PD&MS GROUP
an RSK company

OPTIMUS PLUS
Concept & Front End Specialists
a PD&MS group company

SYNERGIE ENVIRON
Decarbonisation & Energy Efficiency Specialists
a PD&MS group company

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Your Trusted Asset Lifecycle Partner

DECOMMISSIONING

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Established in 2002, we have built a strong reputation for the safe delivery of practical, high quality and cost-effective solutions in the energy and industrial sectors onshore and offshore.

As a strategic lifecycle delivery partner and full-scope EPCC contractor, we support operators through each stage of the asset lifecycle with seamless services that are tailored to meet the challenges of complex, asset-intensive environments.

We have an excellent track record delivering a vast range of EPCC work; from simple repair order scopes, modifications and upgrade projects, TARs and W2W campaigns.

We deliver across all phases of the project, from initial concept development through to installation, commissioning and close out, meaning we can offer an end-to-end and seamless service to our clients.

Our embedded low carbon and renewables expertise and capabilities means we are well placed to support our oil & gas clients on their net zero journeys.

PD&MS – Key Stats

Putting our energy into safe, predictable & sustainable solutions

2002
Founded In 2002


Mid Value Capital Projects, Modification & Upgrade Specialists


Late Life Asset Management & Decommissioning Specialists


Head Office In Aberdeen, Eng. Offices In Glasgow, Baku (Azerbaijan) and Gurugram (India)

RSK
Part of RSK Group – Global Leaders in Environmental and Engineering Solutions

CERTIFIED LR ISO 9001 - ISO 14001 ISO 45001 · UKAS MANAGEMENT SYSTEMS 001
Our Management Systems are Certified By LRQA To ISO 9001:2015, ISO 14001:2015, ISO45001:2018 and ISO/TS29001:2011.

SYNERGIE ENVIRON Decarbonisation & Energy Efficiency Specialists a PD&MS group company
Environmental Consultants


Full Multi-discipline O&M and EPC Capability

650
650 Onshore Engineering and Support Personnel Globally


Sizeable Construction and Commissioning Personnel

Achilles FPAL Verified
FPAL and Sequal Verified.

OPTIMUS PLUS Concept & Front End Specialists a PD&MS group company
Front End/ FEED Specialists


Production Facilities, Drilling Facilities, Onshore Facilities.


Excellent HSE Performance


Global Reach

13m+
13 Million+ Value Adding Onshore and Offshore Exposure-hours have been Liquidated.

GREEN MØDS #lowercarbonsolutions IDENTIFY · QUANTIFY · MODIFY

PD&MS GENES ...it's in our DNA

£140m
£140 Million Turnover (PD&MS)

£2bn
£2 Billion Turnover (RSK)


Energy Industry Specialists with Sector Agnostic Skills and Capabilities

Supporting Operators With Energy Security and Net Zero Ambitions

Transforming How Modifications are Delivered Adding to Decarbonisation, Clean Tech, Low Carbon Expertise.

The Markets We Serve

Providing future-friendly engineering solutions, we are supporting both conventional energy and the energy transition.

OIL AND GAS

Our specialist engineering services support clients through every stage of the asset lifecycle, helping you:

- extend life,
- boost production and
- maximise efficiency,

all while keeping costs under control.

We understand the challenges of operating in mature basins and know how to overcome them. From increasing production capacity and improving efficiency which has saved Total Installed Costs of 20% for one operator, to partnering with clients to develop decommissioning strategies, we work as a strategic partner with clients to minimise risk and maximise value.

THE WIDER ENERGY SECTOR

The knowledge we've acquired in the oil and gas sector has provided us with a great platform to service nuclear and renewable energy clients and we are now a partner of choice for various wind energy developers and operators, in both onshore and offshore settings.

Our renewable energy credentials include work on one of the UK's first anaerobic digestion plants, a wide range of hydroelectric and pumped storage schemes, plus over 20 district energy networks.

Locations

Putting our energy into safe, predictable & sustainable solutions

Headquarters Aberdeen

- Operational Offices
- Working Locations
- RSK Locations

United Kingdom

Headquarters in Aberdeen, that represent PD&MS Group's global centre of engineering excellence. In addition, we have engineering and project delivery offices in Grangemouth and Glasgow including SEL our Clean Tech sector experts.

Azerbaijan

Regional Office in Baku delivering Engineering, Procurement Construction and Commissioning services in Azerbaijan, Georgia and Turkey (AGT), Eastern Europe and the Middle East.

About Us

Putting our energy into safe, predictable & sustainable solutions

Stronger Together: Powering Progress Through Collaboration

OPTIMUS PLUS
Concept & Front End Specialists
a PD&MS group company

Optimus Plus are our front end specialists that we acquired in 2022.

They are a well-established, highly experienced, specialist engineering and consultancy company, combining decades of proven expertise and strategic insight to deliver simple, responsive and cost-effective solutions for the energy industry from concept to decommissioning.

- Conceptual Design / pre-FEED
- FEED
- Multi-Discipline Detailed Design
- Specialist Engineering Services
- Asset Life Extension & Optimisation
- Offshore Survey including laser scanning
- Operational Support inc. troubleshooting
- Decommissioning Engineering Services
- Structural Analysis
- Pipe Stress Analysis
- Availability/ Maintainability Modelling and Reviews
- Decision & Risk Management
- HAZOP/ HAZID/ SIL/ LOPA assessments
- Safety Studies, including Safety Case Reviews
- Contracting and Supply Chain

SYNERGIE ENVIRON
Decarbonisation & Energy Efficiency Specialists
a PD&MS group company

Synergie Environ are our environmental specialists. The team of engineers are focused on cutting cost, consumption and carbon for its clients.

Synergie Environ was born out of desire to push forward the development of clean energy in Scotland and the UK and their vision is simple:

"To assist in the delivery of a zero-carbon future by providing innovative clean technology solutions to industry and businesses."

The team operates over three core business lines: Anaerobic Digestion and Bioenergy, District Energy Networks, and Energy Efficiency and Strategy.

RSK

We were acquired by RSK in 2023.

RSK is a global leader in the delivery of sustainable solutions. Our family of more than 250 environmental, engineering and technical services businesses works together to provide practical solutions to some of the greatest challenges societies have ever faced.

With our integrated offering across research and development, consultancy and on-the-ground application, we can deliver a complete solution that is unrivalled in the market.

Trusted Partner

Putting our energy into safe, predictable & sustainable solutions

WELL-SAFE SOLUTIONS
bp
px energy solutions
sse Renewables
Allseas
Harbour Energy
BAE SYSTEMS
mace
Apache
CalaChem
SPIRIT ENERGY
STANDARD
PETROLEUM EXPERTS
INEOS
MORAY EAST OFFSHORE WINDFARM
REPSOL
VATTENFALL
EL MANSOURA PETROLEUM COMPANY
Rampion Offshore Wind
TAQA
Sterling
dana PETROLEUM
ConocoPhillips


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sustainable solutions
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Engineering the
future of responsible
decommissioning.

Your trusted decommissioning partner

Putting our energy into safe, predictable & sustainable solutions

At PD&MS Group, we bring a proven track record in delivering results across the full asset lifecycle, with a strong focus on late-life operations and decommissioning.

Our scalable, tailored service offering covering all phases of the decommissioning journey, is designed to drive efficiency from start to finish.

Working as a trusted strategic partner, we understand the critical success factors and key drivers behind effective decommissioning programmes. Our delivery provides integrated project management, streamlining supply chain interfaces, reducing complexity and enabling scalable delivery.

By enhancing our capabilities through partnerships with other RSK companies, we offer unrivalled expertise and innovative capabilities. From strategic asset management and life cycle costing to advanced decision-making tools, we help clients reduce ABEX costs and optimise both CAPEX and OPEX.

Through a lean and agile approach, clients can be assured of a decommissioning strategy that **delivers value, minimises risk and maximises return.**

Working with other RSK companies we offer unrivalled expertise and innovative capabilities

Programme Preparation, Strategy & Management

Putting our energy into safe, predictable & sustainable solutions

Leading the way in offshore and onshore decommissioning

We manage the entire decommissioning process in-house, developing and delivering complete decommissioning execution strategies. Every phase is guided by clear decision-making frameworks and a commitment to safety, regulatory compliance, and environmental responsibility.

In addition, we provide specialist programme support for onshore terminal projects, operating safely and efficiently within live operational environments in full compliance with the Construction, Design and Management Regulations 2015 (CDM), ensuring that health, safety and environmental risks are systematically identified, eliminated or reduced through early design and management, ensuring programme planning, supply chain engagement and execution strategies, enabling accountability, regulatory assurance and safe delivery while maintaining operational continuity and commercial certainty for our clients.

Our integrated teams have a strong focus on value retention, identifying late-life opportunities that maximise asset performance and revenue ahead of Cease of Production (CoP). This helps our clients justify strategy and expenditure with confidence.

All aspects of risk are thoroughly assessed and managed, tailoring strategies to the unique needs of each decommissioning project by ensuring supply chain alignment, commercial clarity and efficient execution.

Subsurface Basis of Design

We deliver high-quality Subsurface Basis of Design (SSBoD) across the North Sea

Our expertise covers single well abandonments through to complex, multi-field developments.

We apply geological, structural and geomechanical expertise to optimise plug and barrier design, reducing risk, time, and cost. All recommendations and solutions are supported by detailed evaluation of well histories, pressure data, and zonal connectivity.

Through our approach, we provide an integrated approach to subsurface activities. Seismic interpretation, fault characterisation, stress analysis, and regional geological modelling are combined to define barrier requirements and validate abandonment strategies.

Reservoir behaviour is assessed to identify permeable intervals and isolation targets across exploration, appraisal, and development wells. This ensures correct barrier placement and long-term integrity.

Deliverables are structured and implementation-ready, including SSBoD documentation and handover packages aligned with Well Basis of Design requirements.

Well Engineering & Well P&A Execution

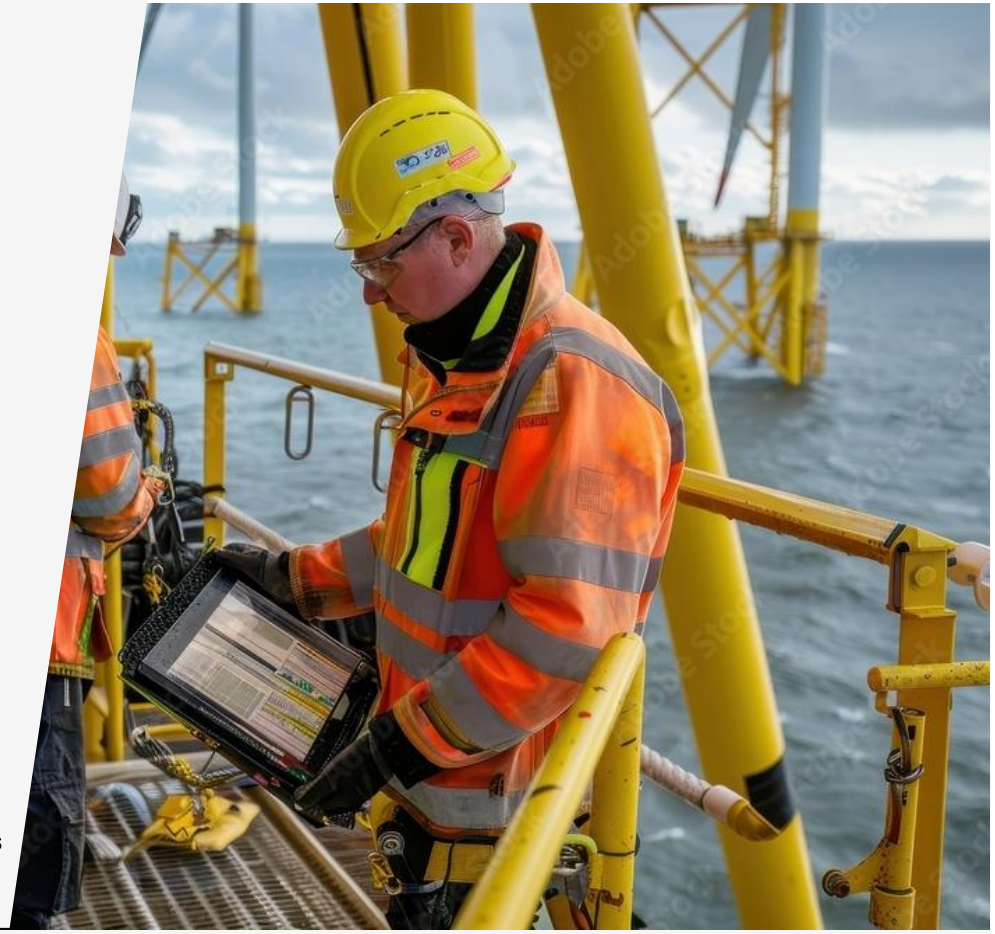
Putting our energy into safe, predictable & sustainable solutions

Well Engineering (Well P&A Planning & Engineering)

Our team of over 100 engineers and supervisors deliver Plug and Abandonment (P&A) operations across the full range of well types and operating conditions, from concept to offshore execution.

We cover the full well P&A scope including early-phase studies, flowline disconnection, hydrocarbon-free verification, process shutdown planning, and liabilitiy assessments. We develop deterministic and probabilistic cost estimates and conduct SIMOPS reviews and risk assessments to support safe and efficient execution.

Project management is integrated from planning through to execution, with on-site support provided to ensure compliant delivery. Well interventions are planned and managed, as well as well removal studies for wellheads and subsea infrastructure, ensuring well integrity is maintained throughout decommissioning. Operations are executed across rig-based and rig-less environments, including LWIV, MODU, barges and platform-based systems such as derrick units, hydraulic workover and modular. We support P&A option screening during pre-CoP studies and assess repurposing opportunities, including CO2 injection and storage in depleted reservoirs.



Well P&A Execution (Supervision & 3rd Party Equipment)

We provide experienced well P&A site management and supervision across platform-based, semi-submersible MODU, and jack-up operations.

We coordinate specialist service providers covering slickline, electric line, coiled tubing, cementing and pumping, tubulars and chemicals. Site leadership is focused on safe, compliant execution and operational efficiency. Teams integrate with client operations and contractors to maintain alignment, control interfaces and deliver against schedule and cost targets.

Engineering Down & Clean (EDC) Onshore and Offshore

Putting our energy into safe, predictable & sustainable solutions

End to end EDC solutions – onshore & offshore

We deliver Engineering, Down & Clean for topside facilities and pipelines, covering planning, preparation, and execution enabling transition, lighthouse and topside removal.

We also deliver a comprehensive Engineering Down and Clean (EDC) service for onshore processing faciltiies, terminals, utilities and process systems, covering planning, preparation and execution.

Our end-to-end solutions include system draining, flushing, purging, venting, isolation and waste management, ensuring systems are rendered non-hazardous, depressurised and compliant with statutory and environmental requirements. This supports safe handover to maintenance, demolition or permanent decommissioning.

Where facilities or pipelines present known or suspected integrity concerns, our EDC methodologies are specifically adapted to ensure safe execution. This includes integrity inspections, controlled flushing and purging techniques, temporary containment measures and revised isolation philosophies. Engineering solutions developed are fit for purpose to minimise the volume of work required as well as considerations for degraded systems. These methods allow EDC activities to be completed safely while maintaining control of risks associated with corrosion, thinning or unknown system conditions.

Activities are executed in accordance with Energy Institute Guidelines, with cleanliness levels defined, verified and documented to support safe decommissioning.

Our facilities and pipeline engineering teams include appointed Engineering Technical Authorities, providing technical assurance and governance across all phases. Safety Case Management, HSSE planning and environmental compliance are embedded throughout.

Topside Preparation and Removal

Proven track record in major brownfield decommissioning scopes

Our engineering team performs walk-to-work studies, deck space and laydown assessments, and dismantling and reboarding risk reviews to define safe and efficient execution plans.

We deliver global and local removal methodologies, including lift point design and installation, structural strengthening, module separation and hook-down strategies. Our scope also covers conductor and caisson removal, vessel duration studies, and Heavy Lift Vessel (HLV) selection and coordination to align onshore preparation with offshore execution.

We manage power optimisation, control and safety system decommissioning, and platform-wide SEMS interfacing. This is supported by performance standard development and verification schemes, alongside preparation of Dismantling Safety Cases to ensure full regulatory compliance.

We have delivered major brownfield decommissioning scopes for operators such as Spirit Energy, Shell and CNR. Execution is supported through collaboration with heavy lift contractors such as Saipem and Allseas. Additional scopes include installation of temporary power systems, modular drilling units and derrick and equipment sea fastening.

Further to our decommissioning offerings, we provide full-scope project and contractor management across the decommissioning lifecycle. In-house rope access teams support underdeck and overside activities, alongside full lift planning and execution, delivering a scalable, integrated solution.

Jacket, Substructure and Subsea Removal & Remediation

Putting our energy into safe, predictable & sustainable solutions

Jacket and Substructure Removal

We support a wide range of decommissioning projects, applying detailed engineering analysis to evaluate and select optimal removal methods based on asset configuration, environmental conditions and schedule constraints.

Our capabilities include single life vessel strategies, including detailed lift point engineering and global structural assessments to support full-lift removal. We also develop removal concepts using semi-submersible crane vessels, enabling scalable solutions for complex substructures and variable metocean conditions.

Hybrid removal methods are assessed where appropriate. Combining large-lift and modular techniques to optimse execution while maintaining structural inegrity. Where full-lift is not feasible, we develop piece-small dismantling strategies, including sequencing, temporary works design, and progressive removal methodologies.

We design and integrate buoyancy tank systems into jacket removal plans, providing alternative solutions where lift capacity or seabed conditions constrain conventional approaches.

Subsea Removal and Remediation

We provide in-house subsea engineering and offshore supervision for the design, planning, and execution of subsea decommissioning and removal campaigns. Our scope of work covers flowbases, PLEMs Christmas trees, and integrated subsea systems, with delivery focussed on safe, efficient and compliant decommissioning. In addition, we also execute SURF scopes, including subsea umbilicals, risers, and flowlines, working with contractors such as Subsea 7 and Boskalis to ensure coordinated offhsore execution and delivery assurance.

Recycling, Re-Use and Disposal

Reducing environmental impact and maximising value recovery

We work with clients during late-life operations (typically <5 years to CoP) to develop and implement low-carbon strategies that reduce emissions during the final stages of production and extend sustainability into the decommissioning phase.

Our teams identify opportunities to reduce environmental impact and maximise value recovery through reuse, repurposing and recycling ot equipment and structures such as turbines, pumps, motors and topside modules.

Proven track record in dismantlement and disposal

We have a proven track record in the management of dismantlement and disposal campaigns, including delivery of the Spirit Energy DP3 and DP4 decommissioning projects in collaboration with our strategic supply chain partner Cesscon, providing onshore dismantlement, disposal and recycling services.

Our core capabilities include:

- Development of asset-wide low carbon strategies for late-life operations
- Identification of circular economy pathways for asset re-use or repurposing
- Carbon footprint and environmental impact accounting
- Dismantlement engineering with a focus on recovery and recycling
- Cost estimation, project planning, and carbon-informed scheduling.

Onshore Facility Removal & Demolition Support

We provide strong safety, assurance and CDM support

We support onshore terminal projects through the pre-demolition phase by providing strong safety, assurance and CDM support in collaboration with asset owners and demolition contractors.

Our involvement includes contributing to pre-demolition HAZID and HAZOP studies, SIMOPS reviews, CDM coordination activities and structured safety meetings, alongside support to isolation, permitting and asset interface planning. THis early engagement helps ensure demolition activities are well prepared, compliant and ready to proceed safely.

During demolition, we provide experienced onshore site representatives to support safe execution and effective coordination. Acting on behalf of the client, out team attends toolbox talks, monitors compliance with approved methodologies and CDM requirements, and works closely with contractors to manage emerging risks. This on-site presence reinforces safety culture and provides assurance that demolition is delivered in line with agreed standards and regulatory expectations.

Monitoring

Providing reliable, long-term integrity monitoring

We deliver bespoke subsea control and monitoring systems specifically tailored for long-term monitoring of plugged and abandoned (P&A) wells and decommissioned subsea sites.

These systems are designed to provide reliable, long-term integrity monitoring, supporting verification of barrier performance and environmental containment.

This capability enables operators to implement post-decommissioning assurance strategies aligned with regulatory requirements and environmental performance objectives.

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Our Experience

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Spirit Energy

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Morecambe Hub Repurposing and Decommissioning Study

DURATION 4 months

KEY ACHIEVEMENTS

- Fulfilled NSTA requirements under Stewardship Expectation 11.
- Examined potential for onshore green hydrogen generation
- Examined potential to utilise land or repurposed rigs for wind farm infrastructure, and for using the onshore terminal area for wind or solar PV installations following a planned upgrade to the local electrical substation.
- Strong ESG policy recommended, and to ensure that scope aggregation was made a high priority.
- Various ports evaluated for logistical and environmental merits, and various technologies for energy-efficient decommissioning operations were explored.

SCOPE

As part of the Spirit Energy ambition to be a net zero organisation and satisfy the NSTA Net Zero Stewardship Expectation, Synergie Environ was appointed to provide a report analysing potential repurposing options and methods of decarbonising the decommissioning process of the SE assets at Morecambe Bay hub. These assets included offshore platforms and onshore terminals.

Synergie Environ conducted a comprehensive two-part study which looked to firstly identify reuse and repurposing options for the Morecambe Bay assets and their various components, and then secondly to review the decommissioning process and identify options to decarbonise the process through different techniques or new technologies.

ENVIRONMENTAL IMPACT:

The carbon reduction options proposed by Synergie Environ has allowed SE to plan and prioritise their wider environmental, social and governance (ESG) strategy implementation with regards to the decommissioning of these assets. Moreover, it equips SE with the necessary insights to explore potential avenues for minimizing emissions across all their owned assets and start to seek collaboration opportunities with other sectors.

Spirit Energy

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DP3 and DP4 Decommissioning Services

DURATION 15 months

SCOPE OVERVIEW

The provision of engineering, project management & offshore services to prepare DP3 & DP4 topsides for lighthouse mode & future removal, including full decommissioning services support & the provision of intervention teams (including PD&MS OIMs, Production Leads and ERT Team members) for the purpose of operating the asset alongside Spirit Energy as the Joint Services Operator

KEY ACHIEVEMENTS

20,000 hours LTI free to date, including support of major asset shutdown scope and NUI interventions.

The offshore team have successfully performed a series of NUI intervention visits allowing the accelerated progress or completion of a number of the base project scopes

Provided SACS modelling expertise to Spirit Energy, ensuring that the global loads imparted onto the NUIs throughout the project lifecycle can be sustained.

Onshore team provided expert Safety Case services such as provision of Safety Case supporting documentation (QRA, EERA, Hazardous Area Classification etc) on behalf of Spirit Energy. The team also successfully interfaced with IVB and HSE on behalf of Spirit Energy.

SCOPE

Supporting Spirit Energy through financial investment decision gate into detailed design. Followed by detailed onshore engineering, provision of Safety Case updates and simultaneous execution of preparatory scopes on Normally Unmanned Installations. Leading into provision of all support services offshore during one-year drill rig campaign to plug and abandon platform wells and two remote subsea wells.

We provided project Engineering Authorities across key technical disciplines, approved and empowered by Spirit Energy to oversee the engineering design. The mindset of the project is 'design for decommissioning'. Throughout the engineering phase the team were encouraged to challenge the traditional approach. Construction led solutions were produced, with the expectation that traditional engineering solutions would be challenged to ensure that the proposed methodologies were safe, yet pragmatic and cost effective.

Provided general services & personnel to support the wider project objectives:

- NUI intervention offshore team
- Project Management and Services team
- Technical safety support
- EA2 (Engineering Authority support)
- Secondment of Various Operations specialists
- Coarse SIMOPS

The DSC contract initially entailed the following core activities, taking the DP3 and DP4 assets to a safe state, ready for the removals contractor:

- Asset integrity scopes
- Wellbay clearance scopes
- Pigging and Flushing
- Global isolations scope
- Engineering down and clean of the topsides systems
- Aids to Navigation (AtoN)
- Rig interface support
- Deck strengthening
- Laser scanning survey of DP3

A number of additional scopes were added to the contracted scope of work:

Relocation and removal of NUI Crane Boom(s) –Support to Spirit Energy and their contractor in relocating the NUI cranes during intervention visits. Subsequent removal of the Crane Booms was also requested of PD&MS.

Global Structural Analysis – Review of the Staad global integrity model for the primary structure and analysis of the load conditions that could be seen by the structure during the Execute phase. These developed into the review and analysis of the DP3&4 finite element models under load cases throughout the lifecycle of the project, including the P&A campaign by others.

Support to Bains subsea flushing – The flushing of the pipeline between the Bains subsea well and Central complex was executed from a DSV as part of the wider field decommissioning programme. PD&MS were requested to support with onshore discipline engineering and Technical Safety support, followed up by offshore support during the flushing campaign.

The restricted access to the NUI worksites, restricted by Civil Aviation Authority permission to land, combined with unpredictable weather and the necessity to perform mandatory asset maintenance routines has proven challenging. However, the project teams' willingness to interact with the asset team has allowed for an integrated approach and work scopes are now well progressed.

Spirit Energy

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European Gas Turbine Decommissioning – North Morecambe Terminal

DURATION 12 months

SCOPE OVERVIEW

PD&MS undertook the Engineering Down and Cleaning (EDC) of the European Gas Turbines EGT Z-8430A & Z-8430B units previously used to power North Morecambe Terminal, isolating and air gapping the units and bringing them to a suitable and safe condition for demolition

KEY ACHIEVEMENTS

Successful isolation, separation and removal from live plant within a working Gas Terminal.

One Team approach– Spirit Energy / PD&MS / Thomsons of Prudhoe

Project delivered on time and within budget

100% Safety Record, Incident free project

86% recycling rate achieved (large amount of concrete/gravel to dispose of)

SCOPE

The EGT Decommissioning Project encompassed all phases from front-end engineering and detailed design through to procurement, construction, demolition, and the removal of the European Gas Turbines (EGT) units Z-8430A and Z-8430B. This work was undertaken to support Spirit Energy's safety culture and to eliminate ongoing maintenance requirements associated with the redundant units.

The scope of work successfully delivered included:

- Engineering Down & Cleaning activities
- Air-gapping of utility pipework systems
- Identification and Abandonment of redundant cables
- Complete software modifications:
  - Emergency Shut Down (ESD)
  - Fire & Gas (F&G)
  - Distributed Control System (DCS)
- Coordination of handover procedures from Spirit Operations to the Demolition Contractor, in full compliance with CDM (Construction Design and Management) regulations.
- Complete demolition of the EGT units down to slab level, with the site finished in accordance with client specifications.

The successful delivery of the scope has enabled PD&MS to continue to support Spirit Energy with the decommissioning of larger plant within North Morecambe Terminal.

Spirit Energy

Putting our energy into safe, predictable & sustainable solutions

Decommissioning Redundant Systems

DURATION 12 months

SCOPE OVERVIEW

PD&MS were engaged by Spirit Energy to decommission redundant systems across the Morecambe Hub during 2024–2025, aligning with Spirit's Redundant Equipment Standard. PD&MS delivered survey, engineering, workpack, and site execution services.

KEY ACHIEVEMENTS

- 6 offshore systems subsequently surveyed, engineered and decommissioned at site
- Tested Spirit's Redundant Equipment Standard in preparation for large decommissioning work in 2025, including obtaining deviations to standard
- 10,000 construction hours delivered LTI free, including during TAR
- Safety hazards removed including PDOs, dead legs, stored energy, and loss of containment risk
- Engineering-lite approach developed as the project progressed – use of site construction team to survey and propose pragmatic solutions & win asset support
- Maintenance Burden Removal – approx 780 hours annually

SCOPE

The objective was to bring redundant systems into compliance with Spirit Energy's Redundant Equipment Standard.

Various systems, requiring multidiscipline input, were decommissioned these included:

- Waste Heat Recovery Package
- Corrosion Inhibitor
- Condensate Coalescer B
- Gas Scrubber A
- MEG Tanks
- Bains Relief

We provided a fully integrated service, including:

- Survey
- Engineering,
- Workpack development
- Procurement,
- Management of key vendors (C&I vendor) and
- Execution of the decommissioning scope.

All activities were carried out by our personnel and aligned with Spirit Energy's Management of Change (MOC) process.

DRS scope included:

- Deviation approved to leave the existing air gap (a spade) in place on the 2nd Stage Suction Scrubbers, which, although technically non-compliant with the standard, is on a 24" line at height and provides support for the remaining pipework.
- Removing as much equipment as possible, efficiently, with minimum construction hours
- Air-gapping redundant systems from live plant
- Removal of dead-legs and destruct of redundant pipework
- Abandonment of electrical equipment and instrumentation
- Deletion of associated inputs / outputs and software logic
- Rectification of previously identified procedural non-compliances
- Addressing physical anomalies – such as potential dropped objects

Moray East Offshore

Putting our energy into safe, predictable & sustainable solutions

Offshore Met Mast Decommissioning Project - Firth North Sea

DURATION 6 months

SCOPE OVERVIEW

PD&MS' team of GWO multi-skilled rope access personnel conducted a DROPS sweep before boarding the mast. They then performed Visual and NDT inspections on designated areas, including the mast, lattice structure, and monopile. The team assisted in safely removing items identified in previous inspections and initiated decommissioning activities following a defined destruct methodology and partial reverse engineering.

KEY ACHIEVEMENTS

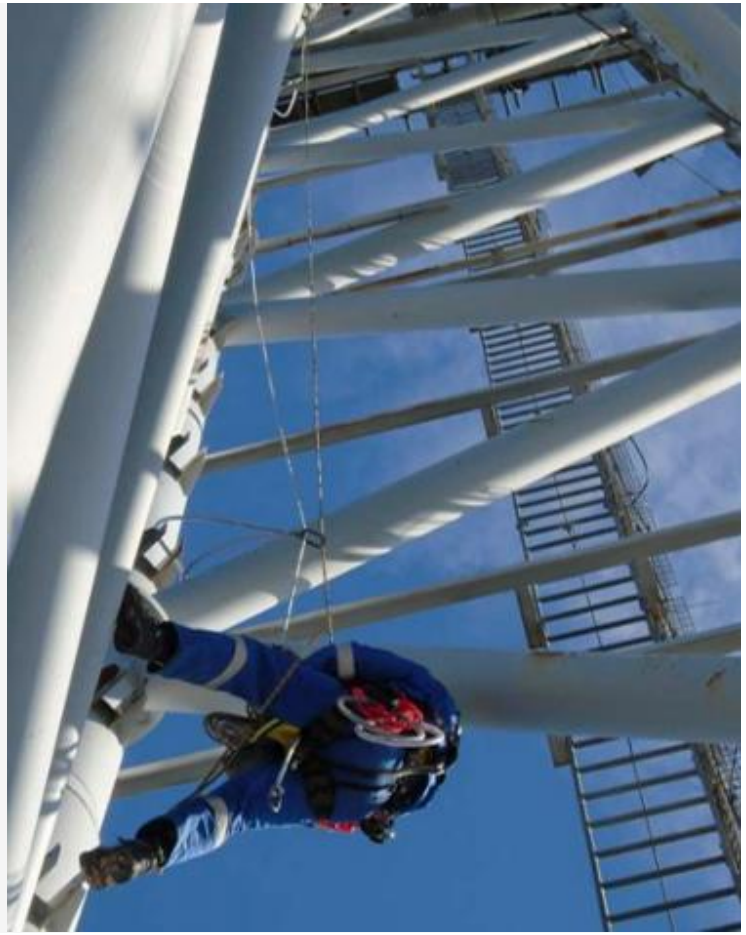
Carl Galfskiy Project Manager Moray East Offshore Windfarm said

"The PDMS support for the offshore met mast was first class, as was the onshore mast decom project. With the guys on the mast working in Sub-zero conditions and tight time schedules they gave 110 %.

Most importantly, the effective planning and documentation development from PDMS and the PDMS professionalism (both on and offshore) culminated in the safe execution of what was a very difficult WAH project. Congratulations to all and well done"

SCOPE

- Delivered a variety of GWO multi-skilled rope access personnel.
- GWO qualified rope access inspection team carried out a DROPS sweep prior to boarding the mast.
- Once onboard, the team successfully undertook Visual and NDT inspections at designated areas of the mast, lattice structure, and monopile (confined space).
- Asset decluttering; assisted in the safe removal of items located at height identified from the previous inspection campaign.
- Decommissioning; commenced decommissioning activities in line with the defined destruct methodology and in part reverse engineering.



Allseas Ninian North

Topside Preparation for Decommissioning

DURATION

26 weeks

SCOPE OVERVIEW

Onshore engineering, design, procurement and construction in connection with topsides preparation for decommissioning

KEY ACHIEVEMENTS

- Delivered against an aggressive fast track schedule
- Engineering and Construction delivered in parallel
- Close collaboration between onshore / offshore
- In excess of 15,000 Direct manhours liquidated with no LTIs
- Full engagement in asset safety culture
- Recognition received by Operator and Client of a job well done, supporting and overall project saving of 40%

PROJECT DETAILS

The Ninian North Platform forms part of a three platform facility in conjunction with Ninian Central and Ninian South located in the East Shetland Basin. It is a combined drilling, production and accommodation platform.

The Ninian North Topsides Removal Preparation Project consisted of completing all necessary modifications to facilitate the topsides removal by the Allseas Pioneering Spirit Heavy Lift Vessel. This fast tracked project was kicked off in November 2017 with engineering and implementation completed by April 2018, capturing the following activities:

- Lift Point Installation – Installation of 16 no Allseas supplied bearing blocks onto the jacket legs to engage with Pioneering Spirit horseshoes to perform lift
- K1 Leg Brace – additional scope identified late in project. Required to strengthen lift point due to concerns over identified lift weight
- Removal of Obstructions for single lift - Destruct and removal of escape to sea ladders and platforms adjacent to jacket legs to accommodate Pioneering Spirit
- Equipment Sea Fastening – securing loose items to prevent the potential of dropped objects during lift
- Derrick Sea fastening – securing derrick in position prior to topsides lift
- Cutting and Sea fastening of Pipework – a significant number of risers, j-tubes, conductor guide sleeves and caissons, some of which required the removal of internals prior to air-gapping underdeck. Followed by partial removal again, as required to facilitate topsides lift.

Significant challenges were overcome to keep the project on schedule

- Offshore implementation was severely restricted by adverse weather from November 2017 through to January 2018
- Growth in scope as the client continued to mature their own design leading to additional scope and revisiting base scope
- Delivery of fabrications in a short time frame
- Issues that arise from dealing with an aging asset (i.e. asbestos)

Shell

Putting our energy into safe, predictable & sustainable solutions

Brent Alpha Decommissioning

DURATION 12 months

KEY ACHIEVEMENTS

Extensive below-deck rope access work scope

Installation and welding of twelve number bearing blocks with zero defects

Scope of work completed on schedule

PD&MS received excellent feedback from Shell representatives regarding its safety record, QHSE performance and offshore supervision throughout the project.

SCOPE

Management and delivery of full appraise, define, execute, implementation, commissioning and close out of the MLXP Project.

THE SCOPES INCLUDED:

- Conductor cutting and removal
- Riser cutting and removal
- Installation of a temporary generator
- Modular Drilling Unit (MDU) installation
- Seawater and firewater caisson guide installation
- BA-BB power cable and umbilical removal
- BAR riser removal
- 20” gas riser removal
- 16” western leg riser removal
- 18” service water line removal
- NavAids installation

KEY ACHIEVEMENTS:

- Extensive below-deck rope access work scope
- Installation and welding of twelve number bearing blocks with zero defects
- Scope of work completed on schedule

Well Safe Solutions

Putting our energy into safe, predictable & sustainable solutions

Carbon Management and Reduction Plan

DURATION 6 months

KEY ACHIEVEMENTS

Identified 4,000 tonnes of CO2e savings, and a 20% reduction in NOx emissions Carbon tax savings worth £200k-£300k per year.

Provided business case for load reduction assessment, battery storage systems, electrical motor improvements and various heat recovery opportunities.

A range of recommendations for Well-Safe to better control and reduce scope 3 emissions, such as internal data gathering advances, and improvements to their supplier selection process.

Technical optioneering of items such as sustainable fuels and support vessel engine upgrades

Energy efficiency and onsite generation by photovoltaics assessed for onshore head office

SCOPE

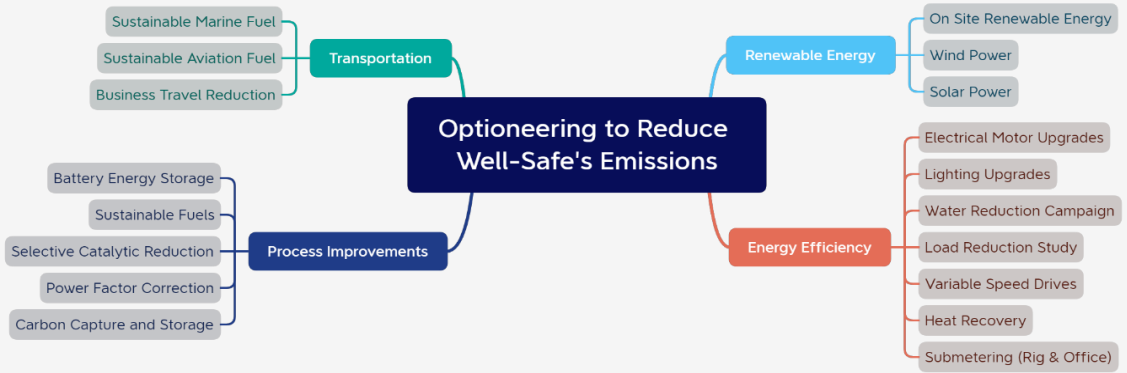
Synergie Environ conducted a comprehensive study to assess Well Safe's emission baseline, against which potential improvements could be compared. This included mandatory scope 1 and 2 emissions, plus scope 3 emissions associated with business travel, personnel transfer, and support vessels.

Potential opportunities were identified and evaluated to reduce the overall carbon footprint and optimise energy efficiency of all Well Safe assets, including the *Well Safe Guardian*, *Well Safe Protector*, and *Well Safe Defender* plugging and abandonment assets, as well as the company's Aberdeen headquarters.

A full site survey of the *Well Safe Defender* was conducted in port. A range of options for future improvements were then assessed and the most beneficial opportunities were presented as an action plan, with recommendations tailored for each asset.

ENVIRONMENTAL IMPACT:

The CMRP developed by Synergie Environ has allowed Well Safe Solutions to plan and prioritise their wider environmental, social and governance (ESG) strategy implementation, as part of their road map to enabling enhanced delivery of well plugging and abandonment for its clients.



Harbour Energy

Decommissioning platform Offshore – Flush Clean & Disconnect Pre-FEED

DURATION

52 weeks

SCOPE OVERVIEW

The primary objective of this project is to achieve unmanned lighthouse mode within 6-9 months post-COP through the flush, clean, and disconnect of topsides of Platform A.

KEY ACHIEVEMENTS

- Optimus in-house decommissioning specialists guided the project throughout both phases.
- Bespoke ranking: Options were ranked based on their impact on cost, schedule, safety, environment, technical robustness, external impacts and client impact. As different aspects were more impactful to the client, an agreed scoring weighting was set, and final and backup options were chosen based on this.

SCOPE

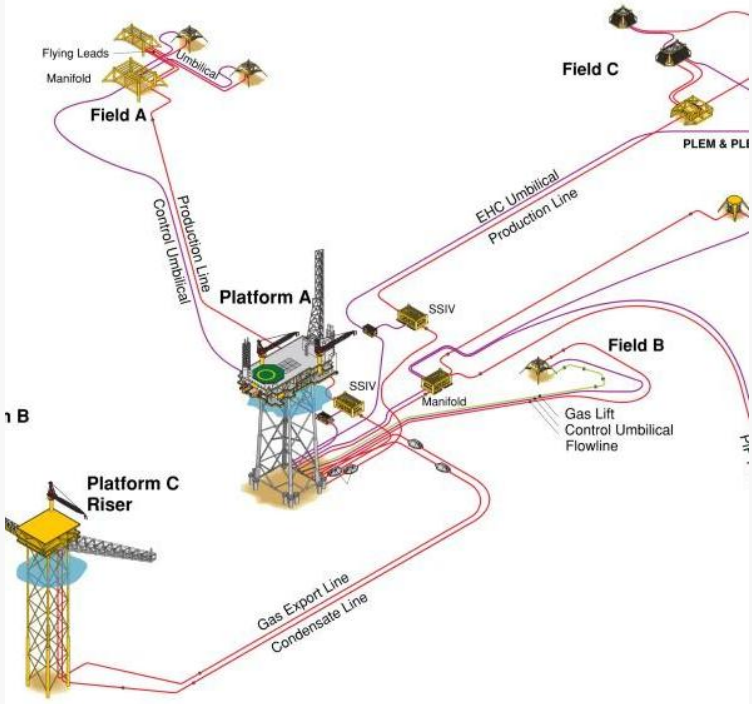
This project is a critical part of the broader decommissioning program and is aligned with the Cessation of Production (COP) for the platform. The primary objective is to achieve unmanned lighthouse mode within 6-9 months post-COP through the flush, clean, and disconnect of topsides of Platform A (pictured right). Additionally, associated in-field subsea pipelines from Field A and Field B, umbilicals, and export pipelines to Platform C were considered.

Field C (pictured right) infrastructure was also initially considered as part of the scope, however following further decisions by the client and the field owner and operator, decommissioning is to be executed by others.

The study involved two phases:

Phase 1: Options generation, assessment, and options ranking.

Phase 2: Further engineering of highest ranked options.



Harbour Energy

Decommissioning platform Offshore – Flush Clean & Disconnect Pre-FEED

SCOPE

Phase 1 Activities:

- Subsystem and Node Analysis: The platform's topsides and subsea systems were divided into nodes, each with a unique ID for targeted examination and assessment of flushing media and disposal routes.
- Framing and Options Workshops: OPAL's Process, Decision & Risk, and Technical Safety teams collaborated closely with the client through multiple workshops. Over 250 options were identified during these sessions and a scoring matrix for evaluating flushing/cleaning options was developed.
- Flow Assurance Study: PIPESIM simulations were conducted to determine optimal flushing rates, volumes, and pump specifications, ensuring technical feasibility.
- Marking Up P&IDs: P&IDs were marked up to outline preferred option routes and isolation points, with further refinements planned for Phase 2.

Phase 2 Activities:

- Engineering of Preferred and Backup Options: OPAL's in-house Process team, flushing and decommissioning experts refined the engineering of selected options, focusing on practical aspects like cleaning pigs, vendor expectations, and past project experiences.
- Further P&ID Development: P&IDs were updated to reflect final operational sequences and required equipment, as well as suggested sample and tie-in points, isolations and system boundaries.
- Calculations: Final flushing volumes were calculated for effective cleaning of topsides and subsea systems. Separator capacity checks-investigate if platform separators could be utilised for the receipt of flushing fluids.
- Development of Flushing Sequences: Detailed sequences for flushing and decommissioning were established, including chemical dosing and contingency planning.
- Temporary Equipment and Infrastructure Evaluation: A list of temporary equipment was created, alongside an assessment of existing pumps and skids, to maximize their use and minimize the need for additional tools and systems. Other discipline involvement was required to evaluate deck layout and weight management for pumping/cleaning spread as well as power usage.
- Topsides and Subsea Flushing Philosophies and Final Report: Detailing flushing mechanism, all findings and recommendations. As well as work to be carried out Pre/Post COP. The Final study report also highlighted highest ranked risks that are being taken for the next phase of the project.

Added Value

- Options Review and Cost Estimate: Over 250 options initially identified in Phase 1 were thoroughly reviewed and narrowed down to less than 50 cost-saving opportunities which allowed for informed decision-making in the Phase 2 report. The report also provided the client with a Class 4 cost estimate for the chosen flush, clean and disconnect options.
- Manpower and Regulatory Requirements: Manpower estimates, flushing volumes and residual oil concentration analyses were provided for regulatory approval and planning.
- Environmental and Interface Assessment: CO2 emissions and platform interface evaluations were conducted to minimize environmental impact and operational risks.

Thank you for your time

We welcome any questions

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