Operations Readiness and Assurance

Lessons learnt on process application

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The present work aims at providing an overlook of the OR&A programme, identifying criticalities and strengths. The analysis will be especially focused on the main problems affecting this process: the lack of feedback on the process.
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Definition and objectives (2)
- Management Systems
- Benchmarking
- Implementation
- Lessons learnt
- Conclusions
Definition and Objectives (1/2)

**Definition**

OR&A is a process used by eni to define, plan, execute and control tasks required for the safe, sustainable and efficient production operations.

**Objectives**

1. Operational input to the project
2. Operations and Maintenance organization after the handover
3. Smooth handover process for a
OR&A: a project within the project

OR&A should match different phases of the projects. It starts at the Development, covers the Handover to Operations and it ends in the Operations, at the completion of start-up.
Progress (2/6)

- Definition and scopes
- Management Systems (5)
  - DMS - Development
  - Handover to Operations
  - OMS - Operations
- Benchmarking
- Implementation
- Lessons learnt
- Conclusions
Eni has different management systems for both Development and Operations. The transition between them is the Handover.

**DMS - Development Management System.**
Set of activities aiming at finding the most suitable solution to the project.

**Handover to Operations.**
Delicate phase to move responsibilities from the Development to Operations.

**OMS - Operations Management System.**
All the activities to manage the asset once the execution phase and the handover have been completed.
Development Management System

- In Eni, DMS is managed through a structured frame: the **OPD** (Opportunity Project Development)

![Diagram showing the stages of the Development Management System]

- **Does the opportunity support an economic development?**
- **Can the project be successfully executed and create value?**
- **Is the selected concept the optimal development alternative?**
- **Is the asset ready for the start-up?**

**In each phase O&RA has several objectives to pursue and specific activities to accomplish.**
Handover to operations is the most delicate part of the entire project.

OR&A is in charge for guaranteeing a smooth process to ensure no value leakage occurrence.
Handover to operations (2/2)

Commissioning and Start-up (CSU)

**Objectives:** facilities **start-up** and seamless production **ramp-up**;

**OR activities:**
- Activate CSU and operations organizations;
- Collect, fill and organize asset documentation;
- Participate in integrated commissioning and acceptance activities;
- Plan and execute pre start-up reviews and audits;
- Issue acceptance certificate.
OMS – Operations Mng System

- OMS, exerted through a standard framework called **OPOS** (Opportunity and Production Operations System), is the last phase of the project where OR&A partially intervenes. After acceptance of the asset, project is concluded and the close-out report is issued;

- The most important task of the OR&A, here, is the organization of O&M plan, generally prepared during the early stage of production.

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**Diagram:**

- Production operations and optimization
- Operation Readiness & Assurance
- Handover
- Acceptance
- Decommissioning

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*eni s.p.a. upstream & technical services*
Progress (3/6)

- Definition and scopes
- Management Systems
- Benchmarking (2)
- Implementation
- Lessons learnt
- Conclusions
Benchmarking (1/2)

- Common industry approach to OR&A
  - Value leakage reducible with an efficient planning and execution of the OR&A
  - Need for considering OR&A as a significant and mandatory component of a project

- Oil&Gas World approach to OR&A
  - Speed up and trigger an efficient ramp-up
  - Creation of value added for the project
  - Integration with the development project
OR&A key factors

- Start early
- Define what readiness means
- Develop an overarching readiness strategy
- Integrate with the project plan
- Establish clear roles, responsibilities and governance
- Focus on what could go wrong must not divert attention from what needs to go right

Operational Readiness cannot give new life to a “sick” project, but can prevent a good project from becoming “sick”
Progress (4/6)

- Definition and scopes
- Management Systems
- Benchmarking
- Implementation (11)
  - Focus area
  - Governance
  - Status of application
  - Case studies
- Lessons learnt
- Conclusions
Focus Area

- OR&A focus area cover all the disciplines involved in the Operations.

Governance

Operations & Maintenance

HSE

Organisation & Training

OPEX

Commissioning & Start-up

Governance is required to design a well structured set of documents to plan, execute and monitor any specific activity.
Governance sets the frame used to define and execute OR&A activities.
Governance (2/2)

- **Execution plan**
  - Explains how the OR programme will be carried out in the specific project and adapts the requirements to the actual situation of each BU. It is a key responsibility of the POM.

- **Management Plan**
  - Detailed activities to be carried out to deliver the overall OR&A objectives
    - **OR Plan** defines OR activities
    - **OR Schedule** puts the OR activities in a time frame aligned with project key milestones (mechanical completion, first oil, etc.)
Nowadays, OR&A is widely used in all development projects.

- Most common OR&A features currently present:
  - OR manager entitled to follow the entire OR&A process;
  - OR manager should liaise with eni and local entities involved (BUs, authorities, etc.);
  - Figuring out all possible needs and problems of the development project;
  - Flexibility to suit specific projects (type of field, Country, technology used, etc.).
Value leakages can occur as a consequence of a non-effective ramp-up. An accurate OR&A allows to investigate in depth the Development and Operations causes of such occurrence.

**Planned vs Actual Production**

- **Best Steady State production**
- **Planned SS production**
- **Actual production**
- **Value leakage from the production loss**

**Indicative daily production [kBoe]**

- **Time elapsed**
Operational failures to be investigated as a solution to the lack of feedback on OR&A process application

- Production losses
- Slow ramp-up
- Failure/delay in the start-up
- Extra costs
Case studies (2/6)

- Production loss
- Slow ramp-up
- Failure in the start-up
- Extra costs

Contribution of SUs in the production (2013)

Expected production: 113 kboed
Actual production: 41.2 kboed

Failure in the start-up
Slow ramp-up
Production loss
Extra costs
2013 start-up projects contribution to $\Delta$

- Slow producing start-ups have a big impact on the total $\Delta$

**Production Losses**

- Loss for not started projects
- Loss for slow producing SUs

![Diagram showing production losses with a total of 71.8%]
Case studies (4/6)

- Production loss
- Slow ramp-up
- Failure in the start-up
- Extra costs

VENEZUELA - 2013 project SU production data

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Budget

Cons.

Delta vs BDG

Boe

Boe

-2000 0 2000 4000 6000 8000 10000

-100% -100% -100% -100% -99% -96% -87% -77% -74% -91% -94% -93%

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Case studies (5/6)

- Operations-related delay causes on CROMLECH* project
  - Modification of blow-down philosophy and liquid storage
  - Issues on the flares

Planned First Gas at FID

Nov 2011

Actual First Gas at Close-out

Jan 2013

* Fictitious name
**Case studies (6/6)**

- **CAPEX increase**
  - Big increase in CAPEX can be due to deviations from the project.

<table>
<thead>
<tr>
<th>CAPEX DISTRIBUTION eni share</th>
<th>AUTHORIZATION DEC 2008 [M$]</th>
<th>CLOSE-OUT NOV 2013 [M$]</th>
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</thead>
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<tr>
<td>Total CAPEX</td>
<td>1150.4</td>
<td>1624.3</td>
</tr>
<tr>
<td>Δ CAPEX</td>
<td>+ 41%</td>
<td></td>
</tr>
</tbody>
</table>
Progress (5/6)

- Definition and scopes
- Management Systems
- Benchmarking
- Implementation
- Lessons learnt (3)
- Conclusions
Lack of feedback on the OR&A

Structured OR&A Lessons Learnt Programme has been so far difficult to be put in place

Need for a continuous and scheduled follow-up
Lessons Learnt – LL (2/3)

LL: improving performances of future projects

Definition: LLs refer to any kind of learning that, once acquired, could improve the performance of the project itself, the performance of other projects or the technical documents/standards.

Lessons Learnt main characteristics

- Usability and relevance
- Impact on processes
- Re-occurrence of the LL in different situations
- Continuous improvement
Lessons Learnt – LL (3/3)

- All project stakeholders contribute to the LL process, not only the Project Team

Set up → LL Gathering → Analyse → Validate

Avoid Tim’s

LL process should proceed along the whole OPD. It means that at the end of each phase, LL should be gathered.

TIM, same error on this project? Don’t you guys do lessons learned?

Sure we do, PIM! They are somewhere on our server.

Well, that explains!

Source: http://www.business2community.com/product-management
Progress (6/6)

- Definition and scopes
- Management Systems
- Benchmarking
- Implementation
- Lessons learnt
- Conclusions (3)
Conclusions (1/3)

- Oil and Gas projects becoming increasingly more challenging. OR&A should therefore keep the pace
- OR&A is the best aid to reduce value leakage occurring in the project
- Very positive impact especially on project characterised by:
  - High degree of complexity
  - Green fields
  - Many resources involved
  - New technologies to be put in place
Conclusions (2/3)

- Currently, a lack of feedback on OR&A is evident

- Some features can be critical in gathering a feedback on process
  - Difficult geopolitical situation that does not allow a proper organization of all the required activities
  - Resistance of the operator company to allow eni to control operations and be consulted for solving problems

- A feedback gathering process has been initiated, based on the LL structure and analysing operational causes of delay on case studies

- Such process should be promoted and developed
A key issue is the attitude towards OR&A of the figures involved in Project management.

An opportunity

A standalone project

Clear identification of responsibilities and related tasks
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