

Exploration & Production

Total is a global oil and gas producer and supplier operating in 130 countries with nearly 100,000 employees, who practise their skills in more than 500 industrial, commercial and support occupations covering all aspects of the petroleum industry: oil and natural gas exploration and production, renewable energy development, refining, distribution and trading. Total is also a major player in chemicals.

To further its development, the Group annually recruits worldwide nearly 10,000 new employees, both male and female, juniors and seniors, at all levels of training. All are different, but share the dynamism, receptiveness, adaptability and team spirit that are key to the Group's success.

Reservoir Engineer m/f

A Reservoir Engineer, whether in a subsidiary or at headquarters, helps to evaluate the deposits discovered and to optimise their development, then their production.

His function is to evaluate the production potential of deposits and the technical means used to optimise oil and gas recovery rates.

Therefore the Reservoir Engineer is at the crossroads between exploration methods and production methods.

Take for example the studies carried out in developing a field. In close collaboration with geologists and geophysicists, the Reservoir Engineer must describe the deposit on the basis of data on the geology, the reservoir rock and the fluids it contains, then predict the behaviour of the deposit.

The Reservoir Engineer then defines development scenarios with the exploitation engineers and economists. For each scenario, he assesses the production profiles of the different fluids and the number of wells required (producers and injectors). This then enables the optimum economic, production and recovery scenarios to be determined. Finally he has to present and "sell" his recommendations inside and outside the Group (partners and authorities in the country of operation).

> First steps

A Reservoir Engineer often starts off in an analytical role (simulations or specialities) where he or she is mentored in the speciality, and in adjacent disciplines such as geology, drilling and economics.

> Career options

After two or three years, the Reservoir Engineer moves on site to assist in developing and exploiting deposits. Numerous avenues then open up: leading to specialisation, projects, management and also other professions (exploitation engineering, economics or trading...).

> Profile required

- Degree from a Graduate Engineering College or foreign university (MSc or PhD), additional qualifications from ENSPM, Imperial College, Heriot Watt, Stanford, etc., is a plus.
- Interpersonal skills, good judgment, self-discipline, pragmatism, analytical mind, responsive to innovation, mobility.
- Fluent English, a second foreign language appreciated.



TOTAL

Experiences

Louise D.

Nationality: Dutch – Age: 29

Reservoir Engineer – Pau (France) - Master's degree in Petroleum Engineering from the University of Delft (NL)

I wanted to work in a large international oil company, preferably French because I was doing a training course in France: Total was the obvious choice!

I have been a Reservoir Engineer for two and a half years and my job is to model oil and gas flows within reservoirs in order to optimise future production.

To get a better picture of what my job involves, the name of the team I work with is rather significant: uncertainties and risk analysis.

One objective: to reduce risks and uncertainty

Our objective is to quantify uncertainties, which are numerous. To give you an idea of this complexity, imagine an oilfield one kilometre square on which the only data available has been obtained by drilling a well a few tens of centimetres in diameter: how do you use this data to get the maximum amount of information on the whole field? What numerical and statistical models will allow account to be taken of these uncertainties for the subsequent development of the field? These are questions which the mathematical models and measurements on the ground will try to answer as accurately as possible or at least with the minimum of risk and uncertainty.

I am, you will have gathered, in a job where mathematics and calculations are extremely important. To this must be added experience and collaboration with the local teams here at headquarters in France or in the subsidiaries closest to the site.

From mathematical models to realities on the ground

Naturally I have a strong desire to do field work and in a few weeks I am going to get the opportunity to go to Nigeria. I will still be a Reservoir Engineer, but the content of my job will be very different because I will be responsible for monitoring day-to-day production, specifically on the Amenam-Kpono platform.

The objective is to monitor day-to-day trends in production in order to increase it if possible. This includes constant analysis of temperatures, pressures, variations in production... a complete set of data that allows us to carry out a production monitoring programme.

I will be based ashore, at the subsidiary, but will make frequent trips offshore to carry out measurements.

There are not many women doing this kind of work in Africa, so I am delighted to increase their number. I have been especially well trained both initially and for this overseas posting because all of the training and courses that I have done this year have been designed to prepare me for these new duties.

Nicolas M.

Nationality: French – Age: 24

Reservoir Engineer – Paris (France) - Graduate Engineer from the Mining School of Nancy, then 2 years apprenticeship at the ENSPM (École Nationale Supérieure du Pétrole et des Moteurs)

As a Reservoir Engineer, my job consists of evaluating the reserves and potential of a deposit.

Everything begins with the seismic studies in the geosciences, which allow us to visualise the different subsurface layers. A numerical model is then created to reproduce the deposit in a simplified form, but one which is as realistic as possible.

Contrary to the generally accepted idea, an oil deposit appears as a porous rock impregnated with hydrocarbons with complex behaviour, rather than a layer occupying an underground cavity.

Modelling what is there and its evolution

From this numerical geological model, the Reservoir Engineer will produce estimates of the production potential of the deposit and its behaviour or possible change. Of course this involves team work and we try to be as realistic as possible in our estimates because the company's reserves depend on them.

Moreover, these estimates have an impact on all decisions in the production chain: where to locate the well? What are the production estimates for the deposit? If production is overestimated, the surface installations will be overdimensioned and vice versa!

When the field enters production, the Reservoir Engineers on the ground (in the subsidiaries) take over well monitoring. Their objective will be to optimise production and, if it slows, to find out why and try to apply the necessary corrective measures.

Accuracy, team work and... mobility

The main qualities required for this job are firstly accuracy and the capacity to analyse a large volume of data. One important point also concerns the capacity to work in a team because a decision is never taken alone but always in a committee, given the risks involved and possible financial consequences. Finally, for my career development, I need to be mobile both for short assignments of 2 to 3 weeks and for an overseas posting to one of our subsidiaries lasting several years.

One of the greatest rewards of this job is of course to find that the models and forecasts we make actually come closest to the real situation. And the satisfaction is even greater if the forecasts are exceeded!



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