ANALYSING PERFORMANCE DATA

Identifying Trends and Long-Term Improvements

Abstract

This project investigated operational performance data from a 13-well offshore decommissioning campaign in the Mediterranean Sea. The aim was to determine whether operational efficiency improved over time and to identify the main contributors to non-productive time (NPT). Operational datasets were cleaned, validated and analysed using Microsoft Excel. Performance metrics including planned versus actual well duration, productive time, NPT, section milling performance and campaign-wide trends were evaluated. More than 500 rows of operational data were analysed using rolling averages, cumulative averages and comparative performance charts. The results showed that productive activity accounted for approximately 71% of total campaign time, while Error Avoidable (EA) NPT represented the largest source of operational delays. Trend analysis demonstrated a reduction in EA NPT over the course of the campaign, suggesting that lessons learned from earlier wells contributed to improved performance in later operations. The findings provide evidence of continuous improvement throughout the campaign and highlight opportunities to further reduce avoidable delays in future offshore decommissioning projects.

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Abbreviations

NPT	Non-Productive Time
EA	Error Avoidable
RA	Risk Acceptable
CT	Coiled Tubing
IWCF	International Well Control Forum

Project Brief

Research Question

To what extent did operational efficiency improve throughout a 13-well offshore decommissioning campaign in the Mediterranean Sea, and what factors had the greatest impact on non-productive time (NPT)?

Aims and Objectives

Main Aim: To analyse operational performance data from a 13-well offshore decommissioning campaign in the Mediterranean Sea to identify performance trends, evaluate the impact of non-productive time, and determine whether operational efficiency improved over the course of the campaign.

Objective	**Purpose**
Clean operational datasets in Excel	Ensure analysis is accurate and consistent
Analyse key performance metrics	Understand operational performance
Identify learning curves and trends	Assess whether efficiency improved over time
Investigate causes of NPT	Identify opportunities for improvement
Provide recommendations	Support future projects and decision making

Hypothesis

If lessons learned from earlier wells were successfully applied throughout the campaign, then operational efficiency should improve over time, resulting in reduced well durations and lower levels of Error Avoidable Non-Productive Time.

Success Criteria

- Produce a validated dataset for all thirteen wells.
- Quantify productive time and NPT.
- Analyse performance trends
- Investigate the causes of EA NPT
- Develop evidence-based recommendations for the company.

Figure 1=Noble Resolve Rig operating in the Mediterranean Sea

Introduction

I am currently working as a Well Engineering Intern at a well management company involved in the decommissioning of thirteen offshore wells. Well decommissioning is a critical stage in the asset lifecycle, requiring the safe and permanent abandonment of wells while ensuring compliance with regulatory requirements and environmental standards.

Background Research and Context

To ensure the analysis was based on an understanding of offshore decommissioning operations, background research was conducted into well abandonment processes, operational performance measurement, non-productive time (NPT), and continuous improvement theory. This research helped determine which performance indicators should be analysed and provided context for interpreting the operational data.

Prior to commencing the data analysis, I completed the International Well Control Forum (IWCF) Level 1 course to develop my understanding of well intervention operations and offshore safety. This provided useful context when interpreting the operational data used throughout the project.

The Offshore Plug and Abandonment Process:

Plug and Abandonment (P&A) is the process of permanently closing an offshore oil and gas well at the end of its productive lifecycle. The primary goal is to restore the natural barriers of the subsea formation to prevent any hydrocarbons or gas from leaking into the marine environment or atmosphere.

The process typically consists of three main operational phases:

1- Reservoir isolation: Placing permanent barriers deep within the wellbore across hydrocarbon -bearing zones to isolate high pressure reservoirs.

2- Intermediate Sealing and Tubing Removal: Removing internal well tubing and setting secondary barriers higher up in the well to prevent fluid movement between intermediate rock layers.
3- Wellhead cutting and Seabed clearance: Cutting the steel casing below the seabed, pulling wellhead structure back up to the surface vessel, and ensuring the seabed is left entirely clear of obstructions.

Performance Measurement in Offshore Operations

A key part of my project was understanding how operational performance can be measured and evaluated using offshore well data.

In the offshore industry, performance metrics are widely used to monitor efficiency, identify delays, and support decision-making during complex operations such as plug and abandonment.

For this project, the primary performance metric analysed was operational duration. The dataset contained information relating to the time taken to complete various stages of well decommissioning activities in the Mediterranean Sea.

By comparing these durations across multiple wells, I aimed to identify trends and determine whether operational efficiency had improved over time.

Understanding Non-Productive Time (NPT)

Another important concept considered during the analysis was non-productive time (NPT). NPT refers to periods during which planned operations cannot proceed as intended, resulting in delays and reduced operational efficiency. In offshore plug and abandonment projects, NPT can have a significant impact on both campaign duration and cost.

NPT events are often classified into various categories:

- Error Avoidable (EA): Delays that could potentially have been prevented through improved planning, communication, procedures, or operational execution.
- Risk Acceptable (RA): Delays resulting from factors that are considered acceptable or unavoidable within the operational environment, such as adverse weather conditions, safety requirements, or regulatory constraints.

Understanding the difference between EA and RA events is important when evaluating operational performance. While EA events can highlight opportunities for improvement, RA events are often a consequence of operating safely and responsibly within a complex offshore environment.

Although detailed NPT classifications were not available for every well included in this study, understanding these concepts provided valuable context when interpreting variations in operational duration across the dataset.

Why is Data Analysis Important?

In offshore decommissioning projects, even small efficiency improvements can result in significant reductions in project duration. Therefore, identifying recurring delays and understanding long-term performance trends is important for both operational planning and continuous improvement. This made performance data analysis particularly relevant to the objectives of this project.

Grouping Data into Phases

Operational Phase Definitions

The Coiled Tubing (CT) Phase consists of pre-rig intervention activities, including well clean-out, barrier verification, diagnostics, and plug-setting operations. The Rig Phase involves more complex abandonment activities requiring a drilling rig, such as tubing retrieval, section milling, cement barrier installation, and wellhead removal.

Importance of Grouping Data by Phase

- Improves data organisation.
- Supports cost and time tracking.
- Simplifies risk management.
- Enhances performance analysis.
- Streamlines reporting.
- Identifies improvement opportunities.
- Supports lessons learned.
- Aids project planning.

Continuous Improvement and Learning Curves

In engineering projects, repeated operations often become more efficient over time as experience is gained and processes are refined. By analysing real operational data using Microsoft Excel, I was able to apply engineering and analytical skills to assess performance trends and develop recommendations for future well decommissioning projects.

Learning curve theory suggests that when similar tasks are repeated, procedures should become more refined and operational efficiency improves. Therefore, later wells would be expected to show reduced operational duration compared with earlier wells.

Trend analysis was consequently used to determine whether a reduction in well duration and inefficiencies could be observed over time and whether lessons learned from previous wells improved overall performance.

Planning My Project

Main Purpose of my project

The main purpose of my project is to provide the company with valuable, charted data that can be used in their report to the client. I plan to produce data that represents the overall duration of each well-being decommissioned and then analyse how much of this time was productive time compared to NPT.

From this analysis, I want to investigate the causes of NPT in more detail and examine the different operations being conducted throughout the decommissioning process. By comparing these activities across multiple wells, I aim to identify trends and assess whether productivity and operational efficiency improved over the course of the campaign.

The project will provide data-driven insights that may help support future planning and improve the efficiency of well decommissioning operations.

Wider Purpose and Significance

The global offshore industry is entering a period where increasing numbers of mature wells require permanent abandonment. As operators seek to reduce costs while maintaining safety and environmental compliance, the ability to identify efficiency improvements through performance data analysis becomes increasingly valuable.

Considerations

Safety

I had to consider data confidentiality within this project, as some information is sensitive to both the customer and the company. To address this, all data was handled responsibly, and any sensitive details were excluded from the report. This ensured that the analysis could be shared and discussed without compromising confidentiality, while still allowing meaningful conclusions to be drawn from the data.

Methodology and Decision Making

- **Tool choice:** Microsoft Excel was selected as the primary analysis tool because it provided sufficient functionality for data cleaning, statistical calculations, trend analysis and visualisation within the project timescale.
- **Data Segmentation Strategy:** I considered analysing each well as a single dataset. However, I recognised that the Coiled Tubing (CT) and Rig phases involved different activities. Separating the data into these phases allowed performance differences to be identified more clearly and made it easier to determine which part of the operation contributed most significantly to delays and NPT.
- **Alternative Approaches Considered:** Before beginning the analysis, I considered several approaches:
    1. Manual calculations were rejected because the dataset contained hundreds of entries and would have been difficult to manage accurately.
    2. I also considered using Python for automated analysis; however, I decided Excel would provide sufficient analytical capability.

Project Schedule

To manage the 70 hours required for this project, work was broken down into key phases over a multi-week schedule:

- Phase 1: Problem definition and background literature research.

- Phase 2: Data cleaning and filtering in Excel.
- Phase 3: Data analysis using tables, statistical trend lines, and dynamic charts.
- Phase 4: Evaluation of findings, drafting recommendations and final report compilation.

Data Analysis and Findings

Data Collection and Preparation

Data Source

- Operational data was provided by the company from a 13-well decommissioning campaign in the Mediterranean Sea.
- The dataset included information on well durations, operational phases, and NPT.

Data Preparation

- Reviewed the data to understand the information available for each well.
- Organised the data in Microsoft Excel.
- Grouped similar activities into common operational phases to allow comparison between wells.

Data Validation

- Checked calculations against original reports and other spreadsheets to ensure consistency.
- Reviewed data entries for any errors.
- Confirmed that calculated values matched the source information before proceeding with analysis.

Tools Used

- Microsoft Excel was used for data organisation, filtering, and analysis.
- Excel was also used to create charts and visualisations to present findings clearly.

Confidentiality Considerations

- Some operational information was sensitive to both the company and the customer.
- Only relevant performance data was included in the analysis.

- Any sensitive or identifying information was excluded from the report.

Skills and Learning

- Developed experience in handling large operational datasets.
- Improved my understanding of data validation and quality assurance.
- Learned the importance of checking data accuracy before drawing conclusions from the analysis.

My Overall Well Duration Analysis

Objective

- Calculate the Rig phase and CT phase timings for each well.
- Compare the overall planned and actual durations of each well.
- Identify wells that significantly exceeded the planned schedule.
- Investigate whether NPT contributed to these differences.

Coiled Tubing (CT) Phase Analysis

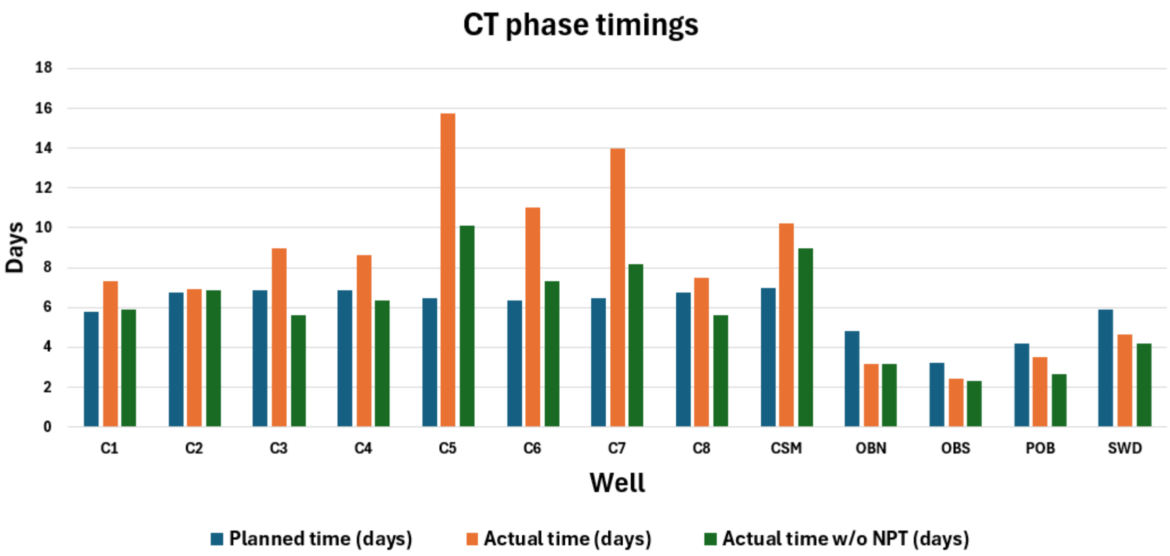

Figure 2- CT phase well duration analysis.

Purpose

The purpose of this analysis was to compare planned and actual durations for the Coiled Tubing (CT) phase across all wells and determine the impact of NPT on performance.

Method

- Compared planned CT duration against actual CT duration.
- Calculated actual duration excluding NPT.
- Created a chart to visualise differences between wells.

Key Findings

- Most wells exceeded their planned CT duration.
- C5 and C7 experienced the largest CT durations.
- C2 was completed remarkably close to the planned schedule.
- Removing NPT reduces CT duration significantly for several wells.

Figure 2 shows the planned, actual, and actual without NPT durations for the CT phase. In most cases, the actual duration exceeded the planned duration, indicating that additional delays or operational challenges were encountered during execution. The largest differences were observed in wells C5 and C7, where actual durations were more than double the planned durations.

Comparing actual duration with the duration excluding NPT demonstrates the impact that non-productive time had on the campaign. However, even after NPT was removed, several wells still exceeded their planned duration, this falls under productive time.

Rig Phase Analysis

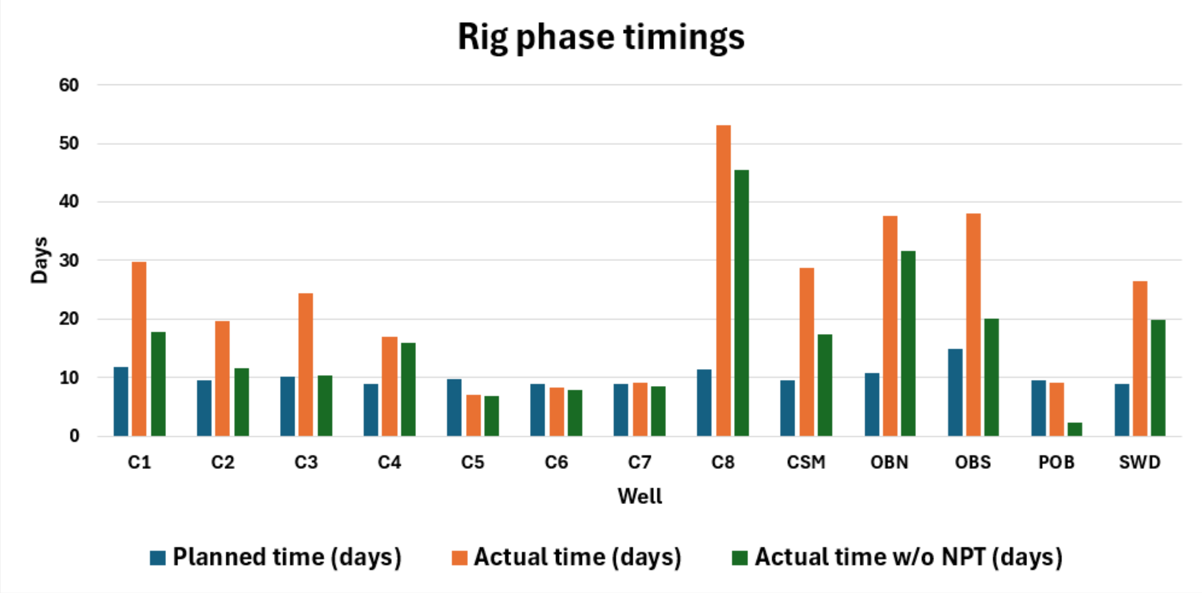

Figure 3

Purpose

I compared planned and actual rig durations for each well to determine how significantly NPT contributed to delays. I wanted to identify whether schedule overruns were caused primarily by operational inefficiencies or by other well-specific factors.

Method

- Compared planned rig duration against actual rig duration.
- Calculated actual duration excluding NPT.
- Created a chart to visualise differences between wells.

Key Findings

- C8 is a major outlier.
- OBN and OBS are also significantly longer than most wells.
- C5, C6 and C7 are close to their planned durations.
- Some wells have very little NPT impact, while others have large gaps between actual and actual-without-NPT durations.

Figure 3 shows a much greater variation in duration during the rig phase than during the CT phase. Several wells significantly exceeded their planned duration, particularly C8, OBN and OBS.

The results suggest that the rig phase contributed more heavily to overall schedule overruns than the CT phase. This may indicate that rig-based activities were more susceptible to operational delays, equipment issues or other factors contributing to NPT.

The large variation between wells highlights the importance of understanding the underlying causes of delays within the rig phase, as improvements here could have a significant impact on overall campaign efficiency.

Combined Well Duration Analysis

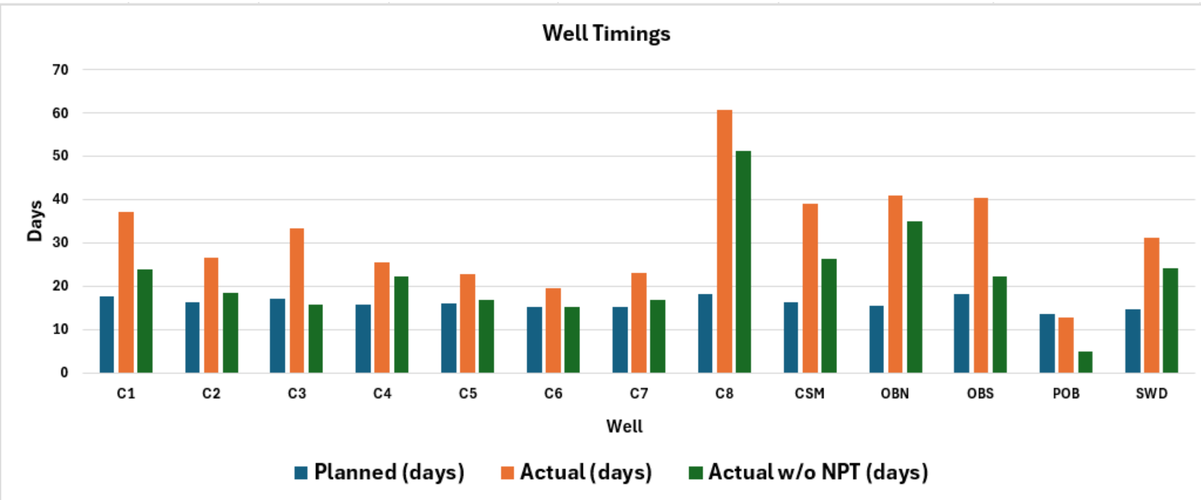

Figure 4

Combining the CT and rig phase data provides a complete picture of well decommissioning performance. Significant variation can be observed across the campaign, with some wells being completed close to the planned duration while others experienced substantial overruns.

The gap between actual duration and actual duration excluding NPT demonstrates the impact of non-productive time on overall performance. However, NPT alone does not explain all variation, indicating that operational complexity and well-specific conditions may also have influenced the results.

Section Milling

Introduction of Section Milling

During the decommissioning campaign, an alternative abandonment technique known as section milling was introduced on selected wells. The purpose of introducing this method was to investigate whether it could reduce overall well abandonment duration.

Section milling involves removing a section of the steel casing and surrounding cement from the wellbore, creating an open-hole interval. This allows a cement barrier to be placed directly against the surrounding rock formation, providing a permanent seal that meets well integrity requirements.

As section milling was implemented on multiple wells throughout the campaign, it provided an opportunity not only to assess its effectiveness compared with previous abandonment methods, but also to investigate whether the operation itself became more efficient over time.

To evaluate this, I analysed and compared the performance of wells where section milling was conducted throughout the project.

Initial Section Milling Performance Analysis

To determine whether experience gained throughout the campaign led to improvements in section milling operations, I analysed the duration and efficiency of section milling activities for each applicable well. The graph below illustrates how section milling performance changed over time.

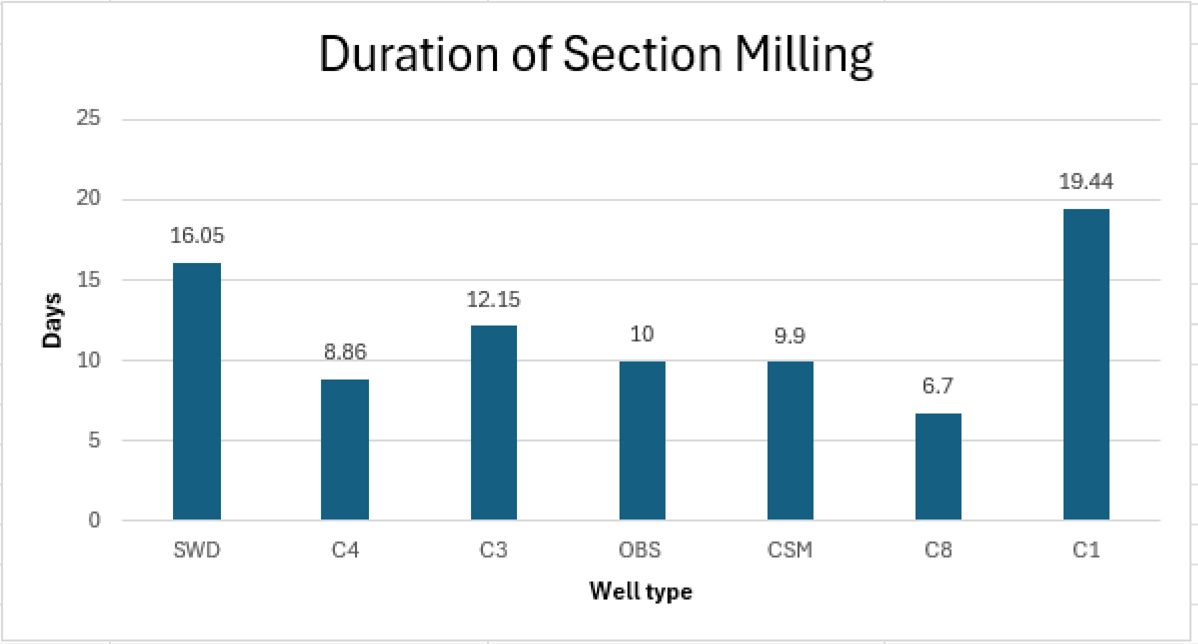

Figure 5- the duration of section milling operations per well.

The results suggest that in figure 5 section milling performance improved as the campaign progressed. Earlier wells required longer operational durations, whereas later wells were completed more efficiently. The data shows a general reduction in section milling duration as the campaign progressed.

However, some variation remained between wells, suggesting that factors such as well condition, operational complexity and external delays continued to influence performance.

What I Concluded

The initial analysis suggested that section milling performance improved throughout the campaign. However, the final section-milled well (C1) appeared to contradict this trend and was noticeably slower than expected. Rather than accepting this result at face value, I investigated the reasons behind the apparent outlier.

Investigation of the Outlier

To understand the discrepancy, I reviewed well schematics and operational information for each section-milled well. I found that the length of casing being milled varied significantly between wells. This meant that comparing total duration alone was not a fair measure of performance. A well with a longer milling interval would naturally take more time to complete, regardless of operational efficiency.

Development of a New Performance Metric

To overcome this limitation, I developed a new performance metric based on milling rate (metres per day). This allowed section milling performance to be compared on a like-for-like basis by accounting for differences in interval length.

Updated Results

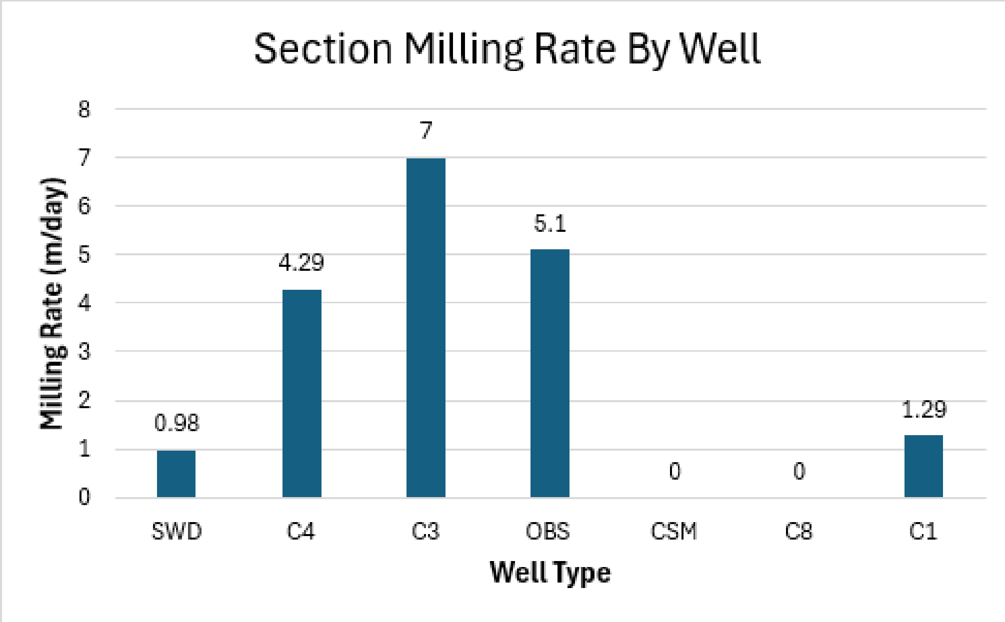

Figure 6

Using milling rate instead of duration provided a clearer assessment of performance and allowed the effect of operational learning to be evaluated more accurately. It also helped explain wells such as C1, where a longer milling interval and the use of a dual section milling tool influenced the overall duration, making duration alone a less representative measure of efficiency.

The low milling rate observed on C1 can be partially attributed to the use of a dual section milling tool during the operation. Although the tool was introduced with the intention of improving the milling process, operational experience suggested that it was less effective than anticipated and resulted in slower progress compared with previous section milling operations. This contributed to the lower milling rate recorded for C1 and demonstrates how equipment selection can have a significant impact on operational performance.

Problem- Solving

At the time of this analysis, milling interval data was not available for wells CSM and C8. As a result, milling rates could not yet be calculated for these wells. However, the data table and associated graph were designed using linked Excel formulas, meaning the calculated milling rates and chart will automatically update once the missing interval data becomes available. This approach allows the analysis to be efficiently maintained and ensures that any future updates are reflected consistently throughout the report.

Productive Time and NPT Breakdown

To gain a better understanding of operational performance, each well was analysed individually. For every well, three pie charts were created:

- Total well duration.
- CT phase duration
- Rig phase duration.

Each chart displayed the proportion of:

- Productive time
- EA NPT
- RA NPT

This allowed the relative contribution of productive and non-productive activities to be visualised for each well and operational phase.

Example:C1

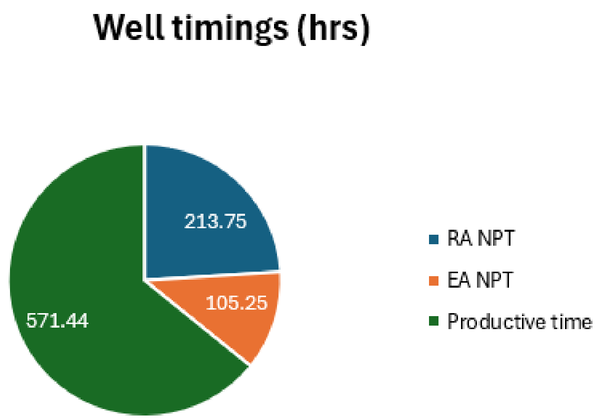

Figure 7

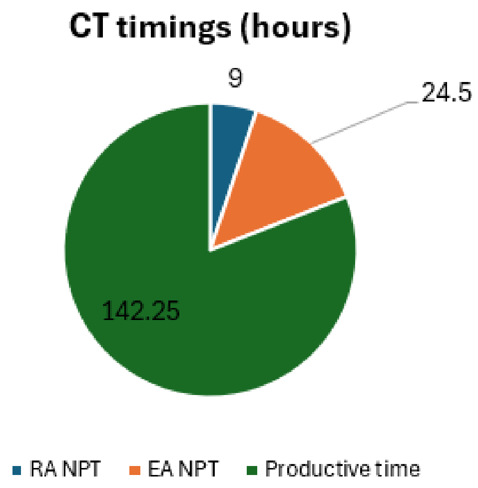

Figure 8

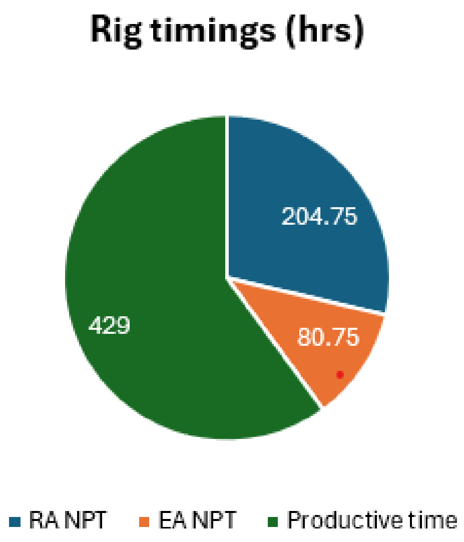

Figure 9

Figures 7, 8 and 9 present the results for the Well C1.

Well C1 was analysed as a representative example of how productive time, EA NPT and RA NPT were distributed across a single operation. The results show that the majority of operational time was productive, while most NPT occurred during rig operations rather than CT activities. This pattern was broadly consistent with campaign-wide findings.

Reflection on Data Presentation

Initially, individual pie charts were created for each well to gain a detailed understanding of operational performance. However, with thirteen wells and three pie charts per well, this resulted in many charts, making it difficult to identify overall campaign wide trends.

To overcome this limitation, I created an overall summary chart that combined data from all wells. This allowed productive time, EA, and RA to be compared at a campaign level and made broader performance trends easier to identify.

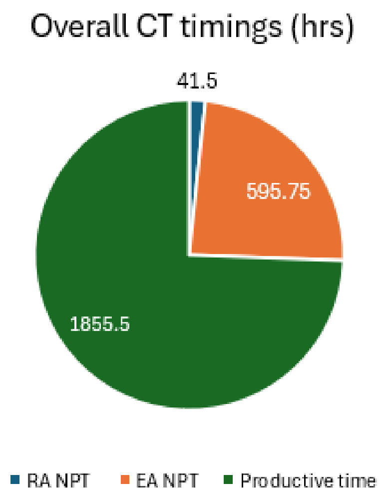

Figure 10

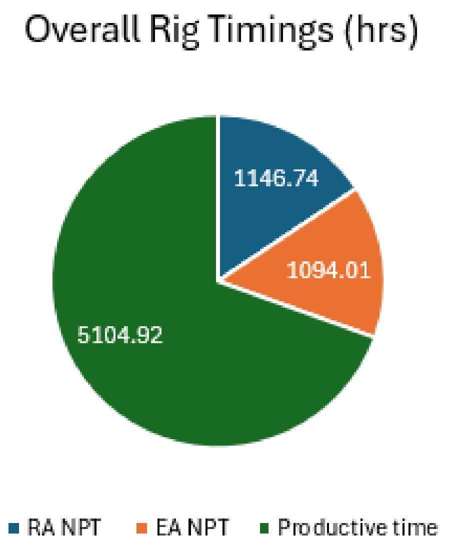

Figure 11

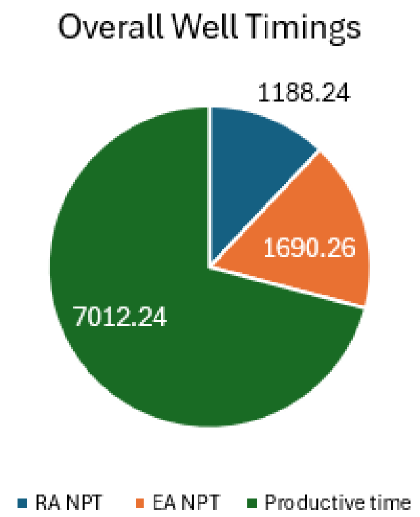

Figure 12

Well Performance

Figures 10, 11 and 12 shows the distribution of productive time, EA and RA NPT from all wells combined. This provided a campaign level view of how operational time was used and made to easier to identify overall trends.

CT Phase Performance

Figure 10 presents the breakdown of productive time and NPT during the Coiled Tubing (CT) phase.

The CT phase recorded 1,856 hours of productive time, representing approximately 74% of total CT activity. EA NPT accounted for 596 hours, whilst RA NPT was significantly lower at only 42 hours.

This suggests that CT operations were efficient, with relatively little delay caused by external or unavoidable factors. However, the level of EA NPT indicates that there may still be opportunities to improve planning, communication, or operational execution within this phase.

Rig Phase Performance

Figure 11 shows the equivalent analysis for rig-based operations.

The rig phase recorded 5,105 hours of productive time, approximately 69% of all rig activity. EA NPT totalled 1094 hours, while RA NPT totalled 1147 hours. Compared with the CT phase, rig operations experienced considerably higher levels of both EA and RA. This suggests that rig activities had a greater influence on the overall campaign duration and were more susceptible to delays caused by operational challenges, environmental factors, and other external factors.

Well Performance

Figure 12 shows the distribution of productive time, EA, and RA NPT across all wells.

The results show that most of the operational time was productive, accounting for 7,012 hours. EA NPT accounted for 1,690 hours, while RA NPT accounted for 1,188 hours.

This indicates that approximately 71% of the total campaign duration was productive time, with the remaining 29% attributed to NPT.

Key Findings

- Productive time represented approximately 71% of the total campaign duration.
- Around 29% of operational time was classified as NPT.

- EA NPT was greater than RA NPT overall.
- The CT phase achieved a higher proportion of productive time than the rig phase.
- The rig phase was responsible for the majority of NPT recorded during the campaign.
- Reducing EA NPT within rig operations could provide the greatest opportunity for improving future campaign efficiency.

Reflection

Initially, individual pie charts were produced for each well to understand performance at a detailed level. However, I recognised that comparing large number of individual pie charts made it difficult to identify overall trends across the project. To overcome this, I combined the data into summary tables, then into summary charts allowing project- wide patterns to be identified more effectively. This improved the clarity of the analysis and helped support evidence-based conclusions.

Performance Trends and Campaign Improvement

Purpose

To investigate how EA Non-Productive Time changed throughout the decommissioning campaign, I calculated both a 7-day and 30-day rolling average. I selected a 7-day rolling average because daily NPT values varied significantly between wells. Smoothing short-term fluctuations allowed underlying performance trends to be identified more clearly.

This approach was particularly useful due to the large dataset used, which contained approximately five hundred rows of daily operational information.

Method

- Daily EA NPT hours were extracted from the operational dataset.
- A 7-day rolling average was calculated to show short-term changes in performance.
- A 30-day rolling average was calculated to show longer-term trends.
- Both averages were plotted against campaign day number.

Results

The 7-day rolling average shows significant fluctuations throughout the campaign, with several periods where NPT exceeded 15 hours. The highest peak occurred at approximately day 265, where the rolling average approached 20 hours.

In comparison, the 30-day rolling average produces a much smoother trend. The graph shows that NPT increased during the early stages of the campaign before gradually decreasing over time.

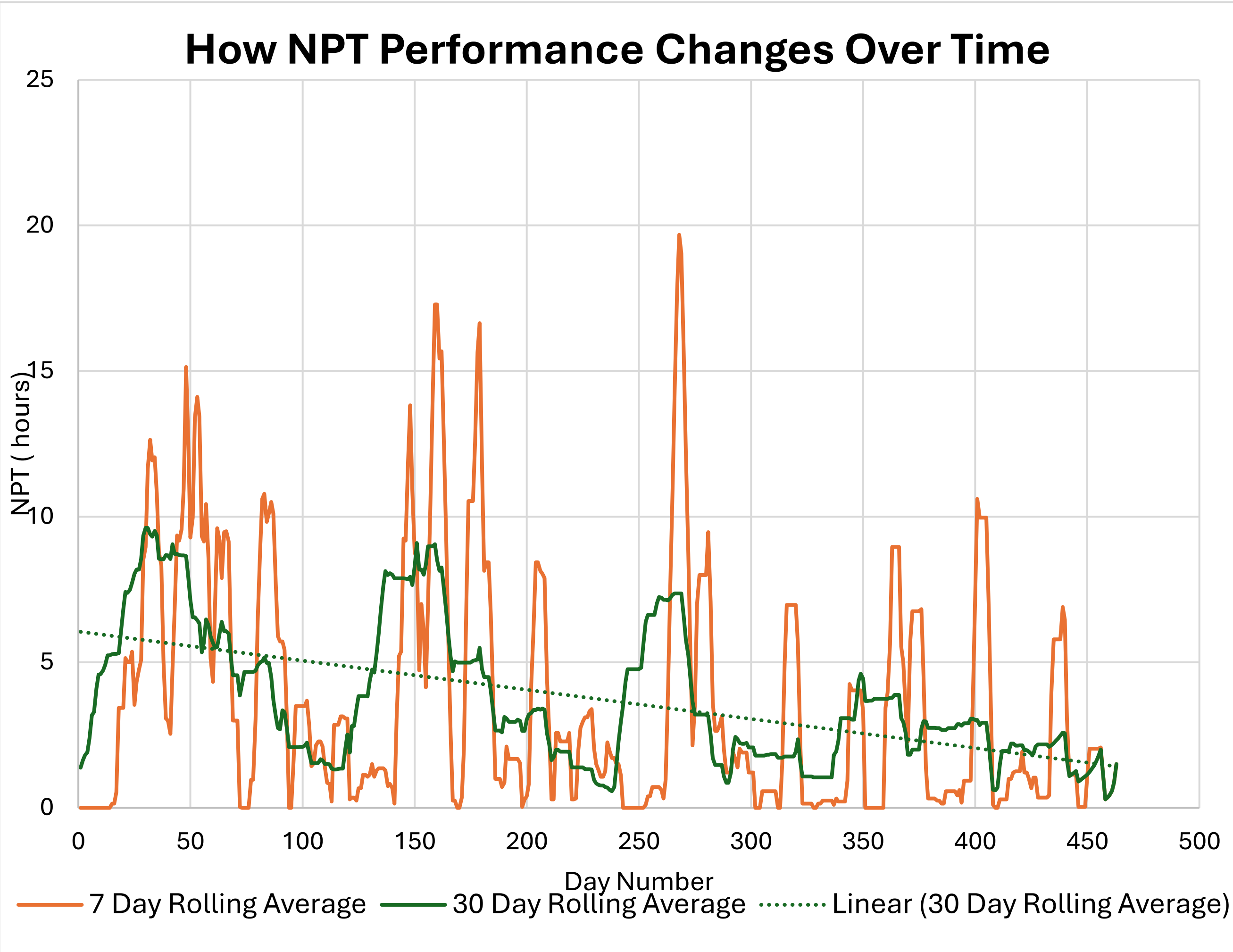

Figure 13

Discussion

The large fluctuations observed in the 7-day rolling average suggest that NPT was often driven by isolated operational events affecting individual wells.

However, the 30-day rolling average provides a clearer indication of overall performance and shows a gradual reduction in NPT as the campaign progressed. Improvements in planning, communication and operational execution are all potential contributors to this reduction.

Reflection

Initially, I considered analysing daily NPT values alone. However, due to the variability of offshore operations, it was difficult to identify meaningful trends. Calculating rolling averages allowed me to better understand long-term changes in performance and make more reliable conclusions from the data.

Overall Cumulative Average NPT Analysis

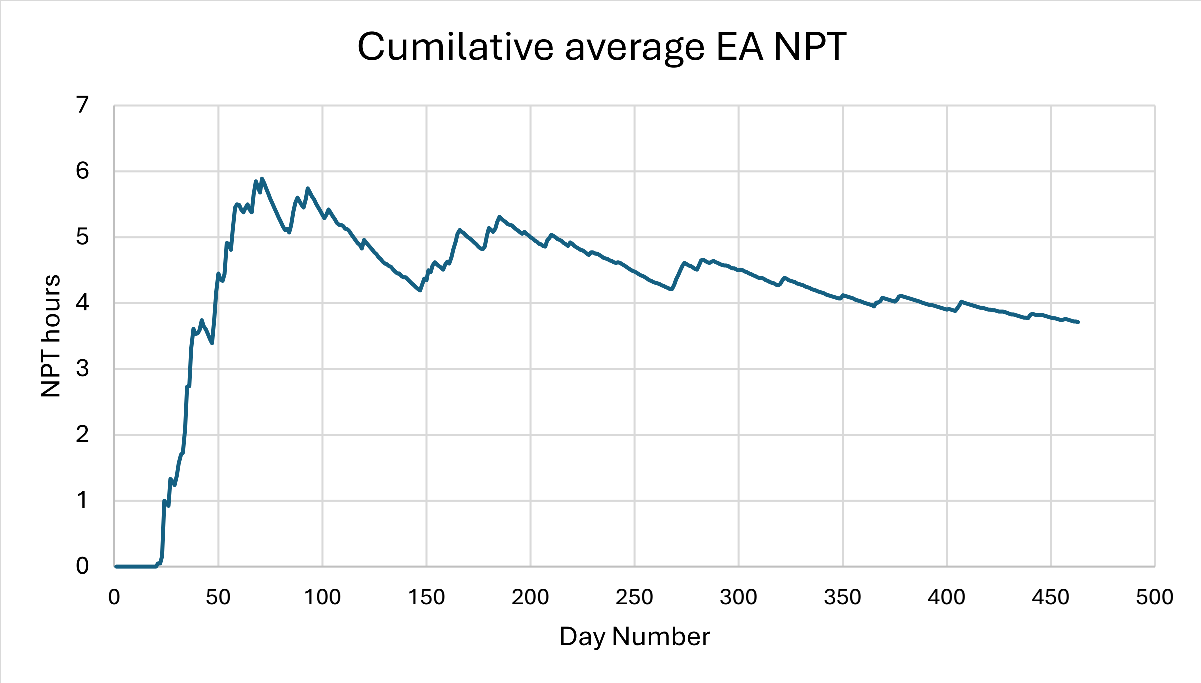

Figure 14

The cumulative average EA NPT increased during the initial stages of the campaign, peaking at approximately 5.8 hr/day, before gradually declining to around 3.7 hr/ day.

Results

- I analysed approximately five hundred rows of operational data collected throughout the decommissioning campaign.
- I recorded the daily EA NPT hours and used Excel formulas to calculate a cumulative average.
- The cumulative average peaked at approximately 5.8 hours/day before gradually reducing to around 3.7 hours/day by the end of the campaign.

Discussion

 I created this graph because I wanted to understand whether campaign performance was improving over time, rather than simply comparing individual wells.

- Initially, I considered analysing NPT on a well-by-well basis. However, I realised that individual results could be heavily influenced by oneoff events and would not necessarily show broader trends across the campaign.

- By calculating a cumulative average, I was able to assess the overall direction of performance and determine whether avoidable delays were becoming more or less common as the project progressed.
- The downward trend suggests that the rate at which EA NPT was being accumulated reduced over time.
- This indicates that lessons learned from earlier wells may have been applied to later operations, resulting in better planning, improved execution and fewer avoidable delays.
- The graph also supports the learning curve theory discussed earlier in this report, where repeated operations become more efficient as experience is gained.
- This analysis was particularly important because one of the main objectives of my project was to assess whether productivity improved throughout the campaign.

Reflection

Creating this graph was one of the most challenging parts of the project because it required the organisation and analysis of approximately five hundred rows of operational data. Through this process, I realised that the way data is analysed can significantly affect the conclusions that can be drawn from it. Whilst individual NPT events provided detailed information, they did not clearly show whether overall performance was improving. By developing a cumulative average analysis, I was able to identify a long-term trend that would otherwise have been difficult to observe. This improved both my Excel skills and my understanding of how data can be used to support engineering decision-making and continuous improvement.

Evidence Of Continuous Overall Improvement

Several analyses provided evidence of continuous improvement throughout the campaign. Section milling performance improved over time, while both rolling-average and cumulative-average analyses demonstrated a reduction in Error Avoidable NPT. Together, these findings suggest that operational experience and lessons learned were successfully applied throughout the campaign, leading to improved efficiency during later wells. Although some variability remained between wells, the overall evidence supports the presence of a learning-curve effect.

Overall Conclusions

The aim of this project was to evaluate operational performance data from a 13-well decommissioning project in the Mediterranean Sea. Then, to identify trends in productivity and non-productive time and provide insights that would support future well decommissioning projects, and the rest of this project.

Through the analysis, I successfully achieved these objectives by examining planned and actual well durations, productive time, non-productive time, and the performance of individual operational phases.

The key findings from this investigation were:

- Most wells exceeded their planned and actual durations.
- Productive tie accounted for approximately 71% of total campaign time
- Error Avoidable NPT represented a greater proportion of NPT than Risk Acceptable NPT
- Rig operations contributed to the largest proportion of NPT.
- Section Milling performance improvement throughout project and helped improve operational duration.
- Both rolling average and cumulative average showed a reduction in NPT over time.

Overall, the evidence suggests that lessons learned from earlier wells were successfully applied to later operations. Improved planning increased operational experience and greater familiarity with procedures are likely to have contributed to this improvement.

The results of this project provide valuable information that can be incorporated into company reporting and may help support planning and decision making for the present and future projects.

Recommendations

Based on the findings from this project, I have identified a few recommendations that could help improve the efficiency of future well decommissioning projects.

Reduce EA NPT

Initially, my recommendation was going to be simply to suggest that the company investigate the causes of Error Avoidable (EA) NPT in more detail. However, after reviewing the data, I realised that I could carry out this investigation myself using the information available. By categorising the EA events, I was able to identify the main contributors to avoidable delays and provide a more specific recommendation based directly on the data.

The analysis showed that EA NPT represented a significant amount of the total non-productive time recorded throughout the campaign.

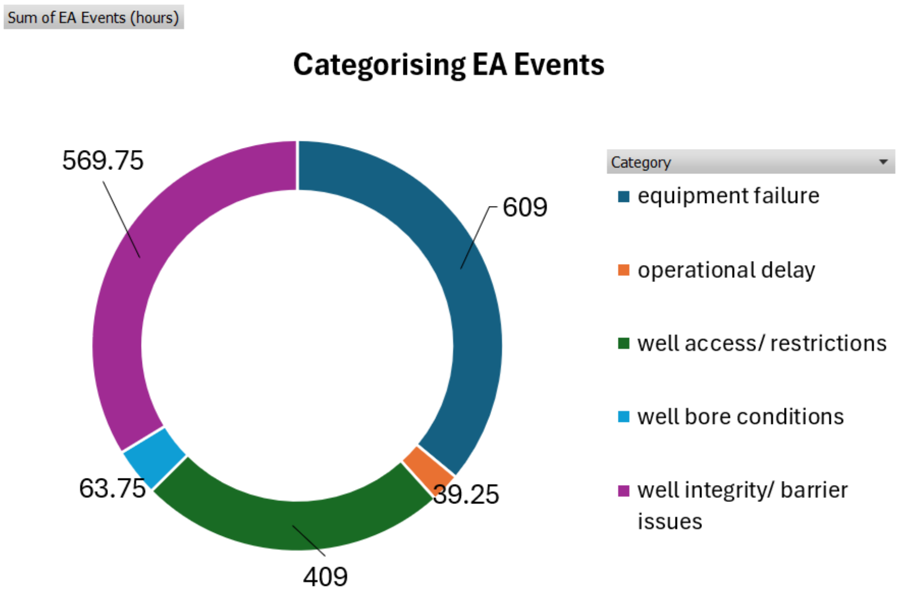

Figure 15-categorisation of EA NPT

The results showed that:

- Equipment failures were the largest contributor to EA, accounting for 609 hours.

- Well integrity and barrier issues were the second largest contributor accounting for 569.75 hours.
- Well access and restrictions also contributed to a lot of the EA NPT.
- Well bore conditions and operational delays contributed significantly less time.

Recommendation:

Based on these findings and previous findings, future operations should focus on reducing equipment -related failures and improving the planning of well integrity activities.

For example, potential actions could include:

- Increasing preventative measures on critical equipment.
- Reviewing recurring equipment failures from previous wells
- Ensuring contingency equipment is available when practical.

Potential Benefit:

- Reduce operational delays.
- Lower levels of EA NPT
- Improve operational efficiency.

Continue the Use of Section Milling Throughout the Remaining Campaign

The analysis suggests that Section Milling performance improved as the project progressed. Operation durations reduced overtime.

Recommendation:

- Continue using Section Milling on the remaining wells.
- Continue monitoring Section Milling duration and milling rates.
- Update performance data as Section Milling wells are completed.

Potential Benefit:

- Further improvement in efficiency.
- Reduced Section Milling durations.
- Additional data to validate the trends identified in this project.

As the campaign is still ongoing, continuing to collect and analyse Section Milling performance data will provide an opportunity to determine whether the positive trends identified in this project continue future wells.

Focus Improvement Efforts on Rig Operations

The rig phase accounted for the largest proportion of NPT throughout the campaign.

Recommendation:

- Prioritise performance improvement initiatives within rig operations.
- Review recurring rig related delays.

Potential Benefits:

- Significant reduction in overall campaign duration.
- Improve operational efficiency.

Evaluation and Reflection

Overall Evaluation

Overall, this project successfully achieved its aim of evaluating operational performance data from a thirteen well decommissioning campaign and identifying ideas for improving operational efficiency. Through this project I managed to analyse, productive time, non-productive time, section milling performance, long term campaign trends and data backed recommendations that can support future projects.

What Went Well

- I successfully analysed data from 13 Wells in the Mediterranean
- I processed and organised approximately five hundred rows of data.
- Created a range of charts and visualisations communicate findings.
- Identified evidence of continuous improvement throughout the campaign.
- Produced recommendations based on actual operational data rather than assumptions.
- Generated information that could potentially support company and client reporting.

Decisions I Made During the Project

Some important decisions made throughout the project were:

- Choosing Microsoft Excel as the primary analysis tool.
- Splitting the analysis into CT Phase and Rig Phase
- Creating rolling averages to identify long term NPT trends
- Using Section Milling rates rather than duration to provide a fairer comparison between wells.
- Investigating the causes of EA NPT myself rather than simply recommending that someone else do it.

Challenges and How I Overcame Them

1. Managing Large Volume of Data

    - Worked with approximately five hundred rows of operational data.
    - Used excel formulas and data validation checks.
    - Cross checked calculations against original reports.
2. Presenting the Data Clearly
    - Initially created individual pie charts for each well
    - I quickly realised that over thirty pie charts made overall trends difficult to identify.
    - So, I decided to create summary charts to show campaign wide performance more clearly.
3. Missing Section Milling Data
    - Some milling interval data was not available at the time of the analysis.
    - Therefore, I built formulas and graphs that automatically update when new data is added.

Creativity and Initiative

Throughout the project, I looked for ways to gain additional value from the data available.

For example:

- Creating cumulative average NPT graphs
- Producing a 7-day and 30-day rolling average
- Separating analysis into CT phase and Rig phase.
- Developing Section Milling rate calculations.
- Investigating the root causes of EA NPT.

Several of these analyses were not part of my original project plan but were added as new opportunities emerged.

Skills and Knowledge Developed

- Advanced my Microsoft Excel skills.
- Data analysis and interpretation skills.
- Technical report writing skills.

- A greater understanding of offshore decommissioning.
- Knowledge of NPT, well integrity and Section Milling operations.
- Improved critical thinking skills and critical thinking abilities.
- Completed the IWCF Level 1 course, developing an understanding of well control, well integrity and offshore operations.

What I Would Do Differently

If I were to continue this project, I would like to include cost data alongside operational performance data to better understand the financial impact of NPT. As the decommissioning project is still ongoing, I would also continue monitoring Section Milling performance to determine whether the positive trends identified in this report continue for future wells.

Final Reflection

The project has significantly improved both my technical knowledge and analytical skills. Working with real operational data allowed me to apply engineering principles to a live decommissioning campaign and understand how data can be used to support decision-making. The project also demonstrated the value of continuous improvement and the importance of learning from previous operations. Overall, I found the project highly rewarding, and it has strengthened my interest in pursuing a career within the energy sector.