Batata 2 Remote Well Pad: Executing Sustainable Development at a Sensitive Amazon Basin Area—Decommission and Abandonment

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Summary

In Ecuador (circa 2006–07), PetroOriental (operator of Blocks 14 and 17) concluded a large exploration project with the construction of the Batata 2 well pad and the drilling of two exploratory wells, pursuing the confirmation and development of oil reserves identified during the seismic work started in 2003 by EnCanEcuador (subsidiary of EnCana Corporation) in the northern region of Block 14. All this development occurred within the Yasuní National Park, one of the natural areas in South America with the highest biodiversity, and also a traditional land of peoples living in voluntary isolation (the Tagaeri and the Taromenani).

The early planning and execution of this project included the development of a long-term strategy and a set of high-standard social and environmental practices to minimize the company's exposure to social and environmental liabilities and to guarantee the success of this challenging project. Unfortunately, by the first half of 2007, after drilling the previously mentioned exploratory wells, the prospects were declared noncommercial, triggering the process for decommissioning and restoration of the Batata 2 well pad. The loop was closed, and the success of the project was dimmed by the lack of results.

This paper summarizes some of the most important elements of the project planning and execution of the Batata 2 well pad by means of a retrospective analysis with the intent to identify some of those practices, highlight them, and present them to our colleagues in the industry. We now have many examples of life-cycle applications, which is our contribution to the discussion, because we believe that life-cycle assessment and life-cycle management are closely linked to sustainable development, a journey that the oil and gas industry is just starting to make.

Introduction

When EnCanEcuador took over the operations of Block 14 in 2003, all teams involved were called to plan and execute one of the most ambitious oil projects within the Yasuní National Park. Corporate staff, business-unit managers, and technical teams joined a special task force to define, design, and implement all critical aspects of the project. Aspects that included selection of contractors, environmental- and social-impact assessment, engagement of stakeholders, environmental and social monitoring, and, finally, a carefully executed pad construction and drilling campaign under the most stringent controls.

The project was executed in two phases. The first phase encompassed a seismic campaign carried out during 2005 and 2006. This phase was also executed with the highest environmental and social standards (Thurber et al. 2005). The second phase was the drilling of two exploratory wells executed during the second half of 2006 and the first quarter of 2007. Many of the activities related to the life-cycle management of this project started during the planning of the first phase and were maintained during the execution of the second phase.

Project Location

The Batata 2 well-pad project is located in Ecuador's most important inland protected area, the Yasuní National Park (YNP), considered one of the most biodiverse areas in the world by scientists and environmental-research institutions. With 2,270 species of trees, 204 species of mammals, 610 species of birds, 121 species of reptiles, 139 species of amphibians, more than 268 species of fish, and hundreds of thousands of species of insects (Bass et al. 2010), scientists and environmental activists were looking closely into any activity developed within YNP boundaries.

The specific area of the project was located in the Province of Orellana in the northeastern part of Ecuador's Amazon region, between the Napo and Tiputini Rivers **(Figs. 1 and 2).**

From the social perspective, the YNP is the traditional land of several indigenous peoples, including two ethnic groups (Tagaeri and Taromenani) living in voluntary isolation (Benalcazar et al. 2010) and under the protection of the Inter-American Commission on Human Rights since 2006. The involvement of indigenous people as part of the labor force, the identification of sensitive areas, or the identification and care of trails used by allegedly noncontacted people were some of our main concerns.

Early Planning

As mentioned previously, all teams involved in the execution of the Batata 2 well-pad project, at corporate and business-unit levels, put forth their knowledge and experience to develop a state-of-the-art project. From our side, the health, safety, and environment (HSE) and social teams were responsible for developing, adapting, and implementing the best health, safety, social, and environmental practices.

Some of the characteristics of the project were defined during the early steps after a rigorous analysis of alternatives that served to keep our project above legal compliance. This was our commitment, and was part of every planning decision. The following are some of the most important features of the project.

- **Site selection.** Civil engineers, the HSE team, and our environmental consultant were required to define the best location possible by use of the most advanced tools. A field team started to survey the area, providing information to our geographic-information-system team to create models in real time

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Fig. 1—General location of the Batata 2 well pad.

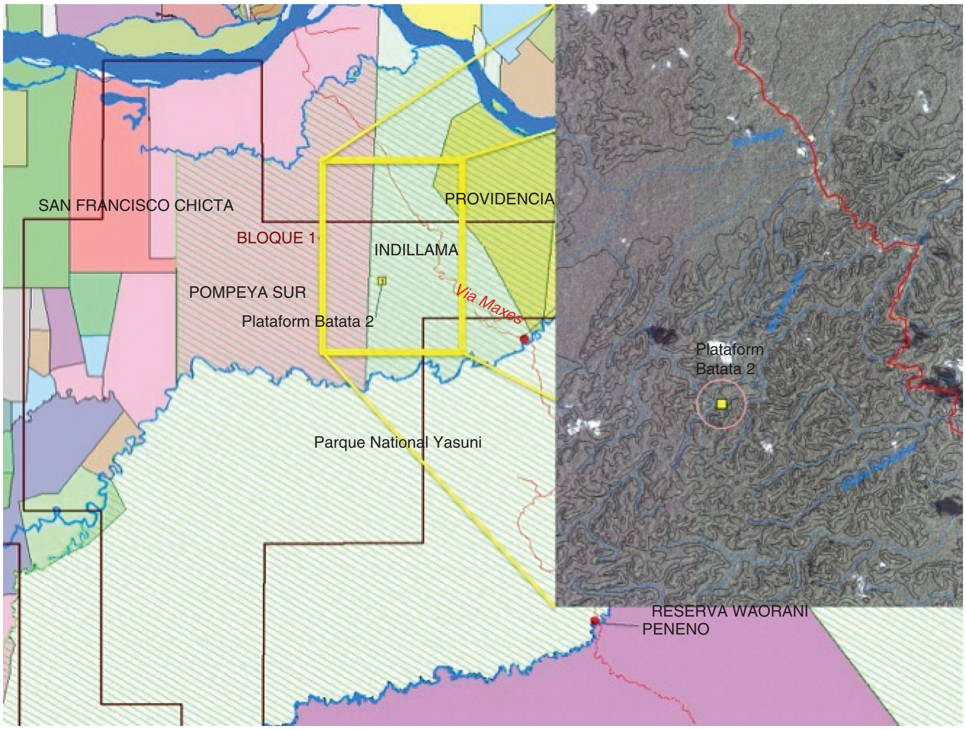

Fig. 2—Exact location of the Batata 2 well pad.

Fig. 3—Site selection, with minimum impact on the watershed.

of any construction scenario to identify, without damaging the area, any potential problem with the watersheds or any other important environmental component. The final site location considered the best environmental conditions **(Fig. 3).**

- **Minimum area of intervention.** Ecuadorean regulations allowed intervening an effective area of up to 1.5 hectares (3.7 acres) for the well pad, including rig area, accommodations, and drilling-cuttings disposal. This area did not include additional affected zones, such as soil movement or soil stockpiles. Nevertheless, considering the sensitivity of the surrounding environment, it was decided to restrain the effective area to a total of 1.5 hectares. We set up a physical boundary and established strong disciplinary actions for damages beyond the authorized area **(Fig. 4).**
- **Construction standards.** During the preparation of terms of reference for the construction-services tender, our teams worked together to establish clear instructions and expectations for the contractors. Everything was aligned with the project objectives, and the lowest footprint required extensive training for the contractors' employees before starting activities on-site and during execution to highlight and refresh the demanding HSE and social requirements set for the project **(Fig. 5).**

Fig. 4—Clear boundaries.

Fig. 5—Training the contractors and construction practices.

Execution

The execution included three main elements: engagement and participation of sensitive stakeholders, selection of reliable contractors, and field controls.

1. Engagement and participation: This type of project could not be executed without the wide participation of diverse stakeholders. Stakeholder participation started during the consultation process of the seismic campaign and was consistently maintained for the subsequent exploratory-drilling phase. One of the most important initiatives was setting up a scientific advisory committee of highly respected and knowledgeable professionals from leading local universities (Universidad San Francisco de Quito and Pontificia Universidad Católica del Ecuador). Both institutions operate research and conservation stations close to the project area. The scientific advisory committee assigned their own environmental and social monitors as part of the project's environmental- and social-monitoring teams. The committee also kept in direct communication with the health, safety, and environment (HSE)/community-affairs manager and HSE superintendents to address any nonconformances in a timely manner and to act upon them effectively.
2. Selection of reliable contractors: Contractors perform most of the field work in the oil and gas industry. For the project team, the only way to execute this project successfully was through the selection of the best service providers. The selection process weighted the highest value to the HSE and social component, including, but not limited to, the contractor's past performance, audit reports, HSE proactivity, existing HSE policies and management system, and proof of HSE commitment. This criterion was applied for any involved contractor, no matter its size, from catering services to air transportation and drilling, especially considering previous experience related to final disposal of drilling mud and cuttings and any other testing materials by reinjecting them into disposal wells.
3. Field controls: The most important feature adopted for the ongoing control of HSE and social performance was the on-site permanent audit. This tool (implemented at the time of the seismic campaign) allowed those in the field and central offices to identify any noncompliance quickly and directly and to establish corrective measures according to its sensitiveness and nature. It also empowered field personnel (both operations and HSE) to adopt sound corrective measures accordingly, with a clearly defined authority matrix. No noncompliance items were allowed to remain open for more than 1 week in the worst-case scenario. The application of this tool resulted in the reduction of open noncompliances to zero at the end of the project. From the administrative perspective, it also helped us to prepare in advance all the required paperwork for the final audit. By the end of the project execution, when the closure audit was performed, most of the noncompliances (99%) had been addressed properly and documented, reducing the audit time and presenting to the authorities a positive signal of our commitment and diligence on this type of project. For the stakeholders, this was important to the process of building up a strong relationship founded on transparency and mutual trust.

Monitoring and Community Involvement

1. Ecuador's environmental regulation requires the execution of a close monitoring to three main aspects. The first is related to environmental quality of the projects. Water, air, noise, and soil shall be monitored to identify potential issues promptly.
2. A second element is to monitor compliance with the environmental-management plan on a permanent basis. As mentioned previously, a strong ongoing audit was established during the construction of the well pad and later during the exploratory drilling. At the end of the project, all the documents worked well as hard evidence of full compliance.
3. The third element to be monitored is related to compliance with all social commitments, including the compliance of

Fig. 6—Well pad construction.

community agreements, the attendance to grievances and complaints, and any other social issue that arises during the project. This was not something new for us. All regular operations are obliged by law to complete this specific social-monitoring program, but the innovation from our side was the manner in which we performed it at that time. We decided to incorporate an important team of local-indigenous-community representatives to be part of this process as community monitors.

For the project team and for the company, the inclusion of local-indigenous-community members as a key component of the monitoring plan was critical to diffuse any accusation or unsubstantiated complaint against the project's real performance. In each roster, we included two local indigenous community members. Our company representatives in the field were always working with a community monitor. Community monitors were encouraged to maintain direct communication with the scientific advisory committee in case the committee required field information or confirmation about any reported issue. Local authorities also contacted the monitors to obtain first-hand information. At the end of the project, as part of the audited documentation, we included a set of minutes and records in which community monitors signed as eyewitnesses or to declare conformance with any process or any other environmental and social issue.

Life-Cycle Management

Life-cycle assessment and life-cycle management are environmental-management tools that are being used increasingly by oil operators, especially when talking about green projects that should keep the lowest possible environmental footprint from their beginning.

Eight years ago, at the time the project was executed, the concept of life-cycle assessment/life-cycle management was new for oil operations in South America. Only a few organizations mentioned it as an upcoming best practice, but almost none had implemented it as a strategy for their projects. Additionally, only a few environmental consultants knew about these management tools and only referred to products totally unrelated to the oil and gas industry. For the company, it was a challenge to include this new concept within such an important project.

Abandonment

In accordance with the environmental-management plan, a provision was clearly defined for the extreme case of abandonment of this pad. This possibility was considered exclusively in case the exploratory-drilling results showed that the pad was not commercially viable for development.

The Batata 2 project fell into this category. Once the decision to abandon the location was made, all the monitoring initiatives and excellent construction practices were maintained to the end of the project execution, which required the total removal of equipment, buildings, accessories, and anything else introduced into the area, including reshaping of the landscape to the original geometry of the site, laying back the topsoil stockpiled since the beginning of the construction phase, controlling the potential erosion of slopes and sensitive zones, and reclaiming to the natural conditions to promote regrowth of endemic vegetation and the jungle's local dominant species.

All these activities were executed successfully, and the overall conditions were re-established up to the point that the scientific advisory committe agreed with and approved the actions implemented.

Conclusions

As of 2014, life-cycle assessment and life-cycle management have become well-known tools and are being implemented in many projects. Nevertheless, oil operators continue looking for effective field measures that could contribute to a successful execution of the project, and to an effective implementation of best health, safety, environmental, and social practices. The concept of life cycle allowed us to see a bigger picture of the project and to link different phases (exploration/production/development) to identify potential issues proactively and make timely decisions and correctives.

Fig. 7—Almost ready for the drilling rig.

First, we have to observe the big picture from the beginning of the project. We cannot say *if we find oil, we will do this or that, or improve this or that*. Our commitments have to be demonstrated consistently along the project life cycle. Social impacts could damage company reputations, affecting the value of assets and shares, and could be identified early and properly managed, reducing any negative effects.

The second lesson learned is involvement, or being open to stakeholder active participation. The inclusion of internal and external stakeholders will only enrich the project and, therefore, pave the road for success. Working in silos, without transparency and close collaboration, will lead to failure. This applies for employees, managers, engineers, contractors, communities, and nongovernmental organizations. It is our responsibility, as companies and industry, to create a critical mass of good professionals, capable workers, and reliable contractors to demonstrate to external stakeholders that the oil industry is not committed to the social or environmental components only, but also to the sustainability of our industry and our planet.

Fig. 8—Drilling at full speed.

Fig. 9—During the first reclamation steps.

The following figures show some of the stages of this successful project: pad construction **(Fig. 6),** just before the rig arrival **(Fig. 7),** during drilling activities **(Fig. 8),** and finally, during the initial phases of reclamation **(Fig. 9).**

Logistic limitations connected to the remoteness of this project have restrained us from obtaining recent pictures, but we have had access to some controlled satellite images of the site, and the Batata 2 well pad is not easy identifiable; therefore, the natural reclamation process has been successful. This is the first project executed in the Yasuní National Park that has completed the life cycle in this manner, adding full credibility to the ability and capability of the oil and gas industry to be innovative and to support its sustainability.

We could define two major lessons learned. The continuity provided by PetroOriental to the project in terms of environmental and social management was essential to its success. All stakeholders were skeptical regarding maintaining previous commitments from the newly arrived Chinese companies. Fortunately, the commitments were respected and the projects were executed following the designed strategies. Support from sensitive stakeholders continued, as well as the commitments from the scientific advisory committee.

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