercise	
	1330-1430	Lunch	
	1430-1700	Exercise	
	1730-2130	OilSim authority	
Tuesday	0800-1100	Lectures	
	1115-1330	OilSim exercise	
	1330-1430	Lunch	
	1430-1700	OilSim exercise	
	1730-2130	OilSim authority	
Wednesday	0800-1100	Lectures	
	1115-1330	OilSim training	
	1330-1430	Lunch	
	1430-1700	OilSim Training	
	1730-2130	OilSim authority	
Thursday	0800-1100	OilSim Training	
	1115-1330	Intro to competition	
	1330-1430	Lunch	
	1430-1700	OilSim competition	
	1730-2130	OilSim authority	
Friday	0800-1400	OilSim competition	
	1730-2130	OilSim authority	
	1400-1600	Lunch/diplomas, speeches, end of course	
	1730-2130	OilSim authority competition	

