4.5 PRODUCTION OPTIMIZATION (5 days)

Workshop / Course Title: PRODUCTION OPTIMIZATION
Company/Training Provider Name: IFP TRAINING
Proposed Dates of Course/Workshop: First semester 2015
Name of Instructor(s): Isabelle REY-FABRET
List of Software/Licenses (if applicable): Proll
No. of computers to be provided by Fored (if applicable): 1 computers for 2 attendees

Course description
This training will provide the participants with overall principles and analytical tools to maximize the productivity and value of Oil&Gas resources, from the reservoir to the end market. Main constraints (technical, economic, environmental, etc.) and optimization opportunities at either subsurface and surface systems are identified, so all disciplines related to Oil&Gas Production, from technical personnel to management, are integrated in order to get the most from the investment and available resources. This implies increasing the productivity, limiting costs and lowering the environmental impact of Oil& Gas Production.

No.	Learning objective
1	To learn about the different notions of well completion, lifting methods, gathering and separation systems, and production well tests, as well as Processing facilities
2	To acquire fundamental notions about nodal analysis, and how to include the different main components of pressure drops, such as static, friction, and acceleration.
3	To have an understanding of integrated operation procedures, best practices, identification of restrictions and corrective actions, and the production optimization using automation technology.
4	To learn about the applications in the oil industry of integrated production system concepts and to be aware of the available software tools to handle such information.
5	To discover the technological trends for integrated production optimization and production data management.

Learning Methodology and Tools:
Classroom topics are introduced by means of several applications and illustrations (videos, samples, equipment, etc.) Comprehensive and practical examples of actual applications implying the concepts of Oil & Gas Production Optimization Trainees go through most relevant applications related to Oil and Gas field Production Optimization following live-simulations carried-out with the instructor.

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Course Content & Delivery Plan		
Day	**Topics to be covered**	**Learning Objective**
D1	**Integrated Production Systems and Production Processes** Properties of Reservoir Fluids Production system loops Well completion and production methods Production well test Gathering and processing facilities Metering and Allocation Fundamentals	1
D2	**Nodal Analysis** Main elements of pressure drop Inflow Performance Relationship (IPR): reservoir & completion basics Downhole Production to surface system Flow rates in pipes and restrictions	2
D3	**Subsurface & Surface Production Operation** Optimization Objectives and Constraints Identifying bottlenecks in a gathering network Performance management Advanced optimization applications Artificial Lift Design and Troubleshooting Integrated subsurface/surface automation concepts	3
D4	**Integrated Application System and Production System Modeling** Integrated application systems Software used in Industry Production system modeling Illustration of Examples by using Proll Software	4
D5	**Technological Trends and Integrated Information Systems** Well instrumentation technology Oil and gas production applications Smart wells and fields	5

6.5 Isabelle REY-FABRET

Civil status

NAME:	REY - FABRET	Date of Birth:	August 03, 1969
First name:	Isabelle	Nationality:	French

Present position

Associate professor at IFP SCHOOL, Exploration-Production

Education

1993 : Mechanical engineer

1994 : Master - Signal processing

2005 : PhD. – Neural networks for multiphase flow simulations

Professional experience

2006 - présent **IFP School – Center for Exploration – Production : associate professor**

Management of the petroleum engineering master

Lectures in the domains of drilling, flow assurance, well performance (IFP School, Indonesia, Algeria, Angola, Gabon)

1995 - 2006 **IFPEn Researcher - Drilling and flow assurance**

- Generation of a system of alarms for the real time management of the drilling process
- Flow assurance modeling by using neural network methodology

Instructor teaching history

2014, 2013, 2012, 2011	**Addax Petroleum Gabon, Kuwait Oil Company, NNPC, ONHYM, PDVSA, Perenco, Qatar Petroleum, Sonangol, Technip, TOTAL, Yemen LNG**	Production Engineering

Languages

	Read	Spoken	Written
English	Fluent	Fluent	Fluent

Publications

I. REY-FABRET, C. MABILE, N. OUDIN 1997 *"Detecting Whirling Behaviour of the Drill String From Surface Measurements"* SPE paper 38587, 9p

P. PERREAU, I. REY-FABRET, M. GOMEL, C. MABILE 1998 "NEW RESULTS IN REAL TIME VIBRATIONS PREDICTION" SPE PAPER 49479, 10P

M. GOMEL, C. MABILE, P. PERREAU, I. REY-FABRET 1999 "EARLY DETECTION OF DRILL STRING VIBRATIONS BASED SOLELY ON SURFACE MEASUREMENTS" OMC99 RAVENNA, ITALY – MARCH1999

I. REY-FABRET ET AL. 2001 "NEURAL NETWORK TOOLS FOR IMPROVING TACITE HYDRODYNAMIC SIMULATION OF MULTIPHASE FLOW BEHAVIOUR IN PIPELINES" OIL&GAS SCIENCE AND TECHNOLOGY – REV IFP, VOL.56 (2001) NO 5, PP. 471-478

I. REY-FABRET, J P DENANDRE, V HENRIOT, F BADRAN, S THIRIA 2003 "NEURAL NETWORK APPROACH FOR MULTIPHASE HYDRODYNAMIC SIMULATION" MULTIPHASE 03, INTERNATIONAL CONFERENCE, 11TH, SAN REMO, 11-13 JUNE 2003, PROCEEDINGS, P. FAIRHURST ED., P. 103-116., BHR GROUP, 2003

I. REY-FABRET ET AL. "INTELLIGENT DRILLING SURVEILLANCE THROUGH REAL TIME DIAGNOSIS OIL&GAS SCIENCE AND TECHNOLOGY – REV IFP, VOL.59 (2004) NO 47, PP. 357-369

Filed patent

I. Rey-Fabret, C. Mabile et JP Deplans "Méthode et système d'estimation en temps réel d'au moins un paramètre lié au comportement d'un outil de fond de puits" brevet n° 96/07 913

I. Rey-Fabret, C. Mabile et N. Oudin "Méthode et système de détection de la precession d'un élément d'une garniture de forage" brevet n° 97/07 931

I. Rey-Fabret et JP Desplans "Méthode et système de détection du déplacement longitudinal d'un outil de forage" brevet 99/04 941

E. Duret, E. Heintze et **I. Rey-Fabret** " Méthode et système pour estimer en temps réel le mode d'écoulement d'une veine fluide polyphasique en tous points d'une conduite" Brevet n° 00/09 889

I. Rey-Fabret, E. Duret E. Heintze et V. Henriot "Méthode pour former un module à réseaux neuronaux optimisé, destiné à simuler le mode d'écoulement d'une veine de fluides polyphasiques" Brevet n° 00/16 878

I. Rey-Fabret, V. Henriot et Q.H. Tran "Méthode pour modéliser les caractéristiques hydrodynamiques d'écoulements polyphasiques par réseaux de neurones" Brevet n° 02/15 570