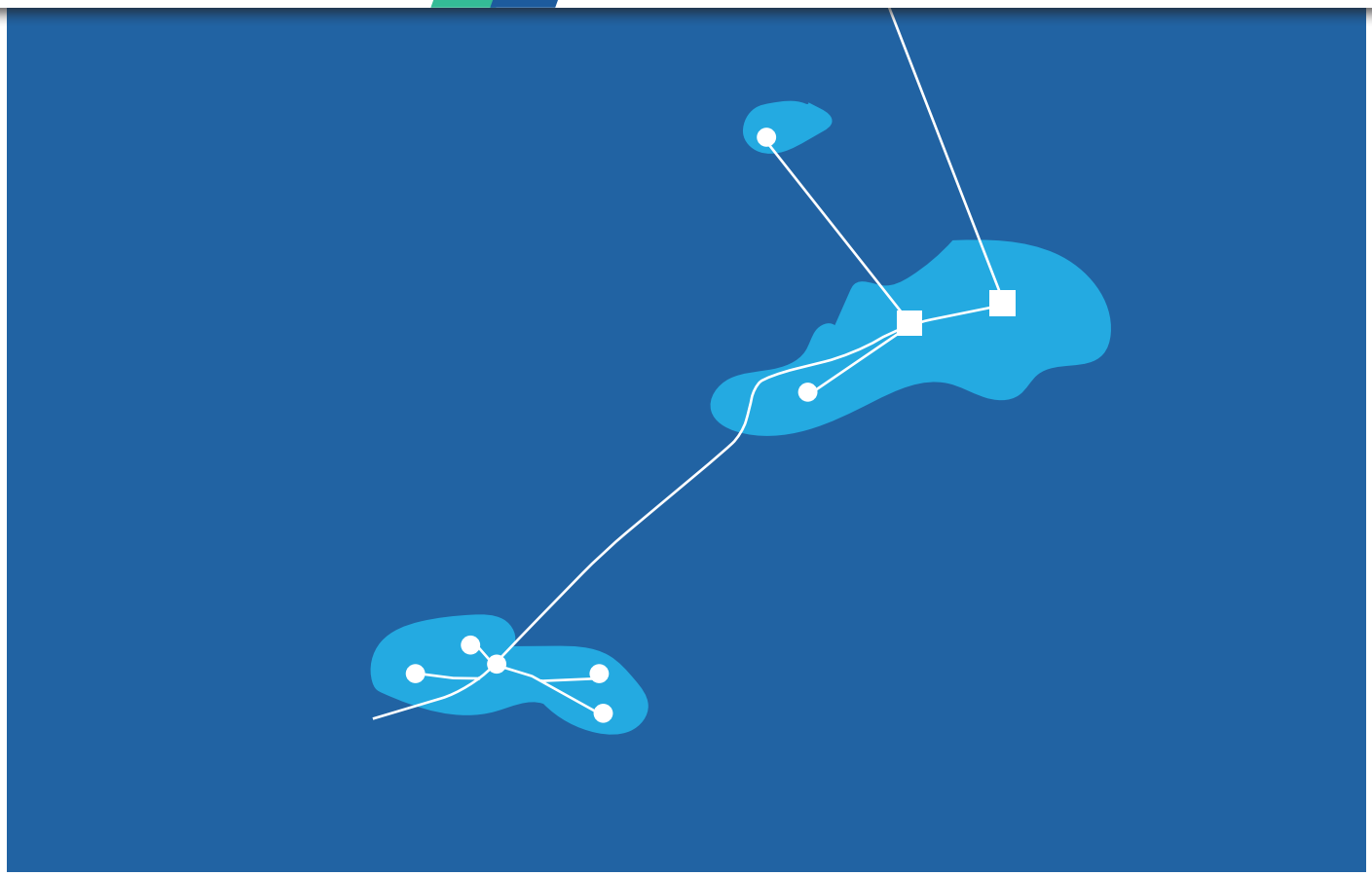
Kinsale Area Decommissioning Project

Decommissioning Plan - Kinsale Head Petroleum Lease (OPL 1) - Consent Application No.1



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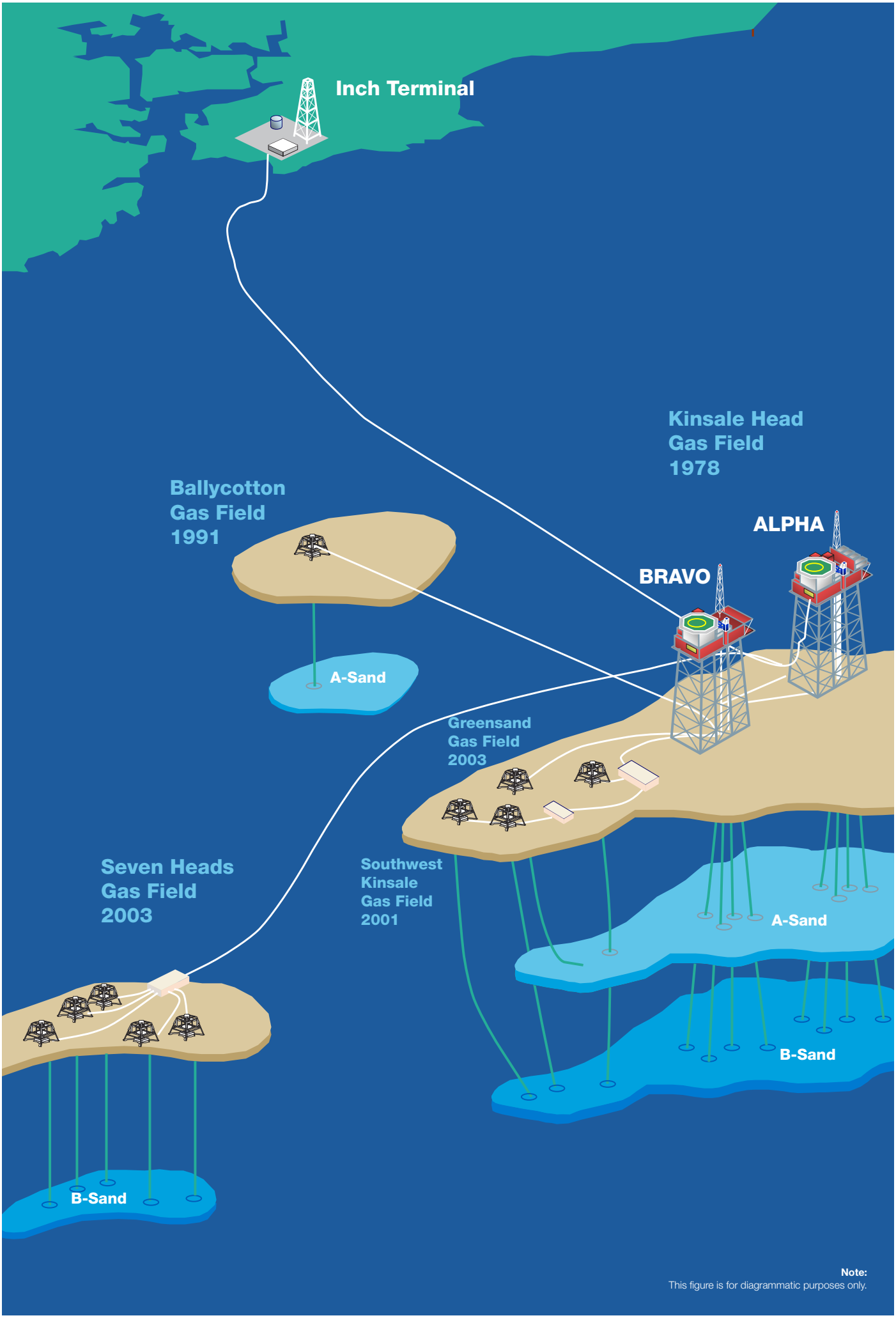
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KINSALE ENERGY

Kinsale Area Decommissioning Project

Glossary of Terms

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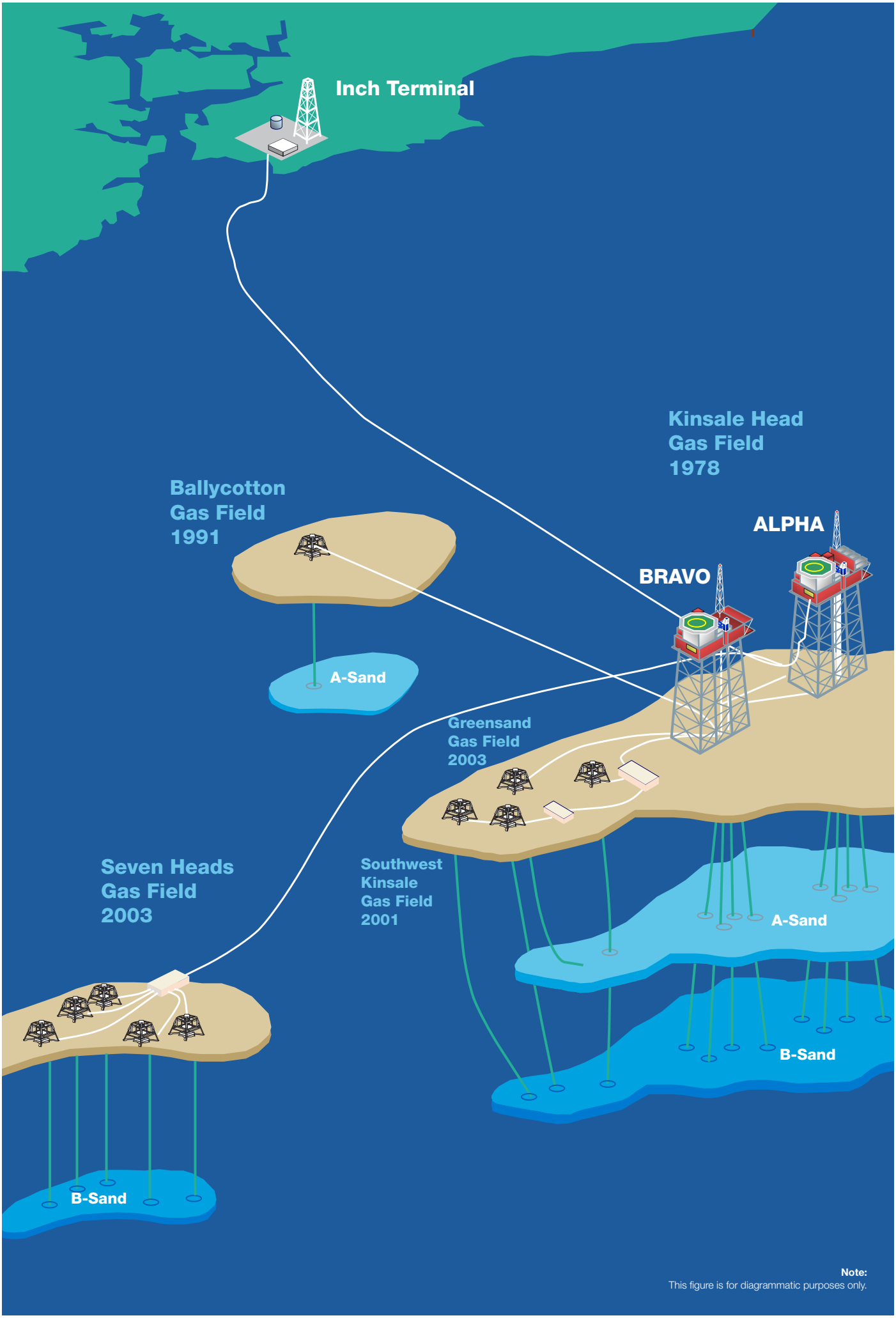
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Glossary of Terms

Term	Explanation
AA	Appropriate Assessment
ALARP	As Low As Reasonably Practicable
AHV	Anchor Handling Vessel
Buoyancy tank	An enclosed air-filled section of a boat or ship designed to keep it afloat and prevent it from sinking
Bunkering	Supply of fuel for use by ships in a seaport
CA	Comparative Assessment
Cantilever	Structural element anchored at only one end to a support from which it is protruding
CCS	Carbon Capture and Storage
Concrete mattress	A series of concrete blocks usually connected by polypropylene ropes resembling a rectangular mattress, used for the weighting and/or protection of seabed structures including pipelines
CoP	Cessation of Production: the stage at which, after all economic development opportunities have been pursued, hydrocarbon production ceases.
CRU	Commission for Regulation of Utilities
CSV	Construction Support Vessel
DAA	Dublin Airport Authority
DCCAE	Department of Communications, Climate Action and Environment
DCENR	Department of Communications, Energy and Natural Resources
DECC	Department of Energy & Climate Change (UK)
Decommissioning	Planned shut-down or removal of a building, equipment, plant, offshore installation etc., from operation or usage offshore.
Diesel	A low viscosity distillate fuel
DSV	Diving Support Vessel
DTTAS	Department of Transport, Tourism and Sport
ER	Environmental Report
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
FEAS	Marine Institute's Fisheries Ecosystems Advisory Services
Flowline	Pipeline carrying unprocessed oil/gas within the oil or gas field area
Freespan	A free span on a pipeline is where the seabed sediments have been eroded, or scoured away leaving a void under the pipeline so that the pipeline is no longer supported on the seabed
Grout	Particularly fluid form of concrete used to fill gaps, generally a mixture of water, cement, and sand
HES	Health, Environment and Safety
HFCs	Hydrofluorocarbons
HWM	High Water Mark

Term	Explanation
HLV	Heavy-Lift Vessel
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organisation
In situ	In the original place.
Interconnector	Structure which enables energy to flow between networks, refers to international connections between electricity and natural gas networks
IOSEA	Irish Offshore Strategic Environmental Assessment
IWDG	Irish Whale and Dolphin Group
Jacket	The structure comprising the “legs” of the offshore platform connected together by horizontal and diagonal trusses and usually made of welded tubular steel. The jacket is typically secured to the seabed by piles
KA	Kinsale Alpha platform
KADP	Kinsale Area Decommissioning Project
KB	Kinsale Bravo platform
KPIs	Key Performance Indicators
km	Kilometre: 1,000m, equivalent to 0.54 nautical miles
LPP	Layer Polypropylene
Manifold	A pipe or chamber branching into several openings.
MARPOL	The International Convention for the Prevention of Pollution from Ships
MRCC	Marine Rescue Co-ordination Centres
Natura 2000 sites	Natura 2000 is a network of nature protection areas in the territory of the European Union. It is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated respectively under the Habitats Directive and Birds Directive.
NIS	Natura Impact Statement
nm	Nautical Mile (1852m = 1 minute of latitude = 1/60 degree of latitude)
NPWS	National Parks and Wildlife Service
NUI	Normally Unmanned Installation: an installation with minimal facilities which is not permanently crewed and is controlled from a remote location (e.g. other platform or shore)
OGUK	Oil & Gas UK
OSPAR	Oslo and Paris Convention
P&A	Plug and Abandon (wells)
PAD	Petroleum Affairs Division of the Department of Communications, Climate Action and Environment
PEP	Project Execution Plan
PETRONAS	Petroliam Nasional Berhad
PLEM	Pipeline End Manifold
PSV	Platform Supply Vessel
PUDAC	Permit to Use or Discharge Added Chemicals

Term	Explanation
ROV	Remotely Operated Vehicle: a small, unmanned submersible used for inspection and the carrying out of some activities such as valve manipulation
SAC	Special Area of Conservation: established under the Habitats Directive
Seafastening	Action of fastening/securing cargoes on ship with the aim of preventing them from movement while the ship is in transit
Semi-submersible rig	A floating mobile drilling rig supported on a number of pontoons, and typically anchored to the seabed while on station
SFPA	Sea Fisheries Protection Authority
Shears	Cutting instrument in which two blades move past each other
SPA	Special Protection Area: established under the Birds Directive
Subsea manifold	Large metal piece of equipment made up of pipes and valves, designed to transfer oil or gas
SWK	South West Kinsale
TEG	Triethylene Glycol
Tie-backs	Link between a satellite field and an existing production facility
Topsides	The collective name for the many drilling, processing, accommodation and other modules which when connected together make up the upper section of the platform which rests on the jacket
Umbilical	Cable and/or hose which supplies required electrical power and chemicals for subsea well control
WDC	Western Drill Centre
Wet Gas	Any gas with a small amount of liquid present

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 1

Introduction

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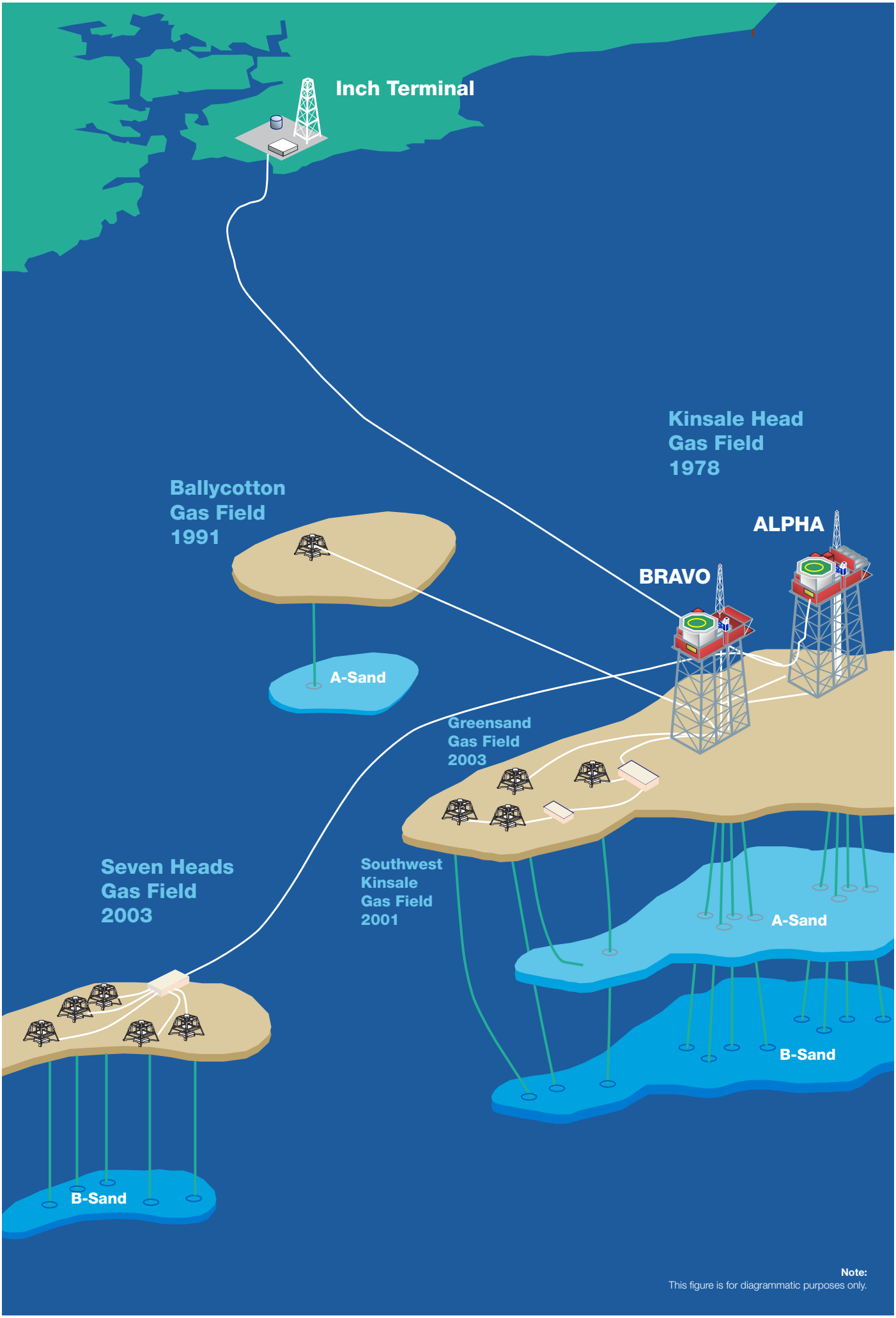
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1 Introduction

1.1 Introduction

PSE Kinsale Energy Limited (Kinsale Energy) is preparing for the decommissioning of the Kinsale Area gas fields and facilities, which are coming to the end of their productive life, having been in production since 1978. The Kinsale Area gas fields and facilities are made up of (1) the Kinsale Head gas fields and facilities and (2) the Seven Heads gas field and facilities. Together the decommissioning of the entirety of the Kinsale Area gas fields and facilities is collectively referred to as the Kinsale Area Decommissioning Project (KADP). The Kinsale Area gas fields and facilities are located in the Celtic Sea, between approximately 40 and 70km off the County Cork coast and onshore at Inch, Co. Cork (**Figure 1**).

The within application relates to the decommissioning of certain facilities associated with the Kinsale Head gas fields and facilities.

1.2 Consent Application No.1 – Kinsale Head

Pursuant to section 13 of the Petroleum and Other Minerals Development Act 1960 as amended (1960 Act), a petroleum lease was granted in respect of the Kinsale Head gas fields and facilities in May 1970 (Offshore Petroleum Lease No. 1 (**OPL-1**)). The Kinsale Head Plan of Development was submitted and agreed with the then Minister in respect of the Kinsale Head gas fields and facilities pursuant to the terms of the OPL-1.

1. Application for approval of an addendum to Kinsale Head Field Plan of Development under Section 13 of the 1960 Act

The Kinsale Head gas fields are coming to the end of their productive life and Kinsale Energy is applying to the Minister for Communications, Climate Action and the Environment (the "Minister") for approval for an addendum to the Kinsale Head Plan of Development for the decommissioning of certain facilities as set out in this document. Kinsale Energy has prepared this Decommissioning Plan – Kinsale Head Petroleum Lease (OPL 1) – Consent Application No.1 (the "**Decommissioning Plan**") which sets out the details for the decommissioning[1] of certain facilities in the Kinsale Head gas fields.

In accordance with section 13A of the 1960 Act, an Environmental Impact Assessment Report (EIAR) has been prepared to accompany this application. An Appropriate Assessment (AA) Screening Report has also been prepared to accompany this application.

2. Application for Consent under Section 5 of the Continental Shelf Act 1968 (as amended)

Pursuant to Section 5(2) of the Continental Shelf Act 1968, as amended, the consent of the Minister is also sought by Kinsale Energy to alter and remove certain facilities from the area designated pursuant to Article 2 of the Continental Shelf Designated Areas Order 1993 SI 92 of 1993.

1.2.1 KADP – Consent Application Process

A further consent application to decommission the remainder of the Kinsale Head gas fields and facilities will be submitted in due course as part of the overall KADP. In addition, consent applications seeking approval for the decommissioning of facilities in the Seven Heads gas field and facilities will be submitted in respect of the Seven Heads gas field and facilities. An application for consent to decommission certain facilities in the Seven

[1] Meaning the removal, part removal or leaving in place of any installation or facility.

Heads gas field will be submitted in or around the same time as this Decommissioning Plan. The facilities to be decommissioned under the various consent applications for the KADP are set out below:

Kinsale Head Petroleum Lease (OPL 1) – Consent Application No.1 (this Decommissioning Plan)

- The Kinsale Alpha (KA) and Kinsale Bravo (KB) topsides,
- All infield subsea infrastructure associated with the OPL-1, including the subsea manifold, PLEMs, valve skid, intermediary tee skid, pipeline/umbilical terminations and associated protection materials.
- All OPL-1 subsea and platform wells including the wellhead structures, as detailed in **Table 1**.
- 3 previously abandoned exploration wells

Table 1: Well Details

Well no.	Location/associated development	Present status
Platform Wells		
49/16-A1	Kinsale Head (KA)	Gas Producer
49/16-A3	Kinsale Head (KA)	Gas Producer
49/16-A4	Kinsale Head (KA)	Gas Producer
49/16-A5	Kinsale Head (KA)	Gas Producer
49/16-A6	Kinsale Head (KA)	Gas Producer
49/16-A7	Kinsale Head (KA)	Gas Producer
49/16-A9	Kinsale Head (KA)	Gas Producer
49/16-B1	Kinsale Head (KB)	Gas Producer
49/16-B3	Kinsale Head (KB)	Gas Producer
49/16-B4	Kinsale Head (KB)	Gas Producer
49/16-B5	Kinsale Head (KB)	Gas Producer
49/16-B6	Kinsale Head (KB)	Gas Producer
49/16-B7	Kinsale Head (KB)	Gas Producer
49/16-B9	Kinsale Head (KB)	Gas Producer, shut in.
Subsea Wells		
48/20-2	Ballycotton	Gas Producer; shut-in
48/25-3	SW Kinsale	Gas Producer
48/25-4	SW Kinsale (WDC)	Gas Producer
48/25-5	SW Kinsale (WDC)	Gas Producer
48/25-6	Greensand	Gas Producer
Previously abandoned exploration wells		
48/25-2	Kinsale Head	Plugged and abandoned.
49/16-2	Kinsale Head	Plugged and abandoned.
48/20-1A	Kinsale Head	Plugged and abandoned.

Seven Heads Petroleum Lease – Consent Application No.1

- Five Seven Heads Field subsea development wells including the wellhead structures, i.e.:
    - Well 48/24 - 5A
    - Well 48/24 - 6
    - Well 48/24 – 7A
    - Well 48/24 - 8
    - Well 48/24 – 9
- One previously abandoned exploration well:
    - Well 48/23-3 (Wellhead Removal only)
- All infield subsea infrastructure associated with the Seven Heads gas field, including the subsea manifold, pipeline/umbilical terminations and associated protection materials.

Kinsale Head Petroleum Lease (OPL 1) – Consent Application No.2

- The Kinsale Alpha (KA) and Kinsale Bravo (KB) jackets
- All infield pipelines and umbilicals associated with the Kinsale Head gas fields
- The 24” export pipeline (offshore and onshore section)

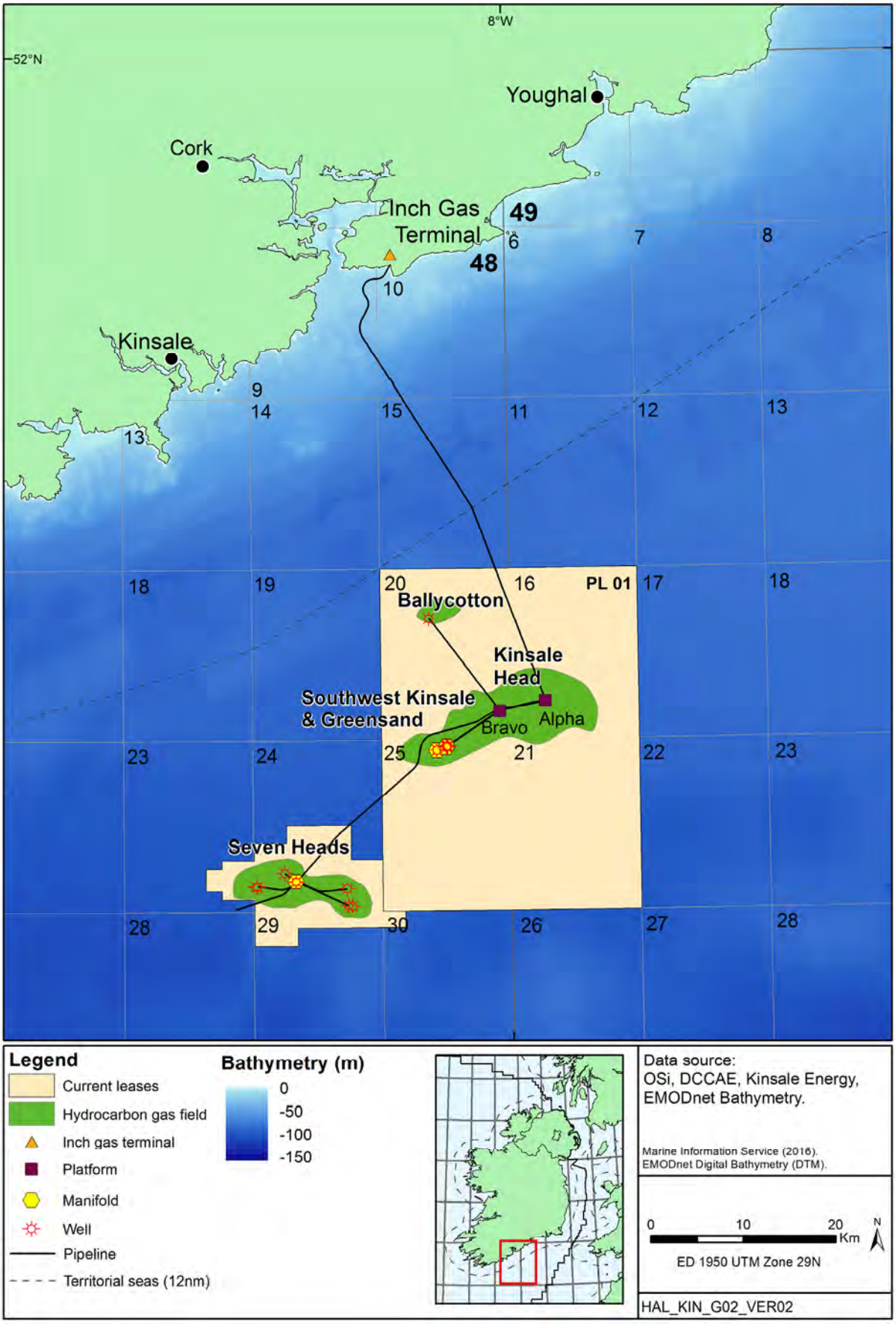
Seven Heads Petroleum Lease – Consent Application No.2

- All infield pipelines and umbilicals associated with the Seven Heads gas field
- The 18” Seven Heads export pipeline and umbilical

The EIAR and AA Screening Report enclosed with this application have, however, been prepared to assess the environmental impacts of the entirety of the proposed decommissioning of the Kinsale Area gas fields and facilities including the decommissioning of the Inch onshore gas terminal.

The decommissioning work to be undertaken under this Decommissioning Plan will be undertaken in conjunction with decommissioning of other facilities on the adjacent Seven Heads field as part of an integrated program for all of the offshore facilities in the Kinsale Area gas fields and facilities area.

Figure 1: Location of the Kinsale Area fields and facilities



1.3 OPL-1

The Offshore Petroleum Lease No. 1 (OPL-1), details are summarised in **Table 2** below.

Table 2: Lease details

Lease	Commencement Date	Block No.	Area (km^2)	Participants (* = Operator)	% Interest
Offshore Petroleum Lease No. 1:	7 May 1970	48/20, 48/25, 49/16 & 49/21	1,003.03	*PSE Kinsale Energy Limited	100%

1.4 Overview of Facilities

The Kinsale Area contains several natural gas fields as shown in **Figure 2** below.

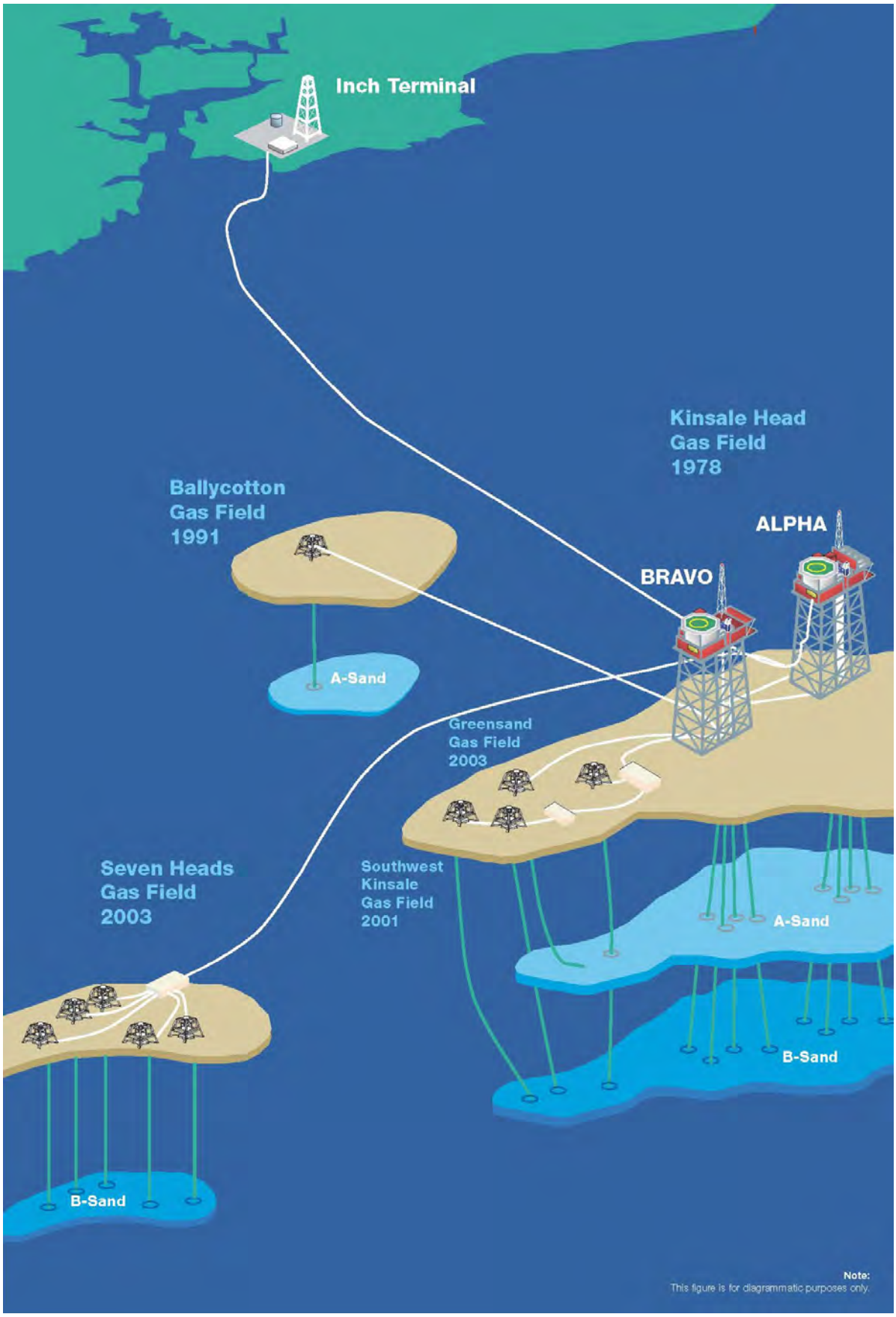
The Kinsale Head, Southwest Kinsale, Greensand and Ballycotton gas fields are all located within Kinsale Head Petroleum Lease (OPL-1).

The adjacent gas field, Seven Heads gas field is located within Seven Heads Petroleum Lease.

The Kinsale Head facilities were installed between 1977 and 2003 with gas production commencing in 1978 and seasonal gas storage operations taking place between 2001 and 2017. The fields are coming to the end of their productive life and are expected to become uneconomic around 2020/2021.

See **Section 2** for details of the facilities.

Figure 2: Kinsale Area Facilities



1.5 Overview of Statutory Background

Certain international conventions and European and national legislation form the legal framework in which the decommissioning of offshore facilities, such as the KADP, must be undertaken. The most relevant conventions and legislation which impose a requirement for a consent for decommissioning relevant to this Decommissioning Plan and/or an obligation or restriction on decommissioning options are outlined below.

Details of all relevant International Conventions and European Legislation is included in **Appendix A1**.

1.5.1 Relevant National Legislation

Petroleum and Other Minerals Development Act, 1960, as amended

The Petroleum and Other Minerals Development Act, no 7 of 1960, as amended, (the "1960 Act") regulates offshore petroleum (including gas) exploration and production activities in Ireland. The Minister for Communications, Climate Action and Environment is the competent authority under the 1960 Act.

A petroleum lease is the authorisation, issued under Section 13 of the1960 Act, to allow the exploitation of a commercial petroleum discovery. The Kinsale Area facilities operate under two petroleum leases.

- Petroleum Lease No 1 (OPL 1 - 1970): Kinsale Head, Southwest Kinsale and Ballycotton Gas Fields, and
- Seven Heads Petroleum Lease (2002): Seven Heads Gas Field.

Following consultation with the Department of Communications, Climate Action and Environment, Kinsale Energy is submitting an EIAR to accompany the Decommissioning Plan pursuant to section 13A of the 1960 Act.

This EIAR assesses the impact of the entirety of the KADP and includes an assessment of all likely significant environmental impacts for decommissioning of the onshore gas terminal at Inch.

Continental Shelf Act

The Continental Shelf Act 1968, as amended (the "1968 Act") is the legislative regime applying to the Continental Shelf. The Continental Shelf is the area of sea and seabed between the 12 nautical mile limit and the 200 nautical mile limit.

Section 5 (2) of the 1968 Act imposes the requirement to obtain consent from the Minister to "*construct, alter or improve any structure or works in or remove any object or material from a designated area."*

The Continental Shelf Designated Areas Order 1993 SI 92 of 1993, Section 2, defines the "*designated area*" as the "*The area set out in paragraph 1 of the Schedule to this Order is hereby designated as an area within which the rights of the State outside the territorial seas over the sea bed and subsoil for the purpose of exploring such sea bed and subsoil and exploiting their natural resources are exercisable*." The Schedule provides a list of points specified by latitude and longitude to define the Continental Shelf.

Apart from the Inch Terminal and the parts of the export pipeline on land and on the Foreshore, the Kinsale Area gas fields and facilities are located on the Continental Shelf. The KADP will involve altering or removing objects or material from the seabed of the Continental Shelf. Consequently, consent under the 1968 Act will be required for the KADP.

The 1992 Licensing Terms

The 1992 Licensing Terms address the surrender of a petroleum lease in Section 33[2]. The abandonment of wells is covered in Section 57[3]. The abandonment of fixed facilities is covered in Section 71[4].

[2] DMNR (1992), page 28.
[3] DMNR (1992), page 41.

Under Section 28 of the 1992 Licensing Terms, Kinsale Energy must apply for the Minister for approval under Section 13/13A of the 1960 Act, as amended, for any plan of development.

The requirements of the 1992 Licensing Terms, as they relate to the decommissioning of facilities, can be summarised as follows:

- The Minister must be given at least 12 months' notice of the intention to determine the petroleum leases,
- An abandonment plan must be submitted in writing to the Minister,
- The plan must contain information on the abandonment and removal of any facilities,
- The plan must contain technical, economic and financial information, as will enable the Minister to evaluate the proposals fully and to assess their economic, social, safety and environmental implications.

These requirements, where appropriate, have been addressed in the within this Decommissioning Plan.

1.5.2 OSPAR Convention (1992)

The OSPAR Convention, OSPAR (1992), is the current legislative instrument regulating international cooperation on environmental protection in the North-East Atlantic.
It replaces the 1972 Oslo Convention on dumping waste at sea and the 1974 Paris Convention on land-based sources of marine pollution. Ireland has ratified the OSPAR Convention.

The OSPAR Convention applies to the internal waters and the territorial seas of the Contracting Parties, the sea beyond and adjacent to the territorial sea under the jurisdiction of the coastal State to the extent recognised by international law, and to the high seas, including the bed of all those waters and its subsoil, situated within specified limits of the Atlantic and Arctic Oceans.

Decisions 98/3, OSPAR (1998), amended the OSPAR Convention in 1998. Under paragraph 2 of the Decisions 98/3, the dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area.

1.5.3 Summary of key relevant National and European legislation

Table 3 below summarises the relevant key National, European and International legislation and the associated consents and requirements for decommissioning of infrastructure relevant to the KADP.

Table 3: Key National, European and International legislation relevant to the KADP

Relevant Legislation	Consents / requirements for Decommissioning
Section 13 of The Petroleum & Other Minerals Development Act 1960	Application will be made pursuant to Section 13 for decommissioning.
Section 5 of The Continental Shelf Act 1968	Application for the consent to "alter/construct/improve" works or structure in 'or remove any object or material from' the Continental Shelf designated area.
Part IIA of the Electricity Regulation Act 1999	Section 13D renders the decommissioning of petroleum infrastructure and the abandoning of any well as a "designated petroleum activity". Section 13E requires a safety permit to carry out designated petroleum activity.
Section 3 of the Petroleum	KEL's current safety permit does not include decommissioning.

[4] DMNR (1992), page 38.

Relevant Legislation	Consents / requirements for Decommissioning
(Exploration and Extraction) Safety Act 2010	Approval of Safety Case required for decommissioning.
Energy (Miscellaneous Provisions) Act 1995, Section 17	Minister shall not approve abandonment without consent of Minister of Marine.
European Communities (Birds and Natural Habitats) Regulations 2011 – 2015	Screening to be undertaken by competent authority to determine whether actions will affect European site. Screening appraisal report to be submitted to competent authority. Transposes Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC) into Irish Law.
Environmental Impact Assessment Directive 2011/92/EU amended by Directive 2014/52/EU	EIA Screening, and EIA if required, to be undertaken by competent authority.
Decisions 98/3, OSPAR (1998)	The dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area.

1.6 Methodology

This Decommissioning Plan has been prepared in line with the legislation as detailed in **Section 1.5,** and in absence of specific decommissioning guidance documents in Ireland, taking cognisance of the following guidance documents for decommissioning projects:

[1] PAD (2004). Rules and Procedures Manual for Offshore Petroleum Production Operations Rev 4.4, 2004, Petroleum Affairs Division, Department of Communications, Marine and Natural Resources, Dublin.

[2] PAD (2011), Rules and Procedures Manual for Offshore Petroleum Exploration and Appraisal, 2011, Petroleum Affairs Division, Department of Communications, Marine and Natural Resources, Dublin

[3] DMNR (1992). Licensing Terms for Offshore Oil And Gas Exploration, Development & Production 1992, Department of the Marine and Natural Resources, Dublin

[4] EPA (2014). Guidance on assessing and costing environmental liabilities 2014.

[5] CER (2017). Safety Case Requirements. Part of the Safety Case Guidelines under the Petroleum Safety Framework. CER/16/024.

[6] DECC (2011). Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998. Version 6, 134pp.

[7] OGUK (2013). Long-term degradation of Offshore Structures and Pipelines Decommissioned and left *in situ*. Commissioned by Oil & Gas UK, 41pp.

1.7 Overview of Decommissioning Plan

This Decommissioning Plan details a range of selected options for the decommissioning of certain facilities within the Kinsale Head gas fields.

A number of options were initially considered to carry out the decommissioning of the facilities, including the consideration of alternative uses of the facilities (refer to **Section 3.3**), as well as a number of different options to carry out the physical decommissioning (refer to **Section 4**).

No feasible alternative uses for the facilities have been identified and the different methods to carry out the decommissioning have been assessed, which resulted in the identification of a number of preferred methods for the decommissioning of each facility.

The broad scope of work involved in decommissioning the facilities (covered by this Decommissioning Plan) is outlined below:

- The removal of the platform topsides (including any special wastes which require further onshore treatment), and the recycling/disposal of topside modules, in accordance with OSPAR decision 98/3.
- The plug and abandonment of platform and subsea wells, and the removal to shore for recycling/disposal of any surface component of these wells, including wellhead structures and platform conductors.
- The removal of subsea manifolds, valves & tees, and well head protection structures to shore for recycling remove. In addition short pipeline spools/umbilical jumpers will be removed to facilitate the removal of the structures. All associated pipeline protection will also be removed.
- The recovery of large items of debris and post-decommissioning survey to confirm success of the decommissioning operations

Table 4 sets out a summary of the proposed decommissioning options considered, as well as any alternative option which was considered to be technically feasible.

As there is no alternative but to remove the topsides, plug and abandon the wells and to remove the subsea structures; the only alternative options available are those associated with the different methods of removing the facilities.

In addition to the above there will be a requirement to remove short pipeline spools/umbilical jumpers to facilitate the removal of the structures. All associated spool/jumper protection will also be removed.

Table 4: Summary of proposed decommissioning options for the OPL-1 Facilities (Consent Application No.1)

Facility	Decommissioning Option Assessed	Method	Vessel Type[5]	Alternative Options Initially Considered
Topsides	Full Removal	Single Lift	Specialist HLV	Partial removal, leave *in situ* or toppling were initially considered as alternatives for the topsides and jackets but due to legal obligations for the complete removal of structures (OSPAR convention – refer to **Section 1.5**) these were not considered further.
			Conventional HLV	
		Piece-medium (reverse installation)	Conventional HLV	

[5] Note that only the principal vessels involved are listed in this table, however other vessels, for example construction support (CSV), anchor handling (AHV), platform support (PSV) and guard vessels will also be used and are listed in full in relevant sections below.

Facility	Decommissioning Option Assessed	Method	Vessel Type[5]	Alternative Options Initially Considered
Subsea Wells	Plug and Abandon well.	"Thru-tubing"	a.Semi-submersible rig b.Light well intervention vessel / semi-submersible rig	No technically recognised alternative
Platform Wells	Plug and Abandon well.	"Thru-tubing"	Rig -less technique from topsides	No technically recognised alternative
Subsea structures	Full Removal	Single Lift	DSV	Leave *in situ* were initially considered as an alternative for the subsea structures but due to legal obligations for the complete removal of structures (OSPAR convention – refer to **Section 1.5**) this was not considered further.

1.8 Objective of Decommissioning project

The objective of this Decommissioning Plan is to ensure that the decommissioning is undertaken in a safe, environmentally friendly and cost efficient manner. The Kinsale Area Decommissioning Project will ensure minimum impact on the environmental and residual risks and liabilities will be managed appropriately. The Decommissioning Plan will ensure that the necessary measures are identified, managed and monitored to lead to successful decommissioning.

The criteria which define the successful decommissioning of the facilities are as follows:

- Compliance with the Minister's consent requirements.
- All decommissioning activities completed safely and with due regard to the environment.
- All activities undertaken in compliance with laws and regulations.
- All works carried out in accordance with good oilfield practice.
- All facilities will be safely decommissioned using standard procedures and appropriately licensed contractors.
- All disposal of wastes, materials and substances will comply with regulatory requirements.
- All records relating to decommissioning and the disposal or recycling of wastes, materials and substances retained throughout the closure process and made available for inspection thereafter through the DCCAE.
- Hazards and environmental risks addressed and the Minister satisfied that the Kinsale Area has minimum impact on the Environment.
- An Environmental Management System in place and actively implemented during the decommissioning period.
- Residual (post-decommissioning) risks reduced to a satisfactory level.
- Appropriate funds in place to cover the costs.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 2

Facilities Description

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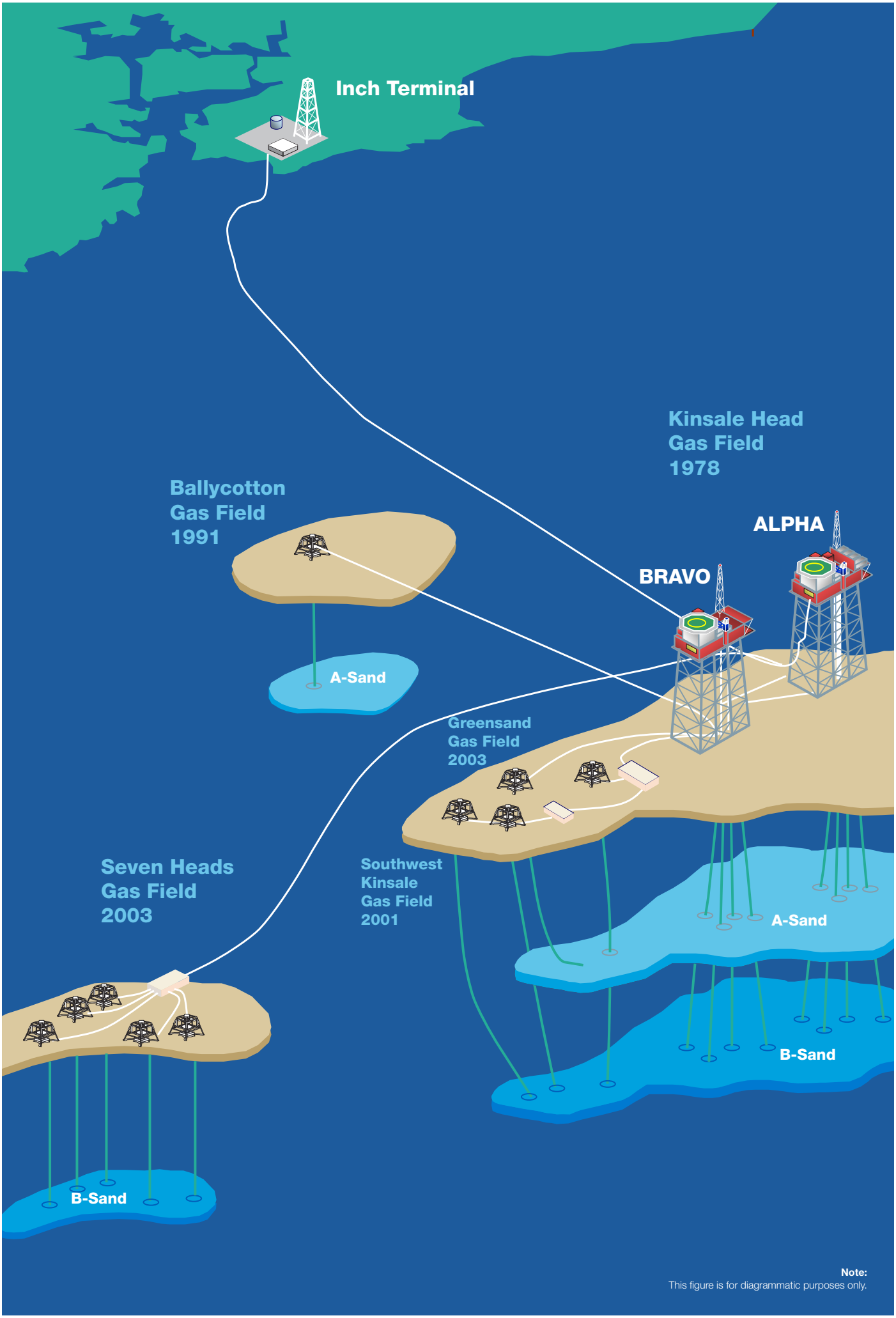
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2 Facilities Description

2.1 History of Operations

The Kinsale Head Gas Field was discovered in 1971 and was brought on-stream in 1978 under a Plan of Development approved by the then Dept. of Industry and Commerce. The Kinsale Head field was developed with two fixed steel platforms (Kinsale Alpha and Kinsale Bravo) with gas exported by pipeline from Kinsale Alpha to the onshore Inch Terminal. The discovery of the field was the basis for the development of the natural gas industry in Ireland and Kinsale Head was Ireland's only source of gas until the installation of an interconnector pipeline from Scotland in 1993.

Following the Kinsale Head discovery, there was extensive exploration of the Celtic Sea with ~90 wells drilled, the last was the Midleton well in Block 49/11 drilled by Kinsale Energy in 2015. However, despite the intensive exploration effort, no other large fields have been discovered, although a number of smaller gas fields have been commercially exploited as subsea tie-backs to Kinsale Head, including the Seven Heads field, which was the last development in the area.

The development of the smaller gas fields, which would not have been economic on a stand-alone basis, and technical modifications to the Kinsale Head facilities (e.g. installation of compression), have prolonged the life of the main field which has allowed continued production from satellite fields, even at very low flowrates. This has effectively extended the economic life of the satellite fields beyond a level that would be sustainable on a stand-alone basis.

The Kinsale Area fields, infrastructure and production status are summarised in **Table 5,** for information.

Table 5: Summary of Development History for the Kinsale Area Fields

Lease	Field	No. of Wells	Facilities	Date/First Production	Status (2017)
OPL-01	Kinsale Head	14	Kinsale Alpha (Manned Platform with production, drilling & accommodation) 7 x Platform Wells	1978	Producing
			Compression added	1992	
			Kinsale Bravo (Manned Platform with production, drilling & accommodation) 7 x Platform Wells	1979	Producing (1 Well Shut-In)
			Compression added	1993	
			Converted to Normally Unmanned Installation	2001	
	Ballycotton	1	1 x Subsea Well	1991	Shut-In
	Southwest Kinsale *	3	3 x Subsea Wells	1999 – 2001	Producing
	Greensand	1	1 x Subsea Well	2003	Producing
Seven Heads	Seven Heads	5	1 x Subsea Manifold 5 x Subsea Wells	2003	Producing (1 Well Shut-In))

The Seven Heads field was developed by a group led by Ramco Energy in 2003; Ramco's interest (86.5%) was subsequently acquired by Marathon in 2006 and is now operated by PSE Seven Heads Limited, a subsidiary of PSE Kinsale Energy Limited. A separate Decommissioning Plan is being submitted for the Seven Heads facilities.

The Kinsale Head reservoirs do not produce sand, and the water associated with the gas is "water of saturation" and is fresh water. Although the Kinsale Head field has no condensate associated with it, the Seven Heads field, which is tied back to Kinsale Alpha, produces very small, non-commercial amounts of light condensate which is extracted on the Kinsale Alpha platform and sent to shore in tote-tanks, with no associated discharges.

No solid sample taken from the Kinsale Area platforms or associated wells, has ever been classed as positive for low specific activity (LSA) or Naturally Occurring Radioactive Material (NORM). This demonstrates that there is no LSA or NORM associated with the Kinsale Area platforms.

There are no well cutting piles associated with any of the drilling locations in the Kinsale Head area. This was confirmed by the 2017 seabed survey.

Oil-Based Muds were only used in the drilling of one of the Kinsale Area wells, the Greensand well 48/25-6; however all cuttings from this well were collected and shipped ashore, so there were no associated overboard discharges.

2.2 Inventory of Facilities

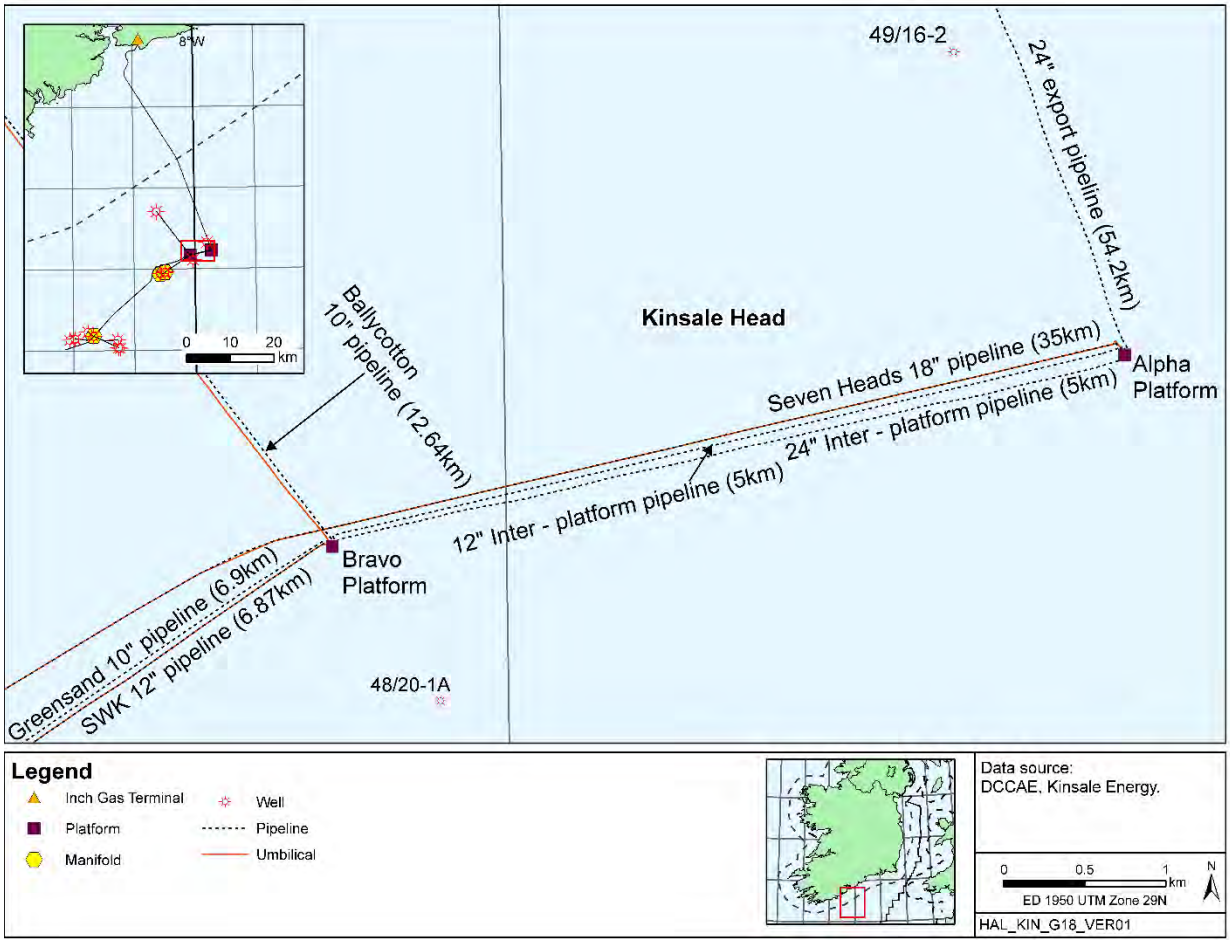
The facilities to be decommissioned, relevant to this Decommissioning Plan, are illustrated (**Figures 3 to 9**) and summarised (**Table 6, 7 and 8**) in the following sections.

This Decommissioning Plan is only for the KA and KB topsides, the 14 platform wells, 5 subsea development wells and associated wellhead structures and manifolds, and removal of wellheads on three previously abandoned exploration wells. Any spool pieces and protection material which need to be removed to allow the decommissioning of the wells and manifold are also included in this plan.

Well completion diagrams and layout drawings of all facilities within OPL-1 are included in **Appendix A2 and A3**.

2.2.1 Kinsale Head Development

Figure 3: Overview of the Kinsale Head Facilities



Kinsale Alpha Topsides

The Kinsale Alpha (KA) topside was installed in 1977. It incorporated drilling, production and accommodation facilities (**Figure 4**). The topsides are supported by an eight-leg piled steel jacket with a total weight of ca. 8,100 tonnes. The topside is an integrated deck module support frame of some 4,700 tonnes, which were installed in seven sections. Maximum accommodation is 43 persons, with present routine manning levels around 15-20 persons. The platform has 9 well slots, of which 7 have been used. The drilling facilities were installed as an integrated package which was removed following completion of the KA wells and transferred to Kinsale Bravo (KB). Subsequent modifications have included cantilever additions in 1991-1992 (the Eastern Compression Cantilever), 2001 (the Injection Compression Cantilever) and 2003 (the Seven Heads Cantilever). Processing of gas for all of the fields in the Kinsale Area is undertaken at KA.

There is an exclusion zone (ref S.I. No. 285/1977), for other sea users, bounded by a line which is 500 metres at all points from a straight line joining the KA and KB platforms. This results in an elongated 500 metre exclusion zone around the KA, KB platforms and the entire stretch between them.

Figure 4: Kinsale Alpha

Kinsale Bravo Topsides

The KB topsides (**Figure 5**) was installed in 1977 and was originally almost identical to KA. An eight-leg piled steel jacket with a total weight in air of some 7,600 tonnes supports the topsides which consist of an integrated deck module support frame of about 3,700 tonnes, which was installed in seven sections. The platform has 9 well slots, of which 7 have been used. The wells were completed using the drilling package transferred from KA, which was subsequently removed. Production from KB, which includes produced gas from the Kinsale Head, SW Kinsale, Greensand and Ballycotton fields, is routed to KA for processing and export. Accommodation on KB was originally for 46 persons but it was converted to a Normally Unmanned Installation (NUI) in 2001, with emergency accommodation for 9 persons. The compression modules and control room which were added in 1993 have been removed.

As noted above there is an elongated 500 metre exclusion zone around the KB platform and the entire stretch between the KA and KB platforms.

Figure 5: Kinsale Bravo

2.2.2 Ballycotton, Southwest Kinsale (Including Western Drill Centre) and Greensand Subsea Developments

Ballycotton, Southwest Kinsale and Greensands are subsea developments which were tied back to KA and KB platforms via subsea pipelines, see **Figures 6 and 7**.

The facilities include subsea x-mas trees over each well (see **Figure 8**), 4 steel well head protection structures over the South West Kinsale and Greensand wells (see **Figure 9**), the Southwest Kinsale Valve Skid and intermediate tee skid and 2 PLEMs (Pipeline End Manifold) associated with Greensands, see **Figure 9**.

See **Figure 10** for a typical pre and post well abandonment diagram.

Figure 6: Ballycotton Infrastructure

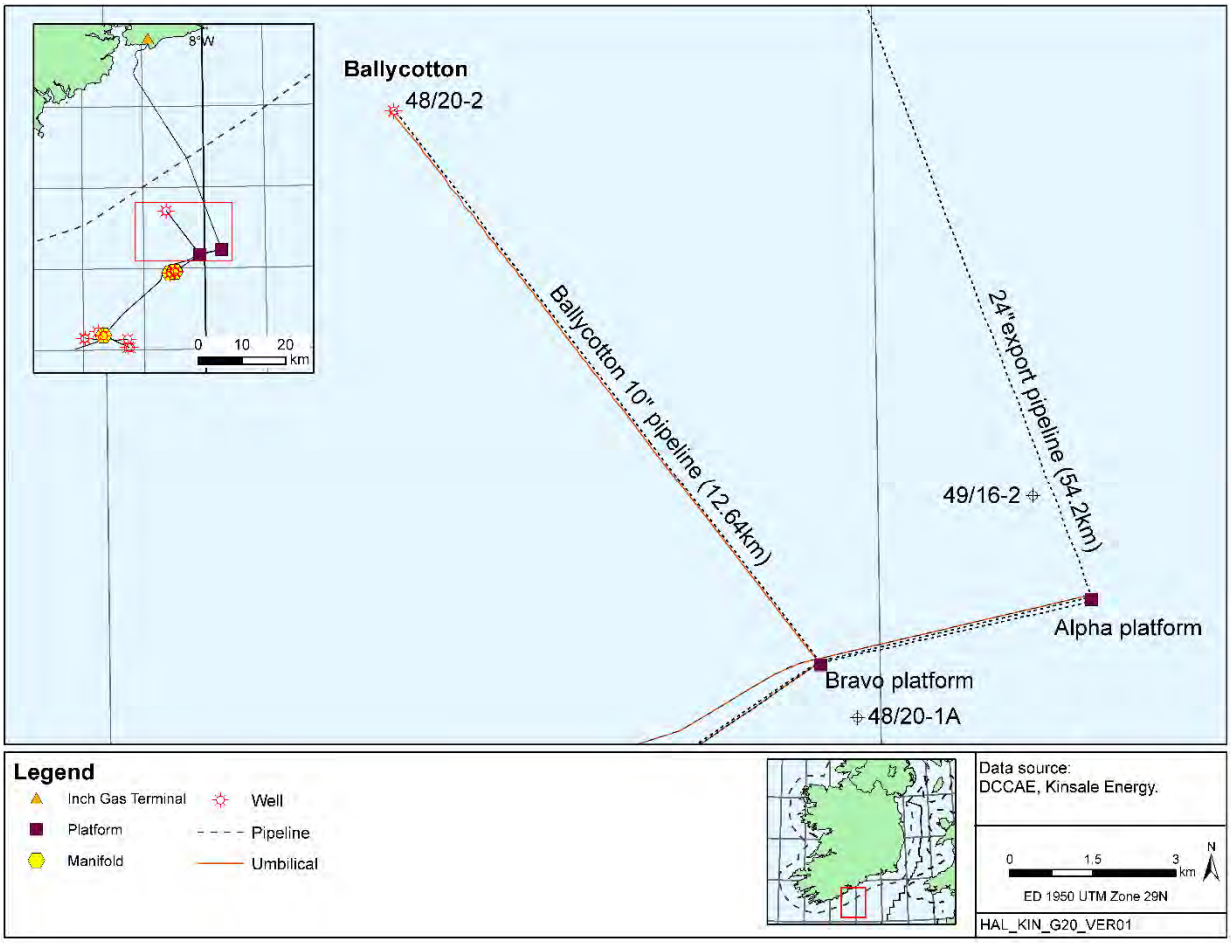


Figure 7: Southwest Kinsale and Greensand

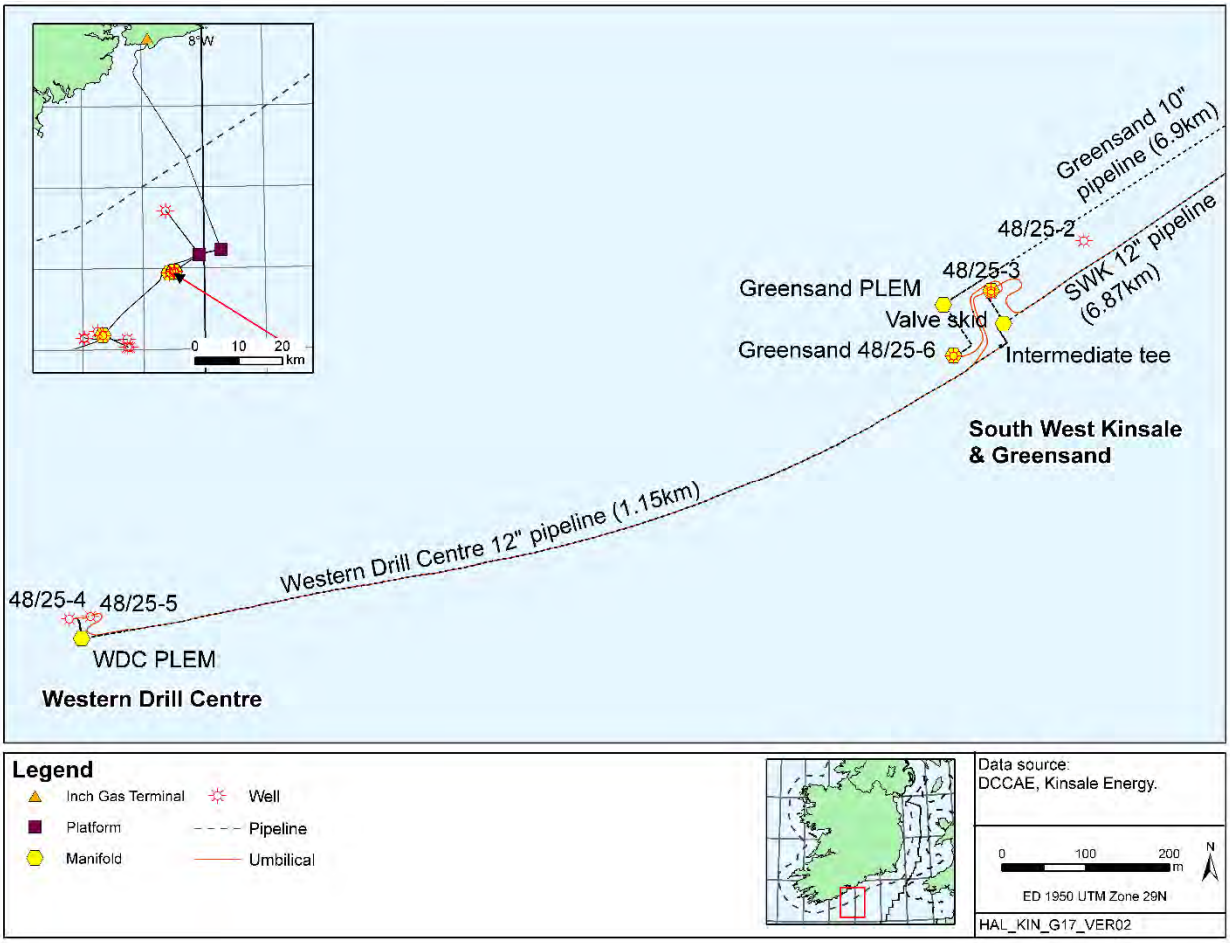


Figure 8: Subsea X-mas Tree

Figure 9: Subsea infrastructure – Wellhead Protection Structure and PLEM

a) Wellhead protection structure

b) Typical Kinsale Area PLEM

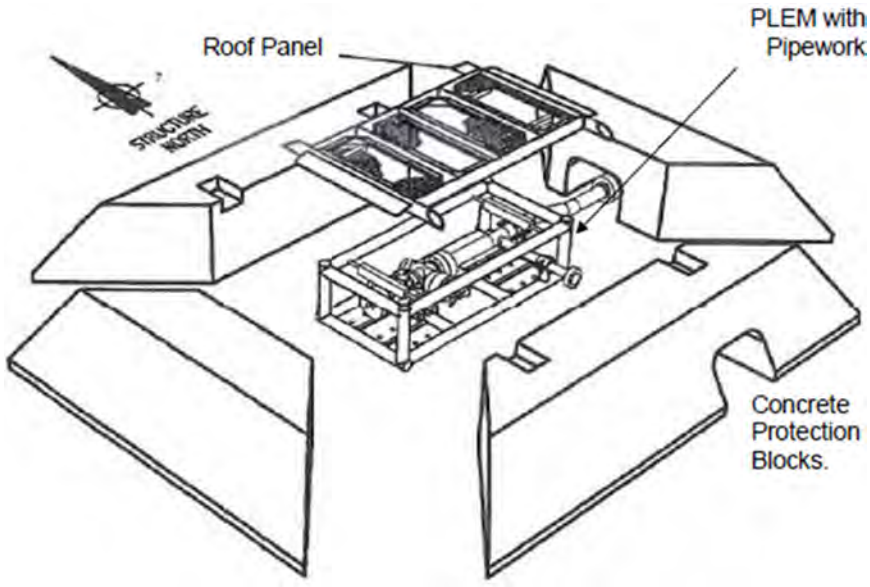
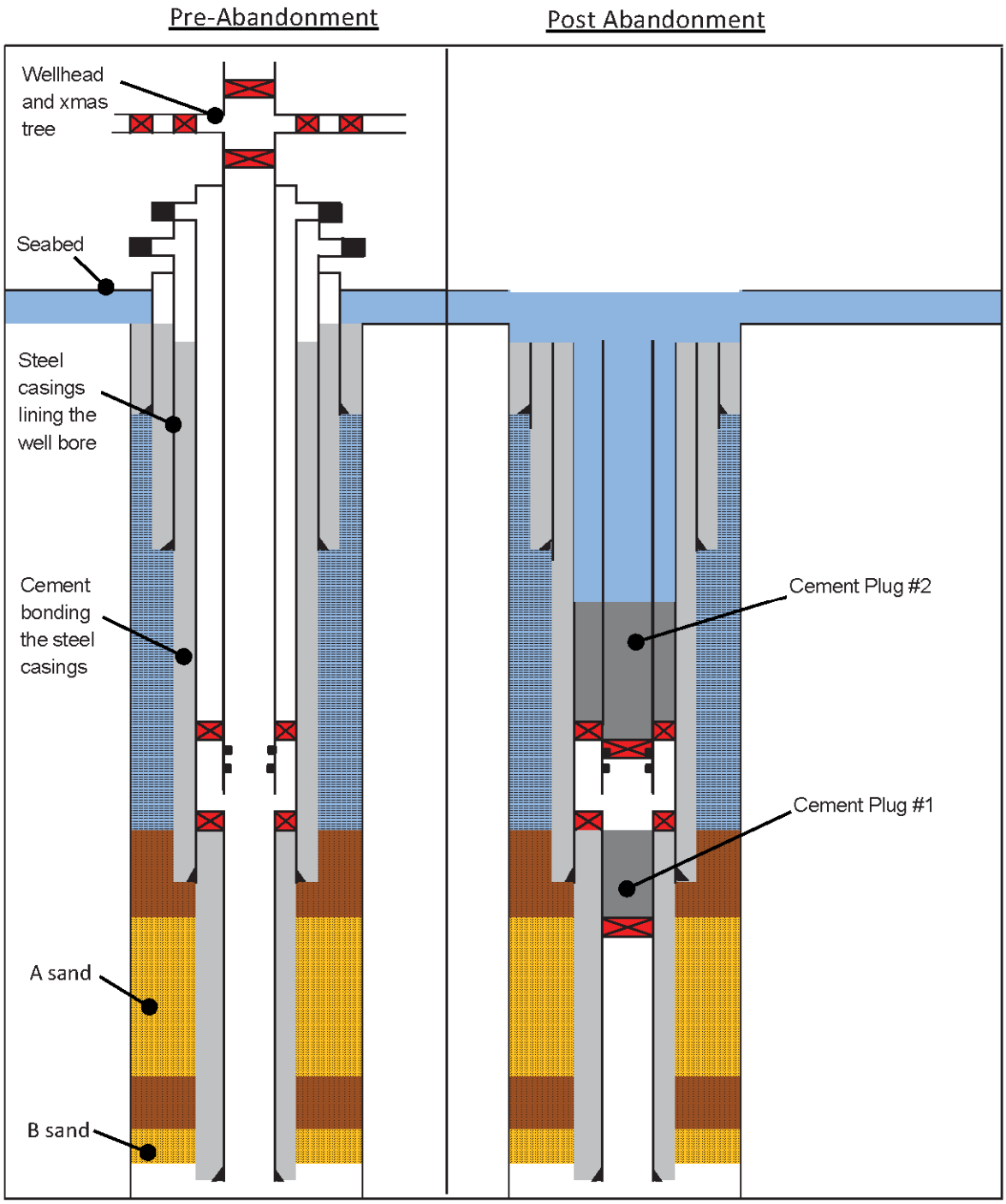


Figure 10: Typical Well Abandonment Diagram



2.2.3 Summary of OPL-1 Lease Facilities (Consent Application 1)

Tables 6, 7 and 8 summarise the OPL-1 facilities to be decommissioned as detailed herein.

Table 6: Topsides to be decommissioned

Structure	Description	Dimensions	Weight (in air)
Kinsale Alpha	Manned platform – Topsides & Jacket standing in approximately 89.9m of water. Topside details: • Cellar deck – equipment and wellheads • Main deck - accommodation on the west side with 43 beds • Vent stack on the north west side of the platform • Helideck on south east side of the platform	Topside: Main Deck area 165 x 83 ft (50.3 m x 25.3 m) Cellar Deck area 152 x 83 ft (46.3 m x 25.3 m)	Topside: 4,700Te approx.
Kinsale Bravo	Normally unmanned platform – Topsides & Jacket standing in approximately 90.5m of water KB Topside details: • Cellar Deck – Equipment and wellheads • Main Deck - Temporary accommodation only	Topside: Main Deck area 165 x 83 ft (50.3 m x 25.3 m) Cellar Deck area 152 x 83 ft (46.3 m x 25.3 m)	Topside: 3,700Te approx.

Table 7: Subsea infrastructure to be decommissioned

South West Kinsale Valve Skid	
Manifold contains a 12” branch to tie-in the SWK well spool and a further 12” connection to tie-in the pipeline.	
Main structure: Protection blocks:	4.4x2.2x1.2m, 10.5Te 10x2.4x1.8m, weight 65Te (x2) 7.7x 2.4x1.8m, weight 45Te (x2)
South West Kinsale Intermediary Tee	
Located approximately 30m from the SW Kinsale valve skid. Connects the Western Extension pipeline to the SW Kinsale infrastructure in a daisy chain configuration.	
Main structure: Protection blocks:	6.5x3.2x1.4m, 8.4Te 8.75x 2.4x1.765m, weight 43Te (x3) 8.75x2.4x1.765m, weight 47Te (x1)
Greensand Pipeline End Manifold (PLEM)	
Manifold includes a 6” branch to tie-in the Greensand well spool and a 10” pipeline end flange.	
Main structure: Protection blocks:	4.7x2.3x1.7m, 9.2Te 10x2.4x1.8m, weight 65Te (x2) 7.7x2.4x1.8m, weight 45Te (x2)

Western Drill Centre PLEM	
Manifold has two 6” branches to tie-in the well spools and a 12” branch to tie-in the extension pipeline spool	
Main structure: Protection blocks:	4.7x2.2x1.7m, 9.2Te 10x2.4x1.8m, weight 65Te (x2) 7.7x2.4x1.8m, weight 45Te (x2)
Well Head Protection Structures	
Four structures placed over SWK Wells 48/25-3, 4, 5 and Greensand Well 48/25-6. Steel tubular frame with concrete foundation blocks on two sides.	
Steel frame: Concrete blocks:	12x13m base, 4.3x4.35m top, 7m high, 25Te 133.3Te (6 concrete blocks of max individual weight 25Te)

Source: Genesis (2011), Xodus (2016c)

Table 8: OPL-1 wells to be decommissioned

Well no.	Drill date	Location/associated development	Present status
Platform Wells			
49/16-A1	08/07/1978	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-A3	24/12/1978	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-A4	08/08/1978	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-A5	09/04/1978	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-A6	15/11/1978	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-A7	19/01/1979	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-A9	22/05/1978	Kinsale Head (KA) – 51 22’ 14.953” N 07 56’ 41.770” W	Gas Producer
49/16-B1	07/06/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer
49/16-B3	26/09/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer
49/16-B4	27/06/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer
49/16-B5	13/05/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer
49/16-B6	30/06/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer
49/16-B7	18/07/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer
49/16-B9	10/08/1979	Kinsale Head (KB) – 51 21’ 38.913” N 08 00’ 55.769” W	Gas Producer, shut in.
Subsea Wells			
48/20-2	01/03/1989	Ballycotton – 51 27’ 07.000” N 08 07’ 28.407” W	Gas Producer; shut-in
48/25-3	30/07/1995	SW Kinsale – 51 19’ 39.505” N 08 05” 48.595’ W	Gas Producer
48/25-4	25/04/2001	SW Kinsale (WDC) – 51 19’ 25.326” N 08 06’ 51.374” W	Gas Producer
48/25-5	28/04/2001	SW Kinsale (WDC) – 51 19’ 25.424” N 08 06’ 50.169” W	Gas Producer
48/25-6	22/04/2003	Greensand – 51 19’ 35.118” N 08 05’ 56.726” W	Gas Producer

Well no.	Drill date	Location/associated development	Present status
Platform Wells			
Plugged and Abandoned Wells			
48/25-2	13/09/1971	Kinsale Head – 51 19’ 39.505” N 08 05’ 48.595 W	Plugged and abandoned.
49/16-2	04/07/1973	Kinsale Head – 51 23’ 16.180” N 07 57’ 34.859” W	Plugged and abandoned.
48/20-1A	06/05/1972	Kinsale Head – 51 21’ 07.772” N 08 00’ 21.764” W	Plugged and abandoned.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 3

Cessation of Production

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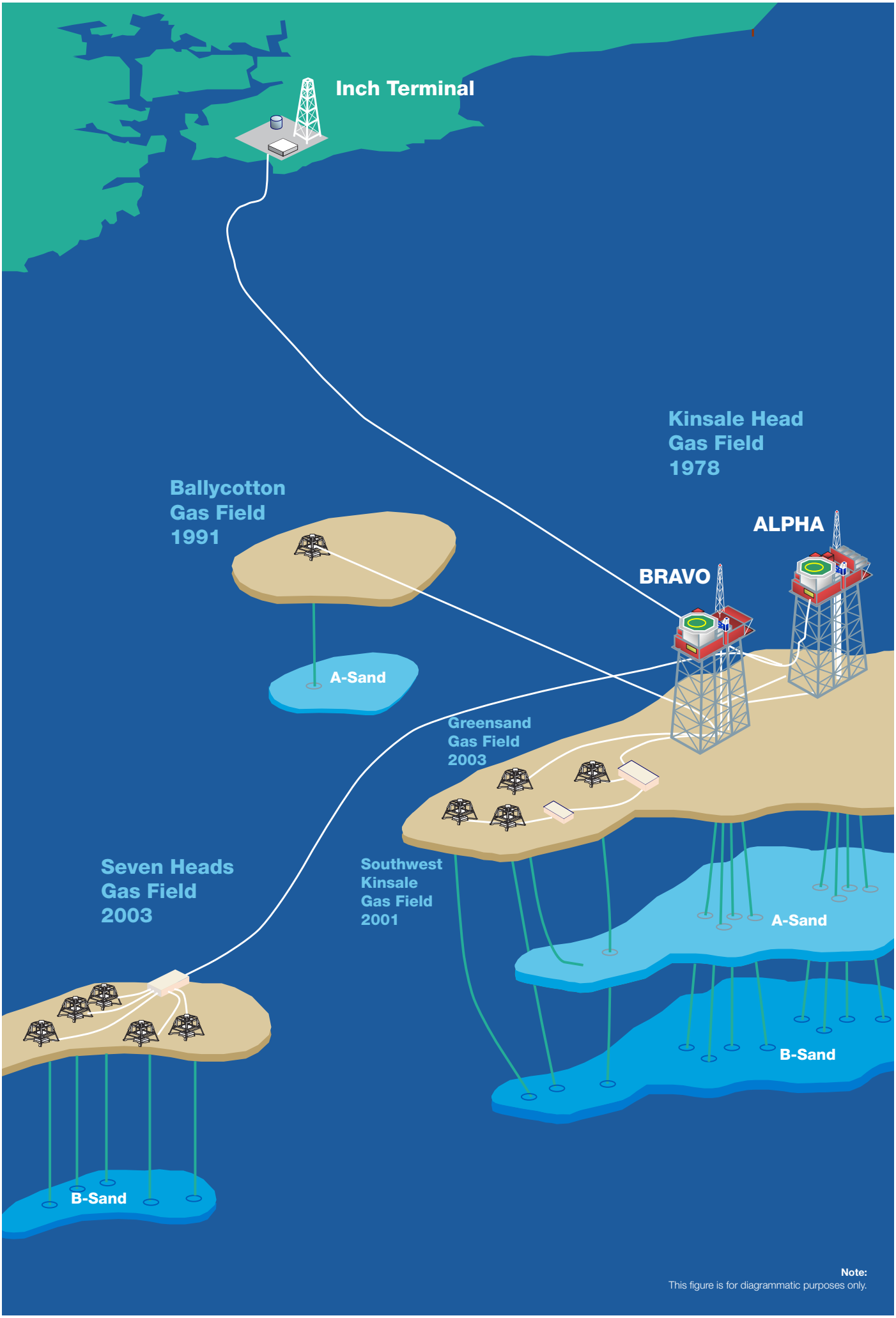
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This figure is for diagrammatic purposes only.

3 Cessation of Production

3.1 Reasoning

The Kinsale Area gas fields have been in production since 1978 (Kinsale Head) and it is expected that the economic extraction of gas will no longer be viable by approximately 2020/2021, whereupon the fields will be shut-in, the wells plugged and abandoned and the associated facilities decommissioned as described below.

The main producing reservoirs in the Greensand ("A" Sand) and Upper Wealden ("B" Sand) formations have been drawn down to extremely low pressures and shut in reservoir pressure will be less than 50 psia at cessation of production, such that there are no further cost-effective production technology modifications that can be applied. The offshore production wells are operating with bottom-hole pressures which are sub-hydrostatic and the Kinsale Alpha first-stage compressor suction pressure is less than 5psig, which is approaching a technical limit for offshore natural gas.

The original Kinsale Head Field Development Plan envisaged a 20 year production profile with a total ultimate recovery of 0.915 TCF corresponding to a Recovery Factor (RF) of ~70%.

The Kinsale Head gas field has produced ~1.76TCF of gas since start up to the end of 2016 and is ultimately expected to produce ~1.77TCF or approx. 96% of the estimated Gas in Place in the reservoir. High recovery factors are also expected for the other fields which have been developed via the Kinsale Head facilities.

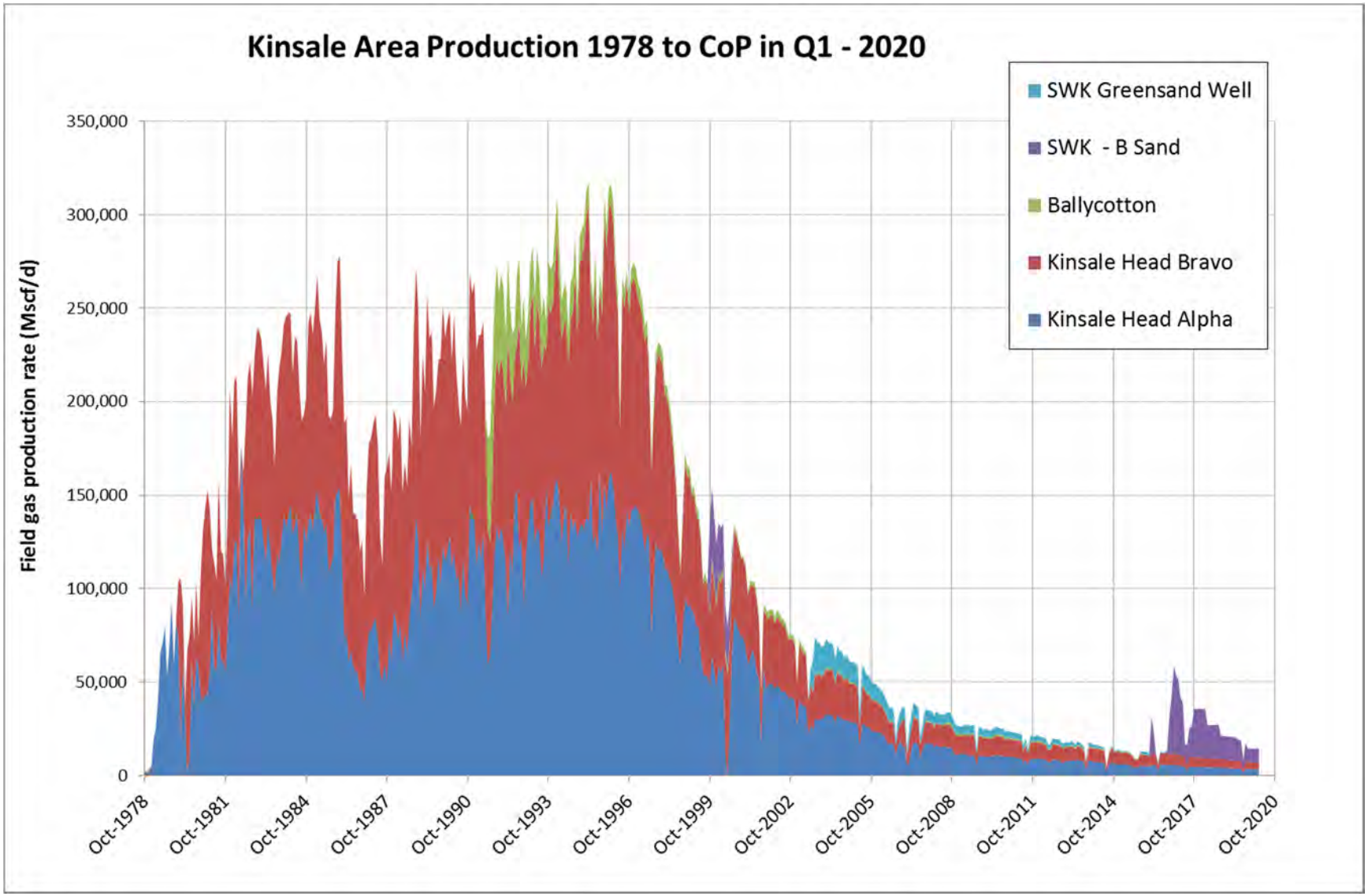
Peak production levels were achieved in the mid-1990's and since then gas production levels have decreased significantly – current (2018) daily average rates are less than 5% of peak rates. **Figure 11** is a graph showing daily average gas production from the fields to date. Field and facility performance have been carefully and pro-actively managed to maximise and extend economic production. However, given the continuing declines in gas rates, no economically sustainable investment program or technical improvements can be implemented to extend economic production.

An application for consent to cease operations in accordance with section 8.8 of the PAD Rules & Procedures Manual for Offshore Petroleum Production Operations will be submitted to DCCAE at least 12 months prior to the proposed CoP date.

3.2 Technical and Economic Evaluations

Kinsale Energy will separately submit to the Minister a report detailing its technical and economic evaluations that support the CoP timeframe proposed in this Decommissioning Plan.

Figure 11: Kinsale Area gas fields – production rates



3.3 Other Uses Considered

The Kinsale Area facilities have been designed for dry gas production and processing, and the majority of the facilities are now close to or beyond their original design lives. Nevertheless, parts of the facilities may be suitable for re-use, depending on the service, particularly the main Kinsale and Seven Heads export pipelines and the platform jackets.

Three potential re-uses have been considered at a high level. These are hydrocarbon production, carbon capture and storage (CCS) and offshore wind energy production.

Hydrocarbon Production

The Kinsale Area facilities are not designed for liquid hydrocarbon or wet gas production and are unlikely to be suitable for such use. Some of the facilities could potentially be re-used for a future dry gas development as host infrastructure. However, there are currently no known commercial dry gas discoveries in the vicinity nor is Kinsale Energy aware of any firm drilling plans for dry gas prospects within tieback distance of any of the facilities. There are a number of appraisal wells planned in the Barryroe field and the 18” pipeline from Seven Heads to Kinsale Alpha, could be used for export of associated gas from a potential development of that field.

Carbon Capture and Storage

Kinsale Energy has carried out technical studies which would indicate that the main Kinsale Head reservoir may be suitable for CCS and also that some of the Kinsale Area facilities may be suitable for CO_2 transportation, particularly the 24” export pipeline and the jackets.

There is currently no commercial case for a merchant CCS service as CO_2 prices are too low to justify the required investment, however, this may change in the coming years. It is also noted that there is a proposal in Ireland’s current National Mitigation Plan (July 2017) for DCCAE to explore the feasibility of utilising suitable reservoirs for CO_2 storage within the next 5 years. A feasibility study into the use of the Kinsale Head reservoir for CCS is being undertaken by Ervia.

Offshore Wind Energy Production

The main 24” export pipeline and landfall could possibly have a use as a cable conduit, for either fibre optic or high-voltage direct current (HVDC) cables (for example as part of a windfarm). The platform jackets could be used to support HV convertor stations. Kinsale Energy is not aware of any wind farm development being considered for the vicinity of any of the Kinsale Area facilities, so no proposal currently exists at this time.

Conclusion

No other re-use options have been identified at present. Should future circumstances change with respect to the potential for any of the re-use options identified above, then a leave *in situ* option, particularly with regard to the 18” Seven Heads export pipeline and the main 24” export pipeline and landfall, could facilitate the re-use of that infrastructure in the future. Additionally, the platform jacket removal campaign may be scheduled over a number of years (1-10 years), depending on vessel availability, cost efficiency and company strategy, which could extend the period over which an alternative use may be identified.

The above considerations inform a staged approach to the consent application process for the project, such that the wells, platform topsides, and subsea structures comprise the first consent application, and the pipelines and platform jackets comprise the second consent application.

Should any of the potential re-use proposals be taken forward, they would be subject to the requisite environmental assessments and consents at the appropriate time, which would also include a cumulative assessment of the decommissioning of the Kinsale Area facilities.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 4

Decommissioning Options

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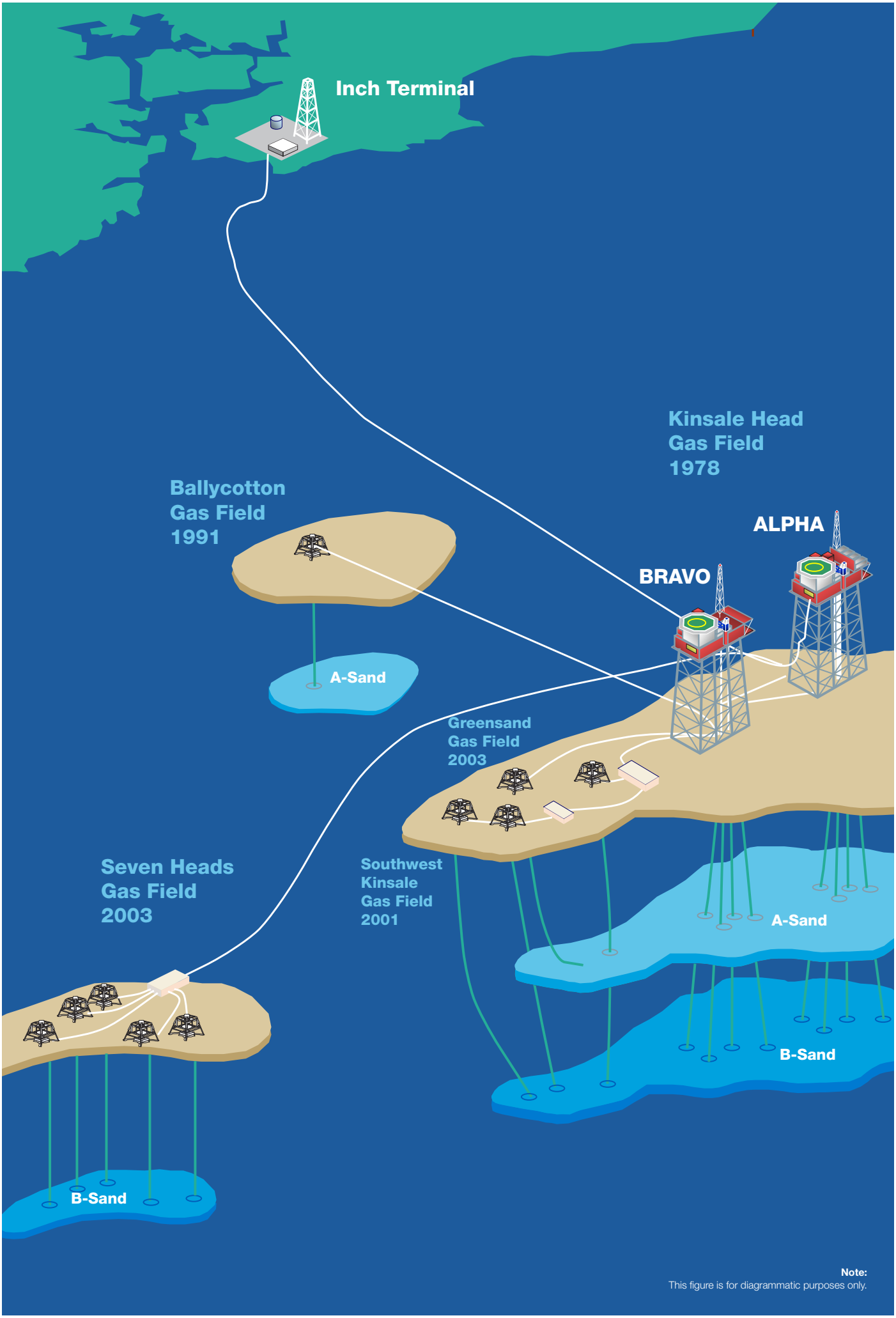
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Southwest
Kinsale
Gas Field
2001
A-Sand
B-Sand
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4 Decommissioning Options

As no feasible alternative uses for the Kinsale Area facilities, have been identified currently, the facilities will be decommissioned. This section details the various decommissioning options which were considered for the Kinsale Head facilities (**Section 2.2**) and the reasoning for the identified preferable options included in this Decommissioning Plan (**Section 1.7**).

The final decommissioning methodology will be determined in conjunction with the selected removal contractor, however, for the purposes of this Decommissioning Plan and the environmental assessment a number of decommissioning options, as indicated in **Table 4** of this report, have been considered in order to provide an assessment of the worst case scenario of the potential associated impact and inform this Decommissioning Plan.

4.1 Platform Topsides

As detailed in **Table 3**, the Kinsale Area platform topsides will be removed as part of the decommissioning project in accordance with the legislative requirements of OSPAR Convention (refer to **Section 1.5**). Several studies have previously been carried out to inform the options selection for the decommissioning of the KA and KB topsides (Genesis 2011, Allseas 2012a, Xodus 2016d). The studies included a consideration of options for their re-use in position, removal and re-use elsewhere, and partial or full removal for recycling or disposal. In view of the circumstances leading to the CoP decision (**Section 3.1**), and the age of the platforms, re-use either *in situ* or at another location is not feasible, and therefore the remaining options considered related to methods for their removal.

The KA and KB platform topsides are comparable in design, but they have been modified since their original installation with both the removal and addition of modules. Consequently, they now have different overall topside weights and configurations. Despite these differences, the methods considered feasible to remove the platform topsides are essentially the same. The topsides may be removed using a single lift approach or the piece-medium (reverse installation) removal of the platform modules with some piece-small removal of components. The single lift options for the topsides may also be completed using various vessel types and techniques as detailed in **Table 4.**

Due to the high recyclability of steel which is the dominant component returning to shore, the topsides will be recycled with minimal disposal once removed and returned to shore.

4.2 Platform Wells

There is no technical alternative to decommissioning the platform wells other than plugging and abandoning the wells.

The wells will be abandoned using a ‘Thru tubing’ technique using a rigless technique from the topsides.

4.3 Subsea Wells

There is no technical alternative to decommissioning the subsea wells other than plugging and abandoning the wells.

The wells will be abandoned using a ‘Thru tubing’ technique using a semi-submersible rig or a light well intervention vessel.

4.4 Subsea Structures

OSPAR decision 98/3 states that, unless in exceptional circumstances, all subsea structures are to be removed during decommissioning, unless they are to remain *in situ* for an alternative use.

With no potential alternative use identified for the subsea structures, and to ensure compliance with OSPAR, Kinsale Energy proposes to remove all subsea structures.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 5

Decommissioning Project Management

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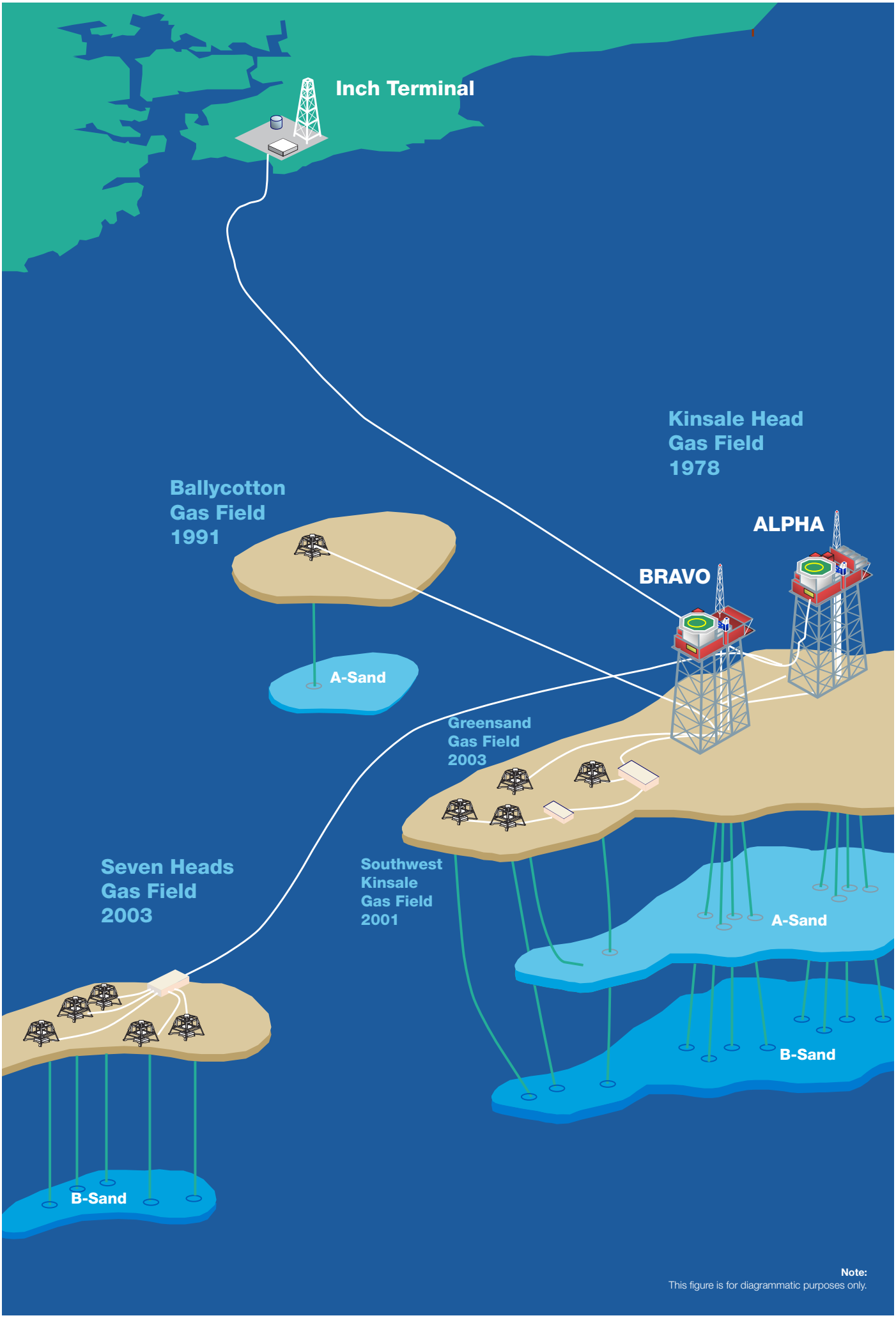
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5 Decommissioning Project Management

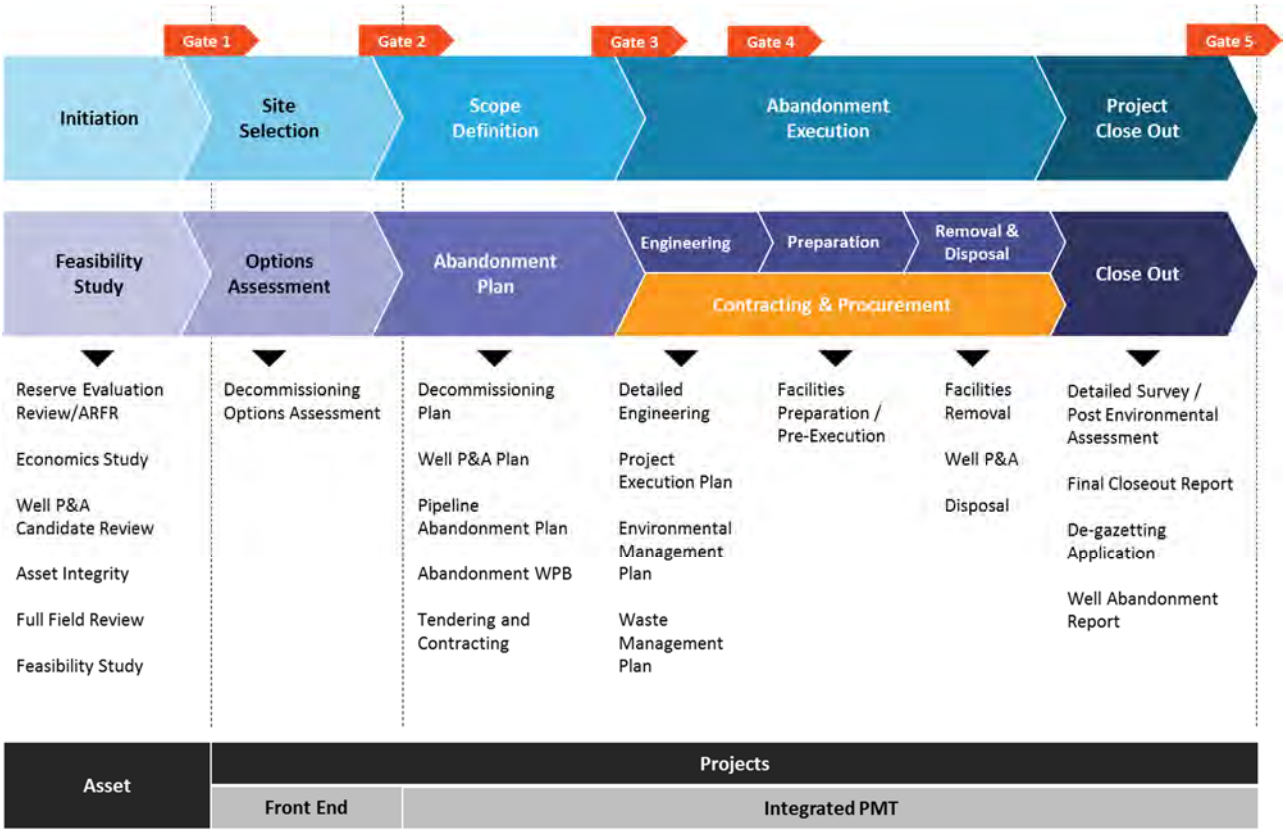
5.1 Project Management Approach

The decommissioning project will be carried out in accordance with the PETRONAS Project Management System (PPMS). The PPMS is a gated process which segregates a project's life cycle into distinct phases.

The key objective of the PPMS document is to promote consistency in application and approach when undertaking projects managed by PETRONAS.

PETRONAS have developed a PPMS system specifically for decommissioning projects as detailed in **Figure 12** below.

Figure 12: PETRONAS Project Management System for decommissioning projects



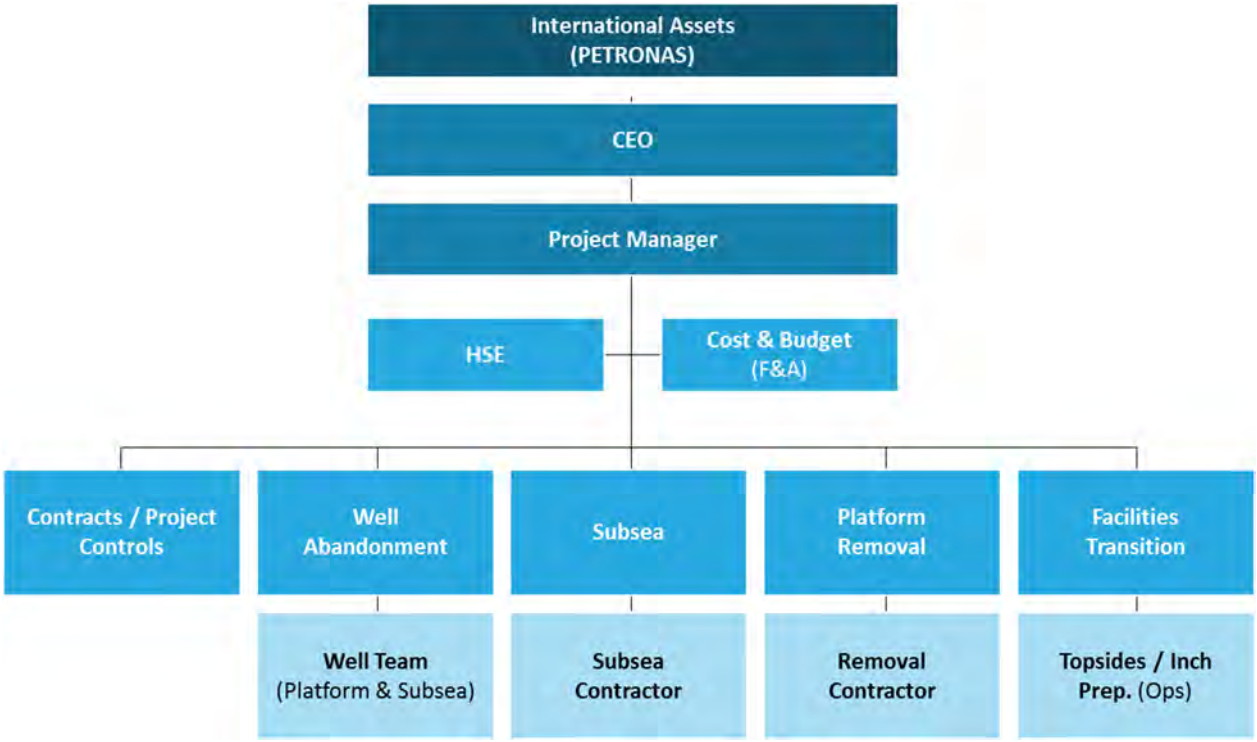
Completion of this Decommissioning Plan, managing all permitting, licences, authorisations, notices, consents and consultations and nomination of the decommissioning works contractors fall within Gate 1, 2 and 3 of the overall KADP, for which Kinsale Energy will also be responsible.

The selection of the final decommissioning methodology will fall within Gate 4 which will be the responsibility of the selected removal contractors, in conjunction with Kinsale Energy. Execution, management of the works and project close-out will be the responsibility of the selected removal contractors.

5.2 Organisation

The project organisation will change through the life of the project to reflect the work scope. Initially, a small in-house Kinsale Energy team will manage the regulatory and permitting process of the KADP. This team will be expanded in line with the Project Execution Plan (PEP) with existing KEL personnel being augmented as required by specialist contract personnel or by secondees from PETRONAS. The overall project organisation of the execution phase is expected to be as shown in **Figure 13.**

Figure 13: Project Team – Execution Phase



5.3 Resources

The following key positions are critical for project success and will be filled by Kinsale Energy/PETRONAS for the duration of the decommissioning works schedule:

- Head of Decommissioning
- Project Controls Manager
- Topsides Facilities Decommissioning Coordinator
- Subsea Infrastructure Decommissioning Coordinator
- Well Abandonment Coordinator
- Onshore Site Decommissioning Coordinator
- Project Engineers
- HES Manager
- Decommissioning Contracts Manager
- Project Planner

Additional external support may also be required from 3rd party organisations and consultants:

- Wells Engineering Team
- Other (public relations, marketing, legal advice etc.)

It should be noted that all of the offshore project activities up to the point where the platforms are "hydrocarbon free" will be carried out within the existing KEL operations framework and the platforms will be manned by KEL and contractor personnel under the control of the platform Offshore Installation Manager (OIM). Following handover to the removal contractor, an offshore decommissioning management team will be put in place by the contractor, with overall project supervision and monitoring being maintained by the KEL project team.

5.4 Costs

An indicative estimate of the overall cost will be provided separately to the PAD.

5.5 Reporting

Reports to be issued during the decommissioning process will be agreed with the regulators (PAD, CRU and other regulatory bodies) at the Regulatory Approval stage; however, the following reports are proposed.

Monthly Progress Report

Following approval of the Decommissioning Plan a Monthly Decommissioning Progress Report will be submitted to PAD; it is intended that this will be the primary reporting mechanism throughout the project, supplemented by other reports as required, e.g. operational site reports etc.

The purpose of the Monthly Progress Report is to notify to the PAD details of:

a) the status and progress of decommissioning, including engineering, planning and operations and

b) any unusual occurrences, including accidents, pollution and other HS&E incidents.

Each Monthly Project Progress Report will:

a) cover one calendar month and

b) will be submitted within 25 days of the end of the report period.

The Format for the Monthly Project Progress Report will generally be in accordance with the requirements set out in Appendix D of the Rules & Procedures for Offshore Production Operations

Operational Reports

During the course of decommissioning operations, a number of additional reports may be generated, depending on the specific activity in progress, e.g.:

- Well abandonments – Daily Operations Summary
- Subsea/marine operations – weekly activity summary

Post-Decommissioning Reports

- Decommissioning Close Out Report (refer to **Section 7.3**) including
  - Seabed Clearance Survey Report
  - Well Status Report
  - Environmental Summary Report

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 6

Decommissioning Activities and Schedule

Hartley Anderson

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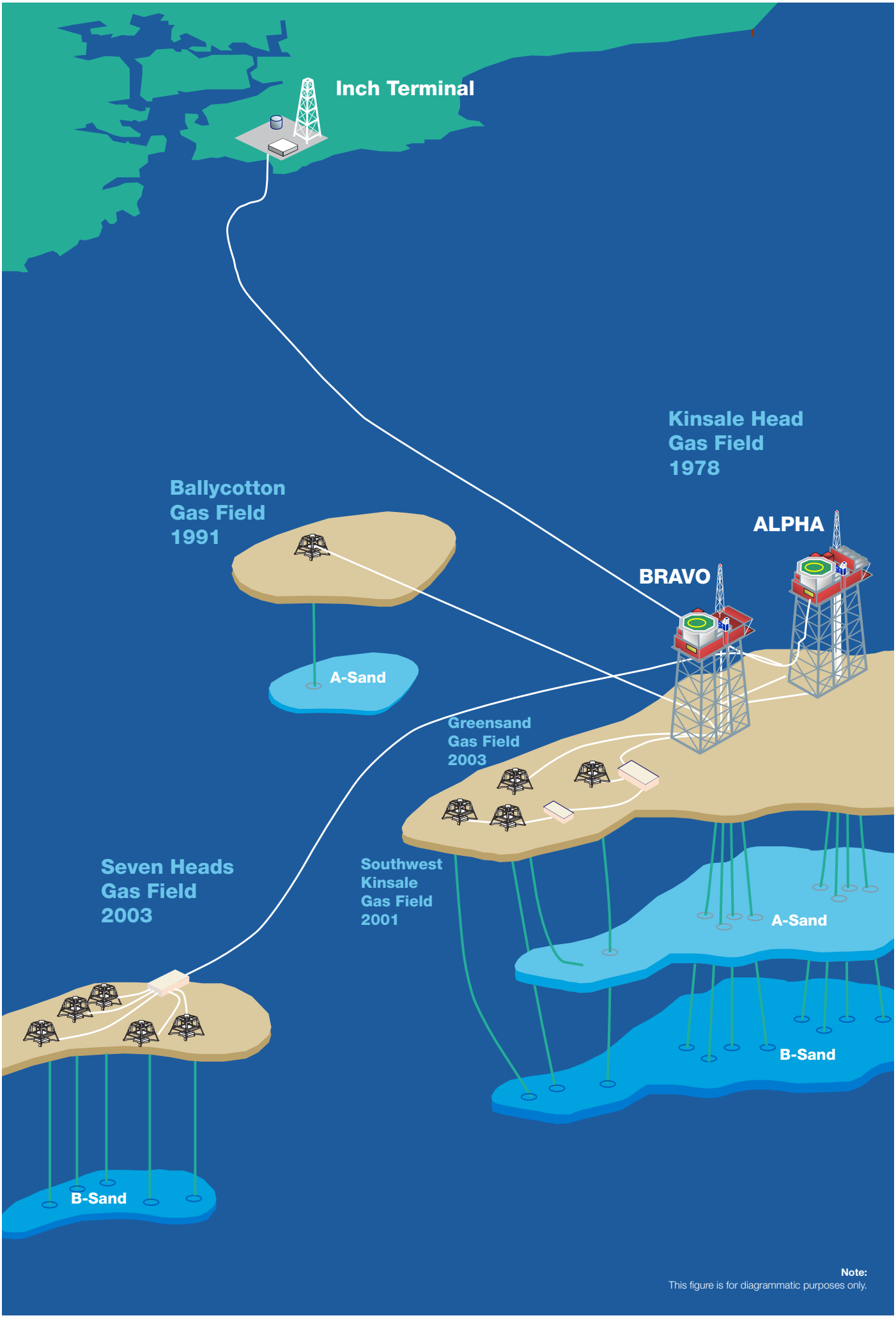

Inch Terminal
Kinsale Head
Gas Field
1978
Ballycotton
Gas Field
1991
ALPHA
BRAVO
A-Sand
Greensand
Gas Field
2003
Seven Heads
Gas Field
2003
Southwest
Kinsale
Gas Field
2001
A-Sand
B-Sand
B-Sand
Note:
This figure is for diagrammatic purposes only.

6 Decommissioning Activities and Schedule

Note: This section provides general information on the activities to be carried out as part of the overall Decommissioning Project, with specific reference to the OPL-1 facilities where relevant.

6.1 Pre-Cessation of Production Activities

During the period leading up to Cessation of Production (CoP) a number of preparatory activities may be undertaken on the Kinsale Head platforms to ensure that the facilities are ready to start decommissioning activities immediately following CoP. These preparatory activities may include:

- Removal of redundant equipment
- Installation of additional/replacement utilities e.g. temporary power generation & distribution
- Preparation of lay-down areas for well servicing equipment
- Local structural modifications for decommissioning equipment
- Installation of temporary accommodation units (Bravo)

Any activities or modifications required pre-CoP will be planned and carried out in accordance with KEL's current operational procedures and in compliance with the Production Safety Case.

6.2 Post CoP Activities / Pre-Decommissioning Activities

Following Cessation of Production it is intended to immediately commence the process of making the facilities "hydrocarbon-free" – this includes a number of activities including:

- Pipeline Contents Displacement, including 24" export line, interplatform line and satellite well pipelines
- Topsides Disconnection and Gas-freeing,

All of the offshore project activities up to the point where the platforms are "hydrocarbon free" will be carried out within the existing KEL operations framework and will be covered in a Decommissioning Safety Case to be submitted to the CRU.

6.2.1 Pipeline Displacement

The pipelines connecting each of the subsea well installations to their respective platforms (Alpha or Bravo) will be displaced with seawater by means of pumping spreads located on the platforms – water will be pumped from the platform and into the connected wells, which will all be at low pressure (sub-hydrostatic). Subsequently, the pipelines will be disconnected at the subsea well locations.

The main 24" trunk line, which may be retained for possible future use, will be filled with inhibited sea-water to limit corrosion.

6.2.2 Topsides Disconnection and Gas-Freeing

In parallel with the pipeline displacement campaign, the platform topsides facilities will be made safe, all pressure vessels and piping will be vented and purged and non-essential electrical supplies will be disconnected.

Volumes of waste (fluids and associated debris) from the topsides are expected to be small as the hydrocarbons produced are dry natural gas (e.g. no sludges or solid NORM material are present).

These wastes, along with any residual inventories of diesel, chemicals, condensate or aviation fuel, will be collected for onshore disposal under Kinsale Energy's existing waste management procedures following CoP.

6.3 Decommissioning Activities

6.3.1 Platform Well Abandonment

Each of the platform wells (7 on Alpha/7 on Bravo) will be decommissioned by setting a cement plug or plugs to seal the tubing/casing strings and then recovering the top section of tubing and casing from the well. The well conductors at the surface and the Xmas Tress will also be removed to facilitate subsequent topsides and jacket removal. The main steps involved are summarised in **Table 9** below.

The well abandonment activities to be carried out during this phase will be subject to an authorisation under the petroleum lease and covered in a specific Well Work Safety Case to be submitted to CRU in accordance with Safety Case Guidelines.

Table 9: Platform well abandonment main steps

Item	Operation
1	Re-enter well and displace wellbore to sea-water
2	Install cement plugs downhole
3	Cut and recover 7" tubing ~150ft below seabed
4	Remove Xmas Tree
5	Recover conductor and casings

A specific abandonment program will be developed for each well as part of the approval program under Section 8.5 of the Rules & Procedures Manual for Offshore Petroleum Production Operations. Any requirement for chemical usage/discharge will be detailed in a PUDAC application for each well.

All well abandonment activities to be carried out during this phase will be subject to approval of the relevant Safety Cases by the CRU in accordance with Safety Case Guidelines

The platform well abandonment activities are estimated to take approximately 155 days to complete (including a 25% contingency)[6]. This excludes mobilisation of the equipment to the platforms from Cork, which would involve up to 3 platform support vessel (PSV) trips

6.3.2 Platform Topsides Removal

As noted above, following Cessation of Production (CoP) the KA and KB platform topsides will be cleaned, disconnected and gas-free prior to removal. Removal may be undertaken using a single lift or multiple lift option as detailed below.

Single lift

The removal of the KA and KB topsides in a single lift may be undertaken by a specialist lift vessel such as the a twin hulled ship shape heavy-lift vessel (HLV), or alternatively using a more conventional HLV, and barge transport to a suitable disposal yard.

[6] Based on AGR (2017b)

Single lift using specialist HLV

The following describes the procedure for a single lift based on a study by Allseas (2012a), with additional information provided on the use of a standard HLV from Genesis (2011). Engineering work required in advance of the lifting procedure may include the addition of module reinforcement and seafastenings, estimated to be between 22t and 43t (based on an assumed 0.5-1.0% of topside weight). The topsides would be separated from the jacket at a suitable point above sea level, using diamond-wire or hydraulic cutting tools, and transferred to a barge using support stools and a skid system. A combination of ballasting the HLV and deballasting the cargo barge would bring the topsides and stools together in a controlled manner. Once all of the topside weight has been transferred to the barge, the lifting system would be disconnected, allowing the barge to be unmoored and towed away.

On arrival at the disposal yard, the barge would be moored and ballasted to match the height of the quayside, and link beams run and connected to the barge to allow for the topsides to skid from the barge, during which ballasting of the barge would maintain its level with the quay.

The stages of the lift and transfer of the topsides to the disposal yard are detailed in **Table 10**.

The overall schedule for the lift of both topsides using the specialist HLV is approximately 39 days (including a 25% contingency).

Table 10: Main stages of the topsides single lift using a specialist HLV

Item	Operation
1	Preparation for lift
2	Vessel ballasted outside a 500m zone before taking up position beside platform, ready for lift, and lift undertaken
3	Transit from site to barge vessel
4	Transfer from HLV to barge using support stools and a skid system, and a combination of ballasting the HLV and deballasting the cargo barge
5	Tow barge to disposal yard quayside
6	Topsides load in to disposal yard

Single Lift using conventional HLV

A more conventional HLV, a semi-submersible crane vessel or similar, could also be used to lift the topsides (see **Figure 14**). The removal would be analogous to that outlined above, e.g. preparatory work module strengthening and cutting of the topsides from the jackets. The topsides would then be lifted onto a barge and transported to shore for recycling/disposal. A conventional HLV may be required to be moored, using anchors. For example a 12 anchor mooring system analogous to that of a semi-submersible drilling rig.

Figure 14: Conventional HLV, in this case Saipem 7000, lifting a topsides structure

Source: worldmaritimenews.com; Courtesy of Saipem

Detailed structural analysis would be required to determine the extent of strengthening of the topside structure and provision of lifting points, required to perform a single lift in this way. The extent of reinforcement may be greater than that which would be required for the reverse installation removal option, because the original installation used multiple lifts. Similar to the other removal options, it is assumed that the existing accommodation on KA would be utilised to support the preparation works to the topsides, for as long as possible, until the arrival of the HLV. On the KB platform, temporary accommodation would be used to facilitate the preparation works.

The overall schedule for the lift of both topsides using the conventional HLV is approximately 44 days (including a 25% contingency).

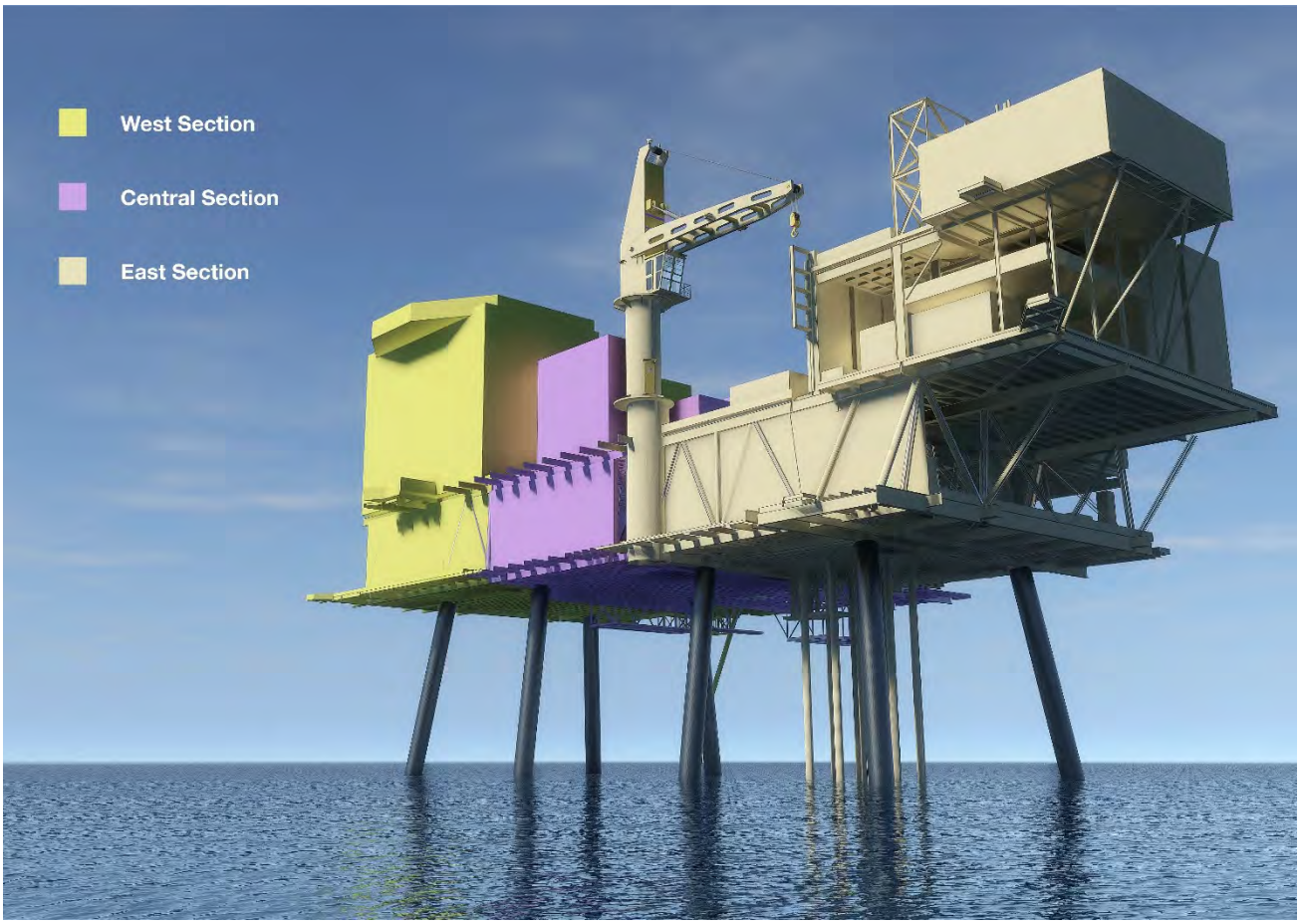
Piece-medium (reverse installation)

The alternative reverse installation approach to topsides removal incorporates a combination of piece small and piece medium in which the equipment, secondary structures, modules and module support frame are removed in separate lifting operations.

See **Figure 15** for a schematic showing a view of the KA topsides module sections. The approach shown for the KA topsides will be repeated for the KB platform.

It is assumed that the existing accommodation on KA will be used to support the preparatory and piece small work until arrival of the HLV, on which the workforce could be accommodated. On the KB platform, temporary accommodation would be installed to facilitate the piece small and preparation works.

Figure 15: Kinsale Alpha topside schematic showing the topside module sections



The overall schedule for the lift of both topsides using the piece medium approach using a conventional HLV is estimated to be approximately 51 days (including a 25% contingency). There is the opportunity for simultaneous operations and resource sharing with the KA facility activities, which has been taken into account when estimating the total vessel durations to complete both KA and KB topsides decommissioning by reverse installation. As with all decommissioning options the ultimate lift strategy will depend on vessel availability, technical assessment, safety and commercial factors.

6.3.3 Subsea Structures Removal

Wellhead protection structures

The well head protection structures need to be removed to allow access to the subsea trees and well head, in order to allow these components to be decommissioned. The steel structures will need to be cut/disconnected from the concrete foundation blocks, which anchor them to the seabed, and then the structures can be lifted to a vessel for onshore recycling/disposal. The foundation blocks will also be recovered individually, with each block having 2 lifting points. It is anticipated that existing lifting eyes will not be used and new lifting straps will be used for lifting structures to the vessel. An ROV will be used where possible, but a DSV with divers may also be used.

Valve skid intermediary tee and PLEMS

Initially all tie-ins (pipe spools and umbilical jumpers), that are in the way of the lift, will be disconnected and removed. The concrete protection blocks, surrounding each structure will be removed and recovered.

Once all disconnections are made, the structures will be recovered to a vessel for onshore recycling/disposal. Similar to the wellhead protection structures, lifting straps will be used for lifting to the vessel. The lifting straps will be put in place using an ROV, where possible, but a DSV with divers may be used.

The overall schedule for the lift of all subsea structures within OPL-1 (and associated spool pieces, umbilicals jumpers and protection materials) and their transport to the disposal yard estimated at 51 days (including a 25% contingency). This is based on works not being undertaken in parallel as a worst case scenario.

6.3.4 Subsea Well Abandonment

Each of the subsea wells will be decommissioned by setting a cement plug or plugs to seal the tubing/casing strings and then recovering the top section of tubing and casing from the well (see **Figure 10**). The well conductors at the surface and the Xmas Trees will also be removed and recovered. The main steps involved are summarised in **Table 11** below.

Table 11: Subsea well abandonment main steps

Item	Operation
1	Re-enter well and displace well bore to seawater
2	Slickline thru-tubing cementing and cutting and recovery of tubing ~400-600ft below seabed
3	Remove Xmas Tree
4	Recover conductor and casings

The well intervention vessel to be used for the well abandonment operations may be a semi-submersible Mobile Offshore Drilling Unit (MODU) (see **Figure 16**) or a Light Well Intervention Vessel (LWIV) and a specific abandonment program will be developed for each well as part of the approval program under Section 8.5 of the Rules & Procedures Manual for Offshore Petroleum Production Operations. Any requirement for chemical usage/discharge will be detailed in a PUDAC application for each well.

Figure 16: Typical semi-submersible drilling rig (MODU)

Detailed procedures for abandonment of each well will be prepared during the detailed engineering phase of the project and will be used to inform the Well Work Safety Case to be submitted for approval to the CRU.

In addition, a Non-Production Safety Case (NPSC) will be submitted for the intervention vessel to be used i.e. MODU or LWIV. All well abandonment activities to be carried out during this phase will be subject to approval of the relevant Safety Cases by the CRU in accordance with Safety Case Guidelines.

The overall schedule for plug and abandonment of the subsea wells within OPL-1 is estimated at 123 days (including a 25% contingency).

6.4 Decommissioning Schedule

An indicative project programme for the entire KADP is shown in **Figure 17**. The final decommissioning project construction schedule will be completed once all decommissioning contracts have been awarded; where the timing of platform removal and subsea well abandonments may vary depending on availability of specialised marine construction and drilling vessels (crane barges, MODU's etc.).

Post CoP, the subsea pipelines connecting the platforms to the onshore terminal and subsea wells will be displaced with seawater into the wells. Following this the platform well plug and abandonment will be completed in order to achieve hydrocarbon free status on the Kinsale Alpha and Bravo platforms. Upon completion of platform well P&A and subsea pipeline displacement activities, both Alpha and Bravo platforms are then available for removal operations.

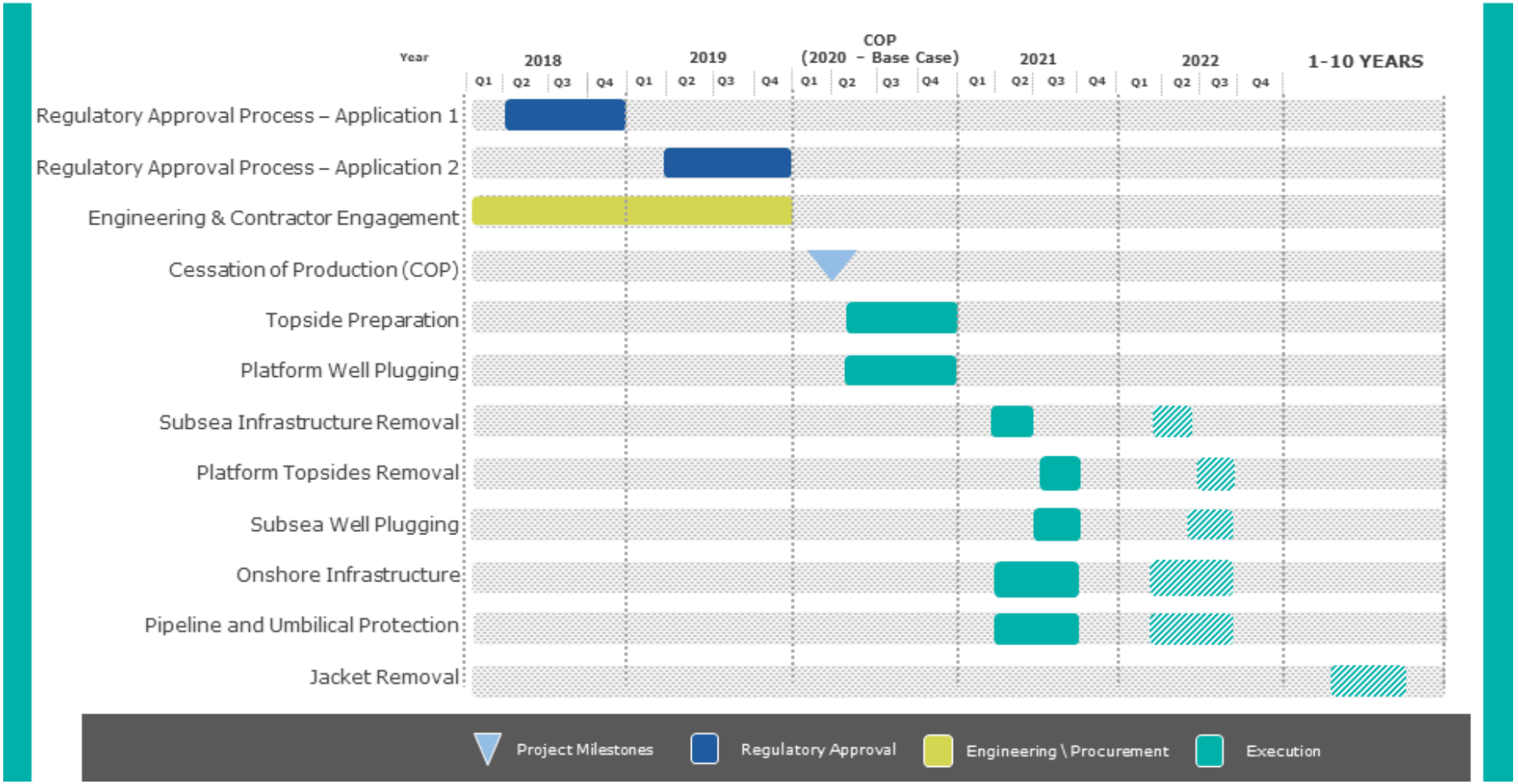
A subsea programme of works to decommission all relevant subsea structures, including the removal of spool pieces, umbilical jumpers and protection materials, will be completed in advance of subsea well plug and abandonment activities.

There are other uncertainties which may affect the decommissioning schedule, including:

Marine vessel availability: the specialised vessels required, for example CSV's/DSV's, may not be available in the time windows planned, due to market conditions or over-runs on other projects; the contracting strategy will be flexible to allow for re-scheduling if required.

Weather: many of the key operations are weather sensitive, e.g. topsides lift, and the program may be delayed due to extreme weather conditions. The time estimates and durations used for planning purposes are based on historical performance data, and include some allowance for weather downtime, based on previous experience.

Figure 17: Indicative Project Schedule



Note: The actual timing of Cessation of Production will depend on field economics (gas prices) and facilities performance, currently anticipated between 2020 and 2021. The timing of activities may also vary depending on company strategy and availability of specialised marine vessels.

6.5 Materials and Waste Management

6.5.1 Waste Management Objectives

Kinsale Energy will follow the principles of the waste hierarchy for the KADP. Taking into account key resource and waste management policy and legislation and the likely waste generation from the relevant decommissioning activities, the resource and waste management objectives for KADP are as follows:

- Maximise reuse and recycling;
- Minimise disposal of waste to landfill; and
- Minimise environmental impacts of waste management.

6.5.2 Materials Generated

The following table summarised the approximate quantity of materials generated from each of the facilities covered by this Decommissioning Plan.

Table 12: Materials Generated

Material Type	Wells	Platform - Topsides	Pipeline Spools & Umbilical Jumpers & protection materials	Subsea Structures
Steel	Total - 1,239Te for all wells, assuming recovery of casings to 3m below seabed and relevant sections of production tubing.	KA: 4544te - Topsides (695Te Piping, 179Te Deck Plate, 2457Te Equipment, 1396Te Structure less 183Te Asbestos) KB: 3594Te – Topsides (552Te Piping, 147Te Deck Plate, 1900 Equipment, 1128Te Structure less 133Te Asbestos)	KH Total - 148Te (Pipeline Ends Removal)	KH Total - 145 Te (4x25 Te wellhead protection structures, 10.2 Te SWK Intermediate Tee, 12.3 Te SWK Valve Skid, 11.1 Te Greensand PLEM, 11.1 Te WDC PLEM)
Concrete		N/A	KH Total - 3080Te (80Te Pipe Spool Concrete Coating & 3000Te Concrete Mattresses)	KH Total - 1372 Te (4x134Te wellhead protection structures, 2x65Te and 2x45Te for SWK Valve Skid, Greensand PLEM and WDC PLEM; 3x43Te and 1x47Te for SWK Intermediate Tee)
Non-ferrous Metals		N/A	N/A	N/A
Asbestos		Alpha 183Te Bravo 133Te	N/A	N/A

Material Type	Wells	Platform - Topsides	Pipeline Spools & Umbilical Jumpers & protection materials	Subsea Structures
Other Hazardous Waste		Small quantities of • Fluorescent tubes (Mercury) • Fire &Gas Detectors (radioactive waste) • Fire Extinguishants • HFC • TEG • Diesel • Heli-fuel • Lubricating Oils Hydraulic fluids • HW540 v2 • BOP fluid (Erifon HD856) (1% concentration). Other miscellaneous hazardous items such as: • Paint and Varnish • Batteries • Aerosols • Coolants	N/A	N/A
Other Non-hazardous Wastes		Alpha Cabling 222Te (copper and plastics) Bravo Cabling 176Te (copper and plastics)	Umbilical quantities negligible (copper and LPP)	N/A
Total		**8,570Te**	**3,228Te**	**1,517Te**

6.5.3 Waste Management Strategy

The following sections summarise the strategy for each particular facility and their materials.

Topsides Waste Management

As noted above following Cessation of Production (CoP), the topsides of the KA and KB platforms will be cleaned prior to removal. Volumes of waste (fluids and associated debris) from the topsides are expected to be small as the hydrocarbons produced are dry natural gas (e.g. no sludges or solid naturally occurring-radioactive material (NORM) are present). These wastes, along with any residual inventories of diesel, chemicals, condensate or aviation fuel, will be collected for onshore disposal under Kinsale Energy's existing waste management procedures.

The topsides structure that is removed will be recycled and only a small proportion is unsuitable for recycling and will be sent to landfill. Asbestos identified on the existing platforms (mainly building cladding material) and other hazardous waste will be handled and disposed of at appropriately licensed facilities in accordance with all relevant legislation. Contractors will be required to strictly adhere to all relevant legislation and guidelines in this regard.

Pipeline Spools & Umbilical Jumpers

Pipeline spools, umbilicals and protective concrete mattress and grout bag materials will be removed for recycling or disposal where necessary to allow access to the subsea structures.

Due to the high recyclability of steel, which is the dominant pipeline material, any pipeline spools which are removed will be recycled. It is anticipated that concrete could also have a high recyclability rate, with the protection materials to be recycled where possible and minimal disposal.

Subsea Structures

The subsea structures, including any concrete mattresses or grout bags surrounding each structure, will be removed and recycled or disposed. Due to the high recyclability of steel, which is the dominant subsea structure material (excluding protection blocks), the subsea structures will be recycled. It is anticipated that concrete should also have a high recyclability rate.

Wells

Wellhead and casing material and Subsea Xmas Trees will be removed and recycled or disposed.

6.5.4 Resource and Waste Management Plan

The decommissioning contractor will be responsible for developing and implementing appropriate procedures, securing the relevant authorisations and agreements to ensure appropriate management and disposal of waste and resources throughout the KADP. The Contractor will also be required to employ staff with skills, qualifications and experience appropriate to the needs of the works to be carried out during the KADP.

A detailed Resource and Waste Management Plan will be prepared by the contractors undertaking the decommissioning works on appointment. Their detailed Resource and Waste Management Plan will set out the following:

- Detailed analysis of the waste arisings/material surpluses including programmes and method statements to support detailed surveys where required;
- How the project resource and waste management objectives in this Decommissioning Plan will be achieved including proposed methods for reuse and recycling of wastes;
- The name, address and authorisation information of proposed recovery, recycling and disposal facilities which will be used for all wastes generated from the KADP;
- Proposals to educate the workforce and disseminate the Resource and Waste Management Plan to responsible staff member(s) for implementation; and
- Records that will be maintained relating to resource and waste management, including the identification of the records required to be kept, responsible staff member(s) for gathering and maintaining these records and the duration that these records will be maintained for.

The detailed plan prepared by the contractor will be submitted to KEL for their approval prior to commencement of the KADP. Written approval from KEL must be obtained prior to commencement of any decommissioning works. The contractor will be responsible for managing environmental issues through appropriate risk management, mitigation, auditing, licensing and monitoring and will be required to ensure compliance with legislative and commercial standards.

6.5.5 Waste Transportation

The contractor will be required to comply with the relevant legislation governing storage, transfer, treatment and disposal of all wastes and need to develop method statements and procedures for transporting waste as part of their detailed Resource and Waste Management Plan. Further, the contractor will be obligated to effectively manage waste streams throughout the decommissioning process and demonstrate their ability to deliver innovative recycling options in accordance with the principles of the waste hierarchy. Where feasible, wastes will be managed in Ireland, however it may be necessary to transfer wastes both within and outside the EU for reuse, recovery and/or disposal (particularly for the platform topsides and jackets).

Waste generated from the decommissioning works will be removed from the Kinsale fields and transported by vessels for dismantling prior to onshore reuse, recovery and/or disposal. The dismantling yard for the offshore infrastructure is yet to be selected, however, it will be an established yard, licenced for the recovery and/or disposal of decommissioned offshore structures where the dismantling, transport and disposal of materials represent an increment to ongoing activities.

Prior to the removal of any wastes, the contractor will put in place all relevant waste authorisations and permits required, and maintain a register of this information throughout the KADP. Authorisations may be required for the transfer of waste (waste carriers), any off-site waste management facilities (permitted or exempt sites) to which waste is taken to and any requirements for hazardous waste premises notification. All documentation will be retained and regularly updated (where required) by the contractor throughout the KADP.

All waste transfers will be undertaken by designated waste collection permit holders. The onshore waste facilities chosen by the contractor must demonstrate proven disposal track records and have appropriate licenses in place.

The trans-frontier shipment of waste to other EU countries will be subject to the TFS Regulations and relevant approvals will be obtained in advance from the National TFS Office at Dublin City Council. The trans-frontier shipment of waste to countries outside of the EU would also be subject to the Basel Convention and OECD Council Decision C(92)39/FINAL.

6.6 Health and Safety

6.6.1 KEL Health, Safety and Environment Risk Management System

In addition to the legislative basis set out above, and adhering to the OSPAR Convention requirement to protect the maritime area against the adverse effects of human activities, Kinsale Energy (as a wholly owned subsidiary of PETRONAS) operates a Health, Safety and Environment Management System (HSEMS) based on the requirements of internationally accepted standards for Environmental Management (ISO14001) and for Occupational Health and Safety (OHSAS18001).

Kinsale Energy's Health, Environment and Safety (HES) policy commits the company to take all reasonable and practical steps to prevent and eliminate risks of injuries, occupational illness, damage to property and the conservation of the environment. This policy is applicable to Kinsale Energy's activities and those of its contractors. All contractors must adhere to all Kinsale Energy HES policies and procedures.

The Kinsale Energy HSEMS is structured around 8 elements which are summarised below:

Leadership and Commitment: addresses top-down commitment and company culture necessary for success in the systematic management of HES.

Policy & Strategic Objectives: a written HES Policy is required as a minimum.

In setting strategic objectives and developing a HES Plan, management is required to consider the overall risk levels of its business activities taking into consideration the legal requirements, technological change, emerging issues and key stakeholders expectations.

Organisation, Responsibilities, Resources, Standards & Documents: addresses the organisation of people within Kinsale Energy, and the resources and documentation for sound and sustainable HES performance. Requires that the organisation and resources are adequate for its purpose, and that responsibilities for safety critical positions at all levels are clearly described, communicated and understood. It requires that staff based offshore are developed following structured competency assessment and training systems.

Hazards and Effects Management Process (HEMP): describes the identification of hazards and evaluation of HES risks for all activities, products and services, and the development of control and recovery measures to reduce HES risks to as low as reasonably practicable (ALARP).

Planning and Procedures: addresses asset integrity, procedures and work instructions, work permit system, management of change, contingency and emergency planning expectations, legislation compliance, process safety management, purchasing and procurement.

Implementation and Monitoring: addresses how activities are performed and monitored, and how corrective action is taken when necessary.

Audits: puts in place a programme to review and verify the effectiveness of the management system. It includes audits by independent auditors of processes or facilities.

Management Review: a formal process for management to review the effectiveness and suitability of the Management System in managing HES risks and ensuring continual improvements in HES performance. A management review occurs every 2 months at the HES Management Committee meeting.

6.6.2 Safety Case

In accordance with the requirements of the Petroleum Safety Framework, as established under the Petroleum (Exploration and Extraction) Safety Act 2010, and as amended by the Petroleum (Exploration and Extraction) Safety Act 2015, Kinsale Energy will develop a number of Safety Cases, as follows:

- Decommissioning Safety Case – covers platform based activities up to “hydrocarbon-free” status
- Well Work Safety Cases – covers all well abandonments
- Non-Production Installation Safety Case – covers well intervention vessels/drilling rigs (prepared by NPI Owner)

These Safety Cases will be submitted to the Commission for Regulation of Utilities (CRU) for approval. The CRU will issue a safety permit in respect of the designated petroleum activity, on acceptance of each of the Safety Cases. Safety Cases submitted to the CRU will be prepared in accordance with the Safety Case Guidelines, including CER/16/023 ‘Requirements of the Petroleum Safety Framework’, CER/16/024 ‘Safety Case Requirements’, CER/16/106 ‘ALARP Guidance’ and CER/16/016 ‘Compliance Assurance System’.

Each Safety Case shall demonstrate that the Kinsale Energy has carefully considered all available data in the planning of the proposed activities and that the risks associated with the design and execution of the activity have been reduced to ALARP.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 7

Post-Decommissioning Phase

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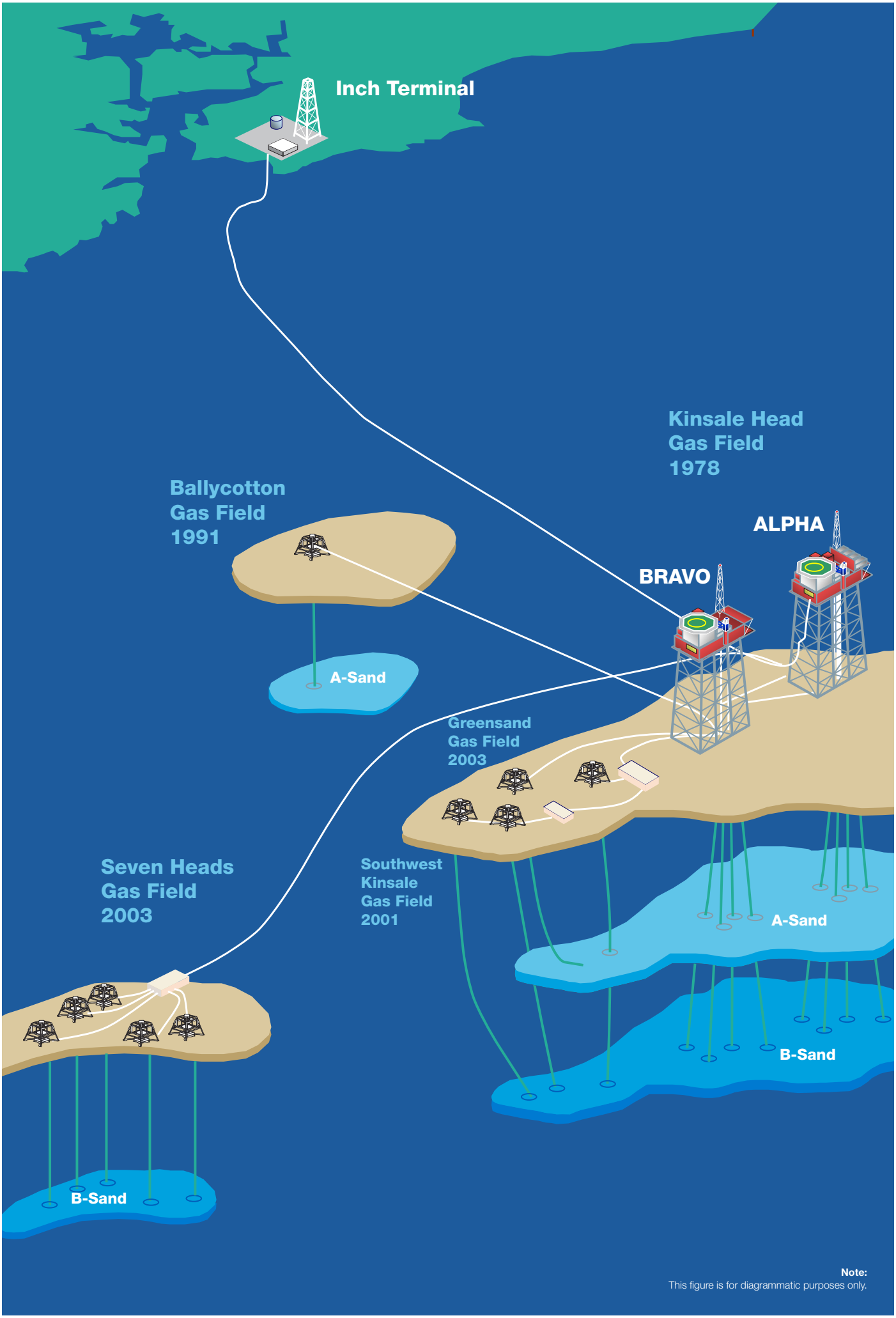
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Southwest
Kinsale
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This figure is for diagrammatic purposes only.

7 Post-Decommissioning Phase

7.1 Post Decommissioning Status

The OPL-1 Lease (Consent Application 1) will result in all wells being plugged and abandoned and subsea structures being removed.

The KA and KB topsides will also be fully removed.

Throughout the operational phase the Kinsale platforms have been marked with Aids to Navigation (AtoN) as agreed with the Commissioners of Irish Lights. Kinsale Energy will provide continuity of navigational safety from CoP through the removal of the topsides and jackets, although this will require changes to the specific Navigation Aids used. Before the start of decommissioning of the platform topsides Kinsale Energy will agree a lighting and marking plan as directed by the Commissioners for Irish Lights for the decommissioning phase of the project. This applies to establishment of new AtoN as well as disestablishment or changes to existing AtoN.

- All applications will be accompanied by an up to date Navigational Risk Assessment, with traffic analysis to inform the Commissioners of Irish Lights to set the Aids to Navigation requirements
- All Lighting and Marking proposals will comply with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation 0-139 on the Marking of Man-Made Offshore Structures (2013)
- Notices to Mariners will be issued highlighting the new marking arrangements

Kinsale Energy will provide solar powered Aids to Navigation (AtoN) marking on the jacket structures, after topsides removal, during the extended decommissioning phase (units will be self-contained with the ability to be monitored by satellite, if required).

A consent application for the decommissioning of the remaining jackets, pipelines, umbilicals and associated protection material will be made in a second consent application to the Minister.

7.2 Post Decommissioning Survey

A post decommissioning survey will be carried out to ensure that no debris is left in place around the wells and subsea structures. Any significant debris found will be removed.

7.3 Decommissioning Close-out Report

A close out report will be submitted to the PAD within 6 months of completion of the offshore decommissioning scope covered by this Decommissioning Plan. The close out report will contain the following information:

- Confirmation of completion of decommissioning works included within this Decommissioning Plan.
- Details of the decommissioning works undertaken including:
  - Equipment & vessels used,
  - Materials used,
  - Construction drawings, and

- An explanation of any variations (approved during the works) to the original approved Decommissioning Plan.

- Details of resource and waste management undertaken.
- Verification/Survey Reports to confirm everything completed in accordance with the Decommissioning Plan

7.4 Residual Liability

This is not applicable to the facilities associated with this Decommissioning Plan as no facilities will be left in place.

7.5 Post Decommissioning Monitoring

No decommissioning monitoring is proposed for this Decommissioning Plan as the plan involves the removal of facilities only. However as the plan involves the removal of the current aids to navigation (AtoN) on the platforms, new AtoN will be placed on the jackets after the topsides are removed, see **Section 7.1** above.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 8

Environmental Assessment

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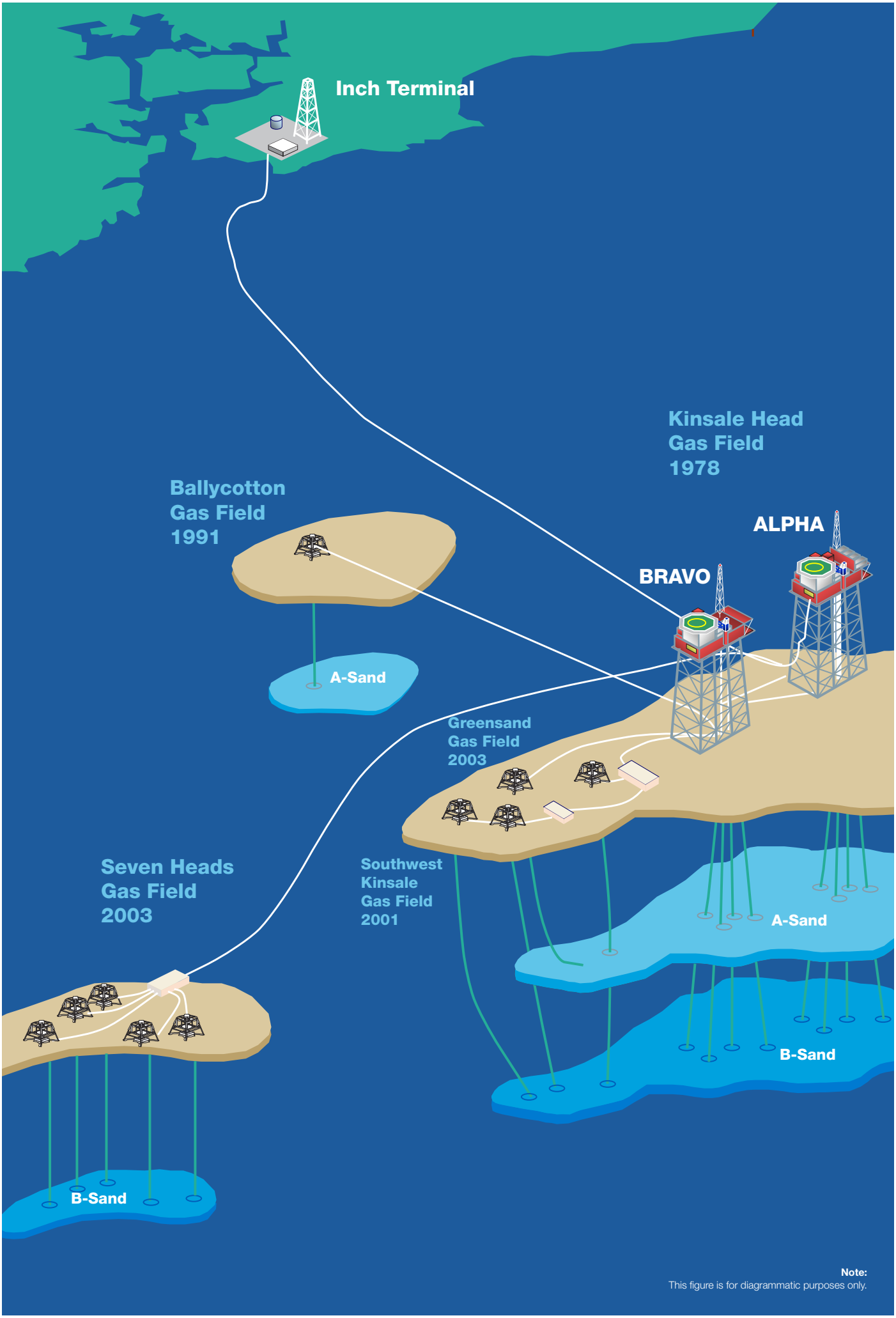
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This figure is for diagrammatic purposes only.

8 Environmental Assessment

An Environmental Impact Assessment Report (EIAR) has been prepared for the KADP to provide the necessary environmental appraisal information to enable the Competent Authority, in this case the Minister for Communications, Climate Action & Environment to undertake an Environmental Impact Assessment (EIA) for the decommissioning of the Kinsale Area facilities.

A single EIAR has been prepared for the entire KADP project. This includes the facilities associated with this Decommissioning Plan.

The following summarises the key points of the EIAR.

8.1 Environmental Baseline and Sensitivity

Since 2002, there have been a series of seabed baseline and monitoring surveys undertaken in the Kinsale Area associated with exploration wells, field and pipeline developments and operations. Together with geophysical mapping undertaken as part of rig site and pipeline route surveys, and seabed survey undertaken in 2017 for the KADP, these surveys provide a good understanding of the seabed topography, sediments and their dynamics, fauna and contaminant status.

Section 4 and 5 of the EIAR details the environmental baseline for the terrestrial and offshore Kinsale Area and its sensitivity.

8.2 Environmental Assessment Methodology and Identification of Potentially Significant Effects

Effects which could arise from the activities associated with the KADP were identified on the basis of the nature of the project (including its location, physical and operational characteristics, residues, emissions and wastes), considered against the description of the offshore and terrestrial environment, and the understanding of impact pathways from a range of sources, including:

- Regional and site specific environmental data, including a pre-decommissioning environmental survey carried out in May 2017, and a site walkover at the Inch terminal site in June 2017
- Typical vessel specifications (e.g. for support, heavy lifts and rock placement)
- Estimates of materials and wastes arising from the decommissioning work
- Decommissioning planning studies and indicative information provided by decommissioning contractors and engineering consultants
- Typical drilling rig and vessel specifications
- Experience of relevant aspects and operations of analogous projects in the Celtic Sea, Irish Sea, North Sea and elsewhere
- Peer reviewed scientific papers describing the effects of specific and analogous interactions
- Other publicly available “grey” literature
- The Irish Offshore Strategic Environmental Assessment (IOSEA) 4 Environmental Report and Irish Offshore Strategic Environmental Assessment (IOSEA) 5 Environmental Report
- Conservation site designations, potential designations, and site advice etc. where relevant
- Applicable legislation, guidance and policies

- A number of EIAR workshops involving Kinsale Energy and the report authors
- Input to the EIA process through consultation with relevant stakeholders.

Potential effects of the KADP were identified on the basis of defined severity criteria, and allow for the consideration of effect likelihood, scale and frequency. The identification of potential effects (positive or negative) also considered those which are direct and indirect, which could lead to cumulative or transboundary effects, as well as their likely duration.

Potential effects were identified against a range of relevant environmental receptors within the broad environmental factors which must be considered under the EIA Directive, namely: population and human health; biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; land, soil, water, air and climate; material assets, cultural heritage and the landscape; and interaction between the factors. Additionally, effects from the vulnerability of the project to risks of major accidents and/or disasters were also considered.

Potentially Significant Environmental Effects to be Considered Further

A number of environmental effects were identified as being of potential significance and/or with potentially moderate or more severe impacts. Those decommissioning activities identified to likely, directly or indirectly, affect one or more relevant environmental factors have been grouped together by major source of effect as summarised in **Table 13** below. These potential effects are considered in Section 7 of the EIAR.

Table 13: Summary of potential significant environmental effects

Source of Potential Significant Effect	Activity	Relevant Environmental Factor				
		Population and human health	Biodiversity	Land, soil, water, air and climate;	Material assets, cultural heritage and the landscape;	interaction between the factors r
Consent Application 1						
Physical presence: decommissioning operations	Physical presence in field and in transit of supply vessels, barge/or heavy lift vessels and drilling rig	✓	✓		✓	
Physical disturbance	Drill rig positioning and vessel anchoring. Mattress removal, cutting of spool pieces and umbilical jumpers and their subsequent removal. Removal of manifolds and wellheads.		✓	✓	✓	✓
Underwater noise	Mechanical cutting well conductors and removal of well surface casings. Rig and vessel noise.		✓			✓
Discharges to sea	Cementing and other chemicals associated with well abandonment operations. Hydraulic fluid release during umbilical cutting.		✓	✓		

Source of Potential Significant Effect	Activity	Relevant Environmental Factor				
		Population and human health	Biodiversity	Land, soil, water, air and climate;	Material assets, cultural heritage and the landscape;	interaction between the factors r
Energy use and atmospheric emissions	Power generation (rig and vessel) Materials recycling			✓	✓	✓
Waste: materials recycling, reuse and disposal	Solid and liquid wastes to shore Removal of hazardous materials Materials recycling Onshore waste treatment, landfill of residual waste/materials Offloading and storage/dismantling of offshore structures onshore Road transport Hazardous material handling.	✓		✓	✓	
Accidental events	Dropped objects Vessel collision risk Accidental spills of fuel/lubricants.	✓	✓	✓	✓	✓
Consent Application 2						
Physical presence: decommissioning operations	Physical presence in field and in transit of supply vessels, barge/ or heavy lift vessels.	✓	✓		✓	
Physical presence: legacy materials (left *in situ*)	Presence of pipeline, umbilicals and protection materials post decommissioning	✓			✓	
Physical disturbance	Vessel anchoring. Excavation of jacket piles/leg stump remediation and removal of jacket. Recovery of large items of debris from the seabed. Remedial rock placement at jacket and pipelines.		✓	✓	✓	✓
Underwater noise	Mechanical cutting of jacket legs and structural members. Vessels, including rock placement. Post-decommissioning survey.		✓			✓
Discharges to sea	Release of inhibited water from export pipelines.			✓		
Energy use and atmospheric emissions	Materials recycling			✓	✓	✓

Source of Potential Significant Effect	Activity	Relevant Environmental Factor				
		Population and human health	Biodiversity	Land, soil, water, air and climate;	Material assets, cultural heritage and the landscape;	interaction between the factors r
Waste: materials recycling, reuse and disposal	Offloading and storage/dismantling of offshore structures onshore Road transport. Materials recycling Onshore waste treatment Landfill of residual waste/materials.	✓			✓	
Accidental events	Dropped objects Accidental spills of fuel/lubricants and chemical spills.	✓	✓	✓	✓	✓

A consideration of KADP activities or issues judged to have positive, minor or negligible environmental effects is given in **Appendix D of the EIAR**.

8.3 Management of Residual Effects and Conclusions

Through a systematic evaluation of the activities relating to the proposed KADP and their interactions with the environment, a variety of environmental effects were identified, the majority of which were of limited extent and duration and considered minor. Those activities identified as being of potentially greater concern were described and assessed further in the EIAR.

A number of potential effects are mitigated through mandatory requirements (e.g. as required by legislation) and project scope of works (e.g. rock placement on pipelines remaining *in situ*). Such mandatory control measures and additional mitigation measures identified are listed in **Table 14**, and will be included in detailed design and final project planning and execution.

These are fully detailed in the EIAR, Section 8.

Table 14: Summary of commitments and actions

Issue	Action
Environmental Management Commitments	
Compliance assurance	Ensure management of the applications for and monitoring of compliance with the requirements of project environmental permits and consents.
Procurement	Ensure requirement to meet MARPOL standards for special areas included in procurement of vessels and rigs used in decommissioning operations.
Contractor management	All vessels and the rig to be used during decommissioning will be subject to audit. Contractor performance will be monitored throughout the decommissioning operations

Issue	Action
Activity planning	Wherever possible, seek to minimise vessel days by making using of vessel synergies and careful activity phasing.
Interaction with other users: decommissioning operations	Notices to Mariners will be issued to cover all phases of decommissioning work to communicate the nature and timing of the activities. All vessels used in the decommissioning operations will meet applicable national and international standards (e.g. in terms of signals and lighting) and would follow established routes to ports. Should the jackets be placed in "lighthouse mode" for a period of time following topside removal, navigational aids of a type agreed with the Commissioner of Irish Lights will be deployed. Consult will take place with fisheries organisations and relevant marine authorities in accordance with legislation.
Discharges to sea:	Ensure chemical risk assessment is undertaken as part of final well decommissioning chemical selection and apply for relevant chemical permits (Permit for Use and Discharge of Added Chemicals – PUDAC).
Waste production	Implement a detailed Resource and Waste Management Plan which maximises the potential for reuse and recycling, including source segregating waste where appropriate. Management of all waste will be undertaken in accordance with the relevant waste legislation and only permitted and licensed waste facilities will be used.
Atmospheric emissions	As part of the decommissioning waste management plan (above), the benefit of materials returned to shore will be maximized through preferential reuse and recycling wherever possible.
Accidental events: Seabed debris from dropped objects	All lifting operations will be risk assessed.
Accidental events: loss of diesel inventories	Undertake audit of vessel bunkering procedures. Bunkering to be conducted in favourable sea states and during daylight hours so far as practicable. Procedure to be agreed with DTTAS.
Mitigation measures and residual effects	
Interaction with other users: decommissioning operations	Guard vessels will be used to minimise the potential for interaction between decommissioning vessels and other users.
	Residual effect: *The use of guard vessels would reduce the risk of other user interaction with certain activities associated with the decommissioning project (e.g. heavy lifts). Noting that these would take place in existing and charted surface exclusion zones, with all vessels subject to mandatory lighting and marking controls, the addition of a guard vessel will result in a minor risk reduction to other users. The residual impact from interactions with other users is temporary and minor.*
Interaction with other users: legacy materials left *in situ*	Rock cover remediation will be used to mitigate the potential snagging risk associated with decommissioning pipelines and umbilicals *in situ*, and the rock will be designed to be overtrawlable.
	Residual effect: *On application of rock cover following removal of exclusion zones around relevant infrastructure, there remains a low risk to other users (primarily fishing) from interactions with pipelines and umbilicals. The option to rock cover all exposed pipeline sections would further reduce risks to third parties.*
	Pipelines and umbilicals will be surveyed post-decommissioning to establish their exact position and this information will be included into navigational charts

Issue	Action
	Residual effect: *The post-decommissioning survey will confirm/update the position of the pipelines and umbilicals and inform any update to their charted location to ensure other users are aware of their accurate position, and therefore contribute to risk reduction from interaction.*
Physical disturbance: sensitive seabed features	The minimisation of rig and vessel movements which require anchoring, and the use of dynamic positioning (DP) on most vessels, where practicable (note that sensitive features (e.g. wrecks, Annex I habitats) have not been recorded in previous surveys within the working area). Pipeline decommissioning options (rock placement) which minimise physical disturbance will be selected subject to wider environmental, safety, technical and economic considerations. For each option involving rock placement, efforts will be made to minimise the volume of rock deployed.
	Residual effect: *The measures have the potential to reduce the significance of effect by minimising seabed footprint of activities. The predicted effect of seabed disturbance is negligible and short-term.*

8.3.1 Conclusion

The overall conclusion of the Environmental Impact Assessment Report is that, in view of the predicted scale, intensity and duration of the activities, with the implementation of the proposed mitigation and risk reduction measures and commitments in **Table 14**, the KADP will not result in significant adverse effects on the environment, other users, or population and human health.

8.4 Conclusions of the Appropriate Assessment Screening

A separate Appropriate Assessment Screening Report (reference, 253993-REP-14) has been prepared for the entire KADP to provide the necessary information required by the consenting authority, the Minister, to undertake screening (Stage 1) to determine if a full Appropriate Assessment of the decommissioning of the Kinsale Area gas fields and facilities is required.

The report concludes that the site of the proposed project is not directly connected with or necessary to the management of any Natura 2000 sites.

The screening assessment identified 13 SACs and 15 SPAs within approximately 100km of the proposed project. Based on the information provided above, and by applying the precautionary principle, it is determined that it is possible to rule out likely significant impacts on the integrity of any Natura 2000 site and therefore it is not deemed necessary to undertake any further stage of the Appropriate Assessment process.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Section 9

Stakeholder Engagement

Hartley Anderson

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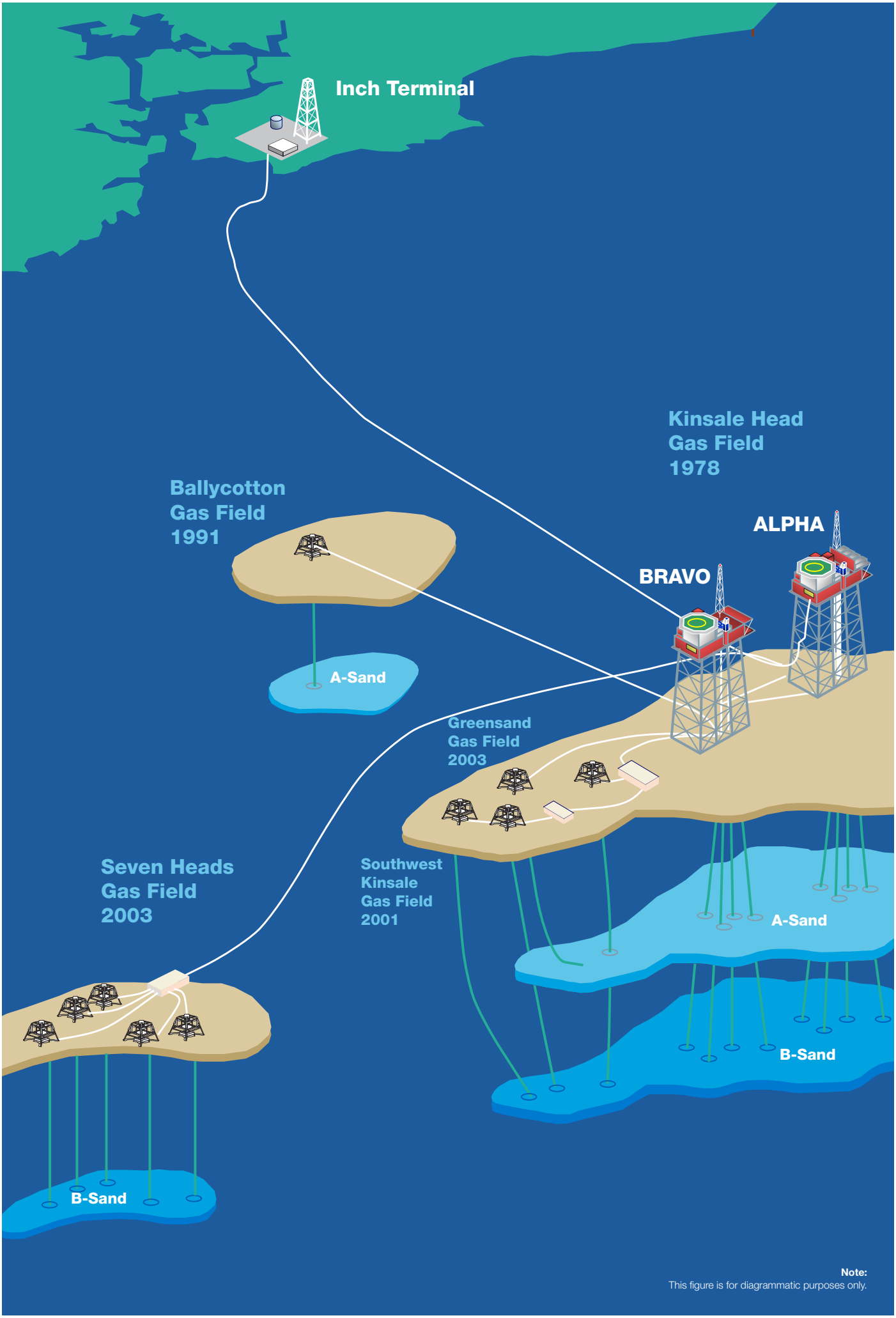
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9 Stakeholder Engagement

9.1 Introduction

A systematic, documented process has been put in place to manage the stakeholder consultation requirements and we have set out below our approach to this process.

The overarching approach that has been adopted for stakeholder management on the project is as follows:

- Any party outside of the project participants are considered a stakeholder.
- All stakeholders will be consulted with and updated on the project as appropriate
- Ensure stakeholders have had the opportunity to input into the project as appropriate

To achieve the above:

- A stakeholder manager has been nominated for the project. Their role is to:
  - co-ordinate stakeholder communications, and
  - maintain a register of all stakeholder communications.
- A live stakeholder register is being maintained and which records historic and planned stakeholder engagement and communications.
- The register will be maintained throughout the development of the project.

9.2 Stakeholder Engagement Activities

During the preparation of this Decommissioning Plan and associated EIAR, discussions were had and/or correspondence made with statutory and non-statutory bodies and other interested parties in order to ensure that issues relating to the proposed KADP were addressed. The parties consulted include the following:

- Petroleum Affairs Division (PAD) - Department of Communications, Climate Action and Environment,
- Commission for Regulation of Utilities (CRU),
- Marine Planning and Foreshore Unit – Department of Housing, Planning and Local Government,
- Cork County Council,
- National TFS (Trans Frontier Shipments) Office, Dublin City Council,
- National Parks and Wildlife Service (NPWS),
- National Monuments (NM),
- Ervia,
- Gas Networks Ireland (GNI),
- ESB,
- Cork Port Operations,
- Naval Operations (Cork),
- South West Regional Fisheries Forum,
- South East Regional Fisheries Forum,
- Birdwatch Ireland,

- Irish Whale and Dolphin Group (IWDG),
- Cork City Council,
- TDs and local councillors.

For a full list of consultees, please refer to Appendix F of the EIAR.

A consultation response was received from the Irish Whale and Dolphin Group (IWDG) noting the need to ensure that the decommissioning works will not disturb or degrade the marine habitat for cetaceans.

The proposed decommissioning scope of work and the environmental assessment has had due regard to the concerns regarding the protection of cetaceans and ensures that potential adverse effects are minimised.

A written response was also received from Dublin Airport Authority (DAA) stating that DAA has no observations to make on the KADP.

A meeting was held between Kinsale Energy, Arup/Hartley Anderson and NPWS during the consultation process. At this meeting Kinsale Energy outlined the proposed decommissioning project as well as detailing the methodology being used to assess ecological impacts and impacts on Natura 2000 sites. NPWS requested that the following was also considered:

- To consult with the IWDG for data on cetaceans.
- To consider the Marine Institute's Fisheries Ecosystems Advisory Services (FEAS) survey data, in particular marine mammal and seabird observations made during the Celtic Sea herring and ground fish surveys.

Subsequent to the meeting, useful information was obtained from both the IWDG and FEAS publications which has been reflected in the KADP EIAR.

A response was also received from the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht regarding the underwater archaeology assessment. The environmental assessment has had due regard to underwater archaeology.

In addition to the above, two public consultation sessions were undertaken with invitations made to all key stakeholders and interested members of the local community. The first information session took place at the Clayton Hotel, Cork City On 18th April 2018. An advertisement was placed in the local newspapers and letters sent to key stakeholders. The second public information session was hosted in the Aghada Community Centre, East Cork on 19th April 2018. This was arranged to facilitate residents living in the area of the onshore Inch terminal. Letters of invitation were individually delivered to residents in the Inch area in advance of the information session.

Both public information sessions were well received, with a total attendance of 45 people across both sessions. Feedback received from stakeholders has been positive and will be monitored and managed for the duration of the project.

9.3 Further Stakeholder Engagement

Stakeholder management will continue throughout the decommissioning works and may extend beyond completion, if there are any long term monitoring or maintenance requirements imposed as conditions of the consents (refer to **Section 7**).

Taking into consideration the stakeholder consultation which has been completed as part of the preparation of the Decommissioning Plan (refer to **Section 9.2**), the following stakeholders are included on Kinsale Energy's current stakeholder register as requiring further consultation prior to, during and/or following the decommissioning works:

- Petroleum Affairs Division (PAD) - DCCAE

- Commission for Regulation of Utilities (CRU)
- Gas Networks Ireland/Ervia
- Marine Planning and Foreshore Unit - DHPLG
- Cork County Council
- TFS Office, Dublin City Council
- NPWS & National Monuments - DAU - DAHRRG
- The Irish Coast Guard (IRCG)
- Irish Maritime Operations Centre (NMOC) of the Irish Coast Guard - (Marine Rescue Co-Ordination Centre (MRCC) of the Irish Coast Guard)
- Marine Radio Affairs Unit of the Maritime Safety Directorate
- Maritime Safety Policy Division of the Maritime Safety Directorate
- Ship Source Pollution Prevention Unit Irish Maritime Administration (Formerly - Marine Environmental Division of the Maritime Safety Directorate)
- Marine Institute
- Commissioners of Irish Lights (CIL)
- Naval Operations – Department of Defence
- Cork Port Operations
- Environmental Protection Agency
- RNLI Ballycotton
- Sea Fisheries Protection Authority
- Sea Fisheries Policy Division
- South & West Fishermen's Organisation
- Irish South & West Fish Producer Organisation (IS&WFPO)
- Irish South & East Fish Producer Organisation (IS&EFPO)
- South West Regional Fisheries Forum / (Regional Inshore Fisheries Forum)
- South East Regional Fisheries Forum / (Regional Inshore Fisheries Forum)
- National Inshore Fisheries Forum (NIFF)
- Irish Fish Producers Organisation (IFPO)
- Bord Iascaigh Mhara
- Irish Fish Producers Organisation
- Irish Whale and Dolphin Group
- Birdwatch Ireland
- Landowners of onshore pipeline & wayleave
- Local Residents – Inch
- General Public

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Kinsale Area Decommissioning Project

Appendix A

Further Information

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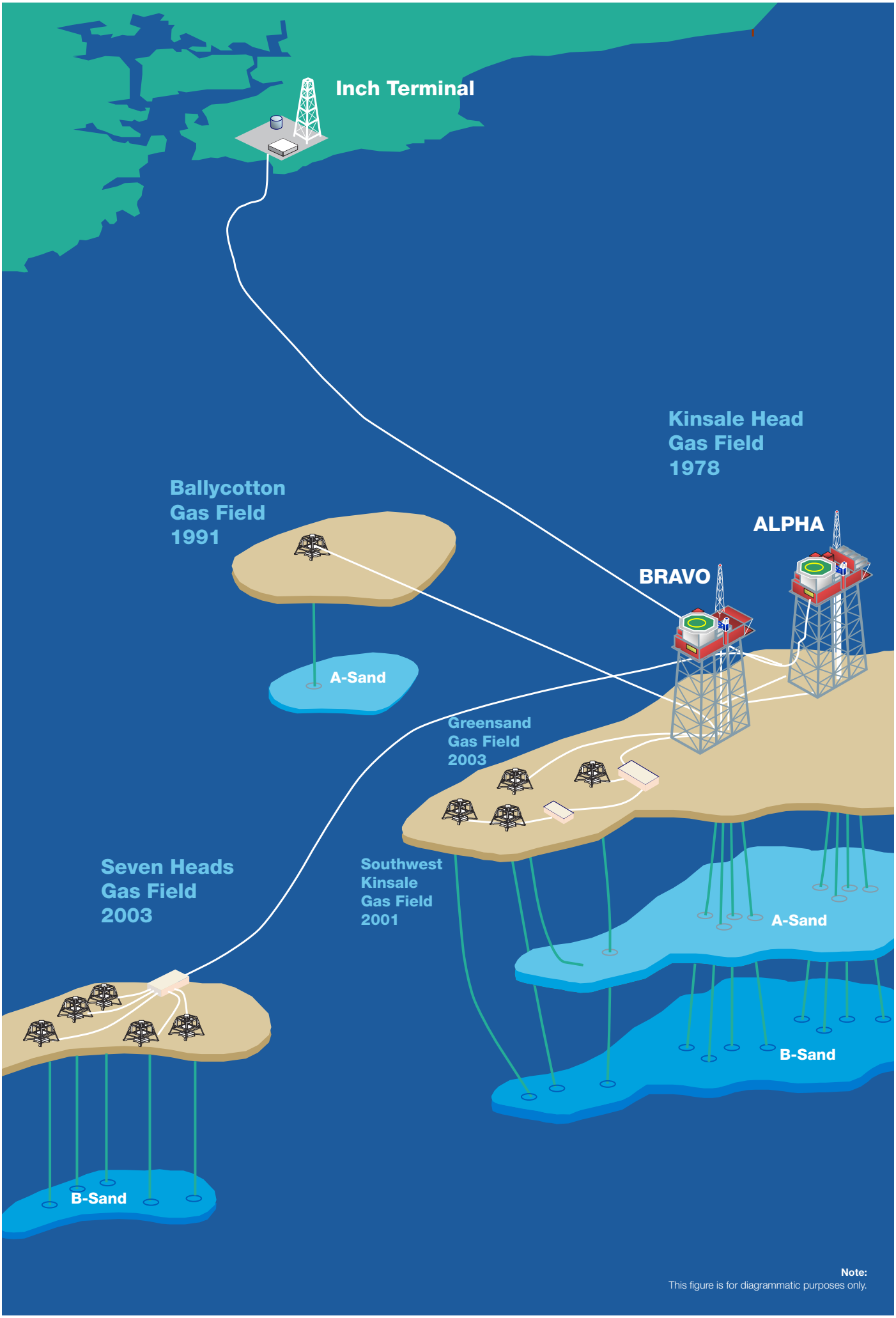
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Kinsale Area Decommissioning Project

Appendix A1

Relevant International Conventions and European Legislation

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A1.1 Relevant International Conventions and European Legislation

Table A1 below summarises the key international conventions and European legislation relevant to the KADP. **Section A1.2** and **Section A1.3** provide further detail.

Table A1: Key International legislation relevant to the KADP

Relevant Legislation	Consents / requirements for Decommissioning
OSPAR Convention (1992)	The KADP shall take all possible steps to prevent and eliminate pollution and apply the necessary measures to protect the maritime area against the adverse effects of human activities during works. Under paragraph 2 of the Decisions 98/3, the dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area – Kinsale Area platforms and subsea structures to be removed as part of the KADP.
MARPOL Convention, International Maritime Organisation (1978)	Ireland ratified the Convention, the requirements of which are transposed in Sea Pollution Act, 1991 (No. 27 of 1991). The Convention will apply to all shipping operations associated with the KADP ensure the prevention of pollution of the marine environment.
UN Convention on the Law of the Sea (1982)	The Convention will apply to the granting by the competent authority of an authorisation for the KADP.
Basel Convention	Any waste generated by the KADP, which has to be exported from Ireland, will be subject to the Convention.
Espoo Convention	Assessment required of the potential for the proposed activity to result in significant transboundary effects.
OECD Decision on the Control of Transboundary Movements of Waste	Any waste generated by the KADP, which will be exported from Ireland, will be subject to the OECD Decision.
Ballast Water Convention	All vessels associated with the KADP are required to manage their ballast water and sediments to a certain standard, according to a ship-specific ballast water management plan. All ships vessels also have to carry a ballast water record book and an international ballast water management certificate.
Water Framework Directive (2000/60/EC)	The Water Framework Directive, EC (2000), sets the objectives for water protection for the future and applies to inland surface waters, groundwater, transitional waters and coastal waters. Most of the KADP activities will be located outside 'coastal waters', as defined in the Directive. The Directive requirements will apply only to near shore and onshore decommissioning activities.
Marine Strategy Framework Directive (2008/56/EC)	The Directive aims to achieve good environmental status for the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. Most of the KADP activities will be located within the marine area, to which the Directive applies. The Directive requirements will apply to KADP activities.
Waste Framework Directive (2008/98/EC)	Waste activities arising from the KADP must comply with the Directive.
Commission Decision 2000/532/EC on the list of wastes, as amended by Commission Decision 2014/955/EU	Waste, arising from the KADP, must be classified in accordance with the Decision.

Relevant Legislation	Consents / requirements for Decommissioning
Regulation (EC) No 1013/2006 on Shipments of Waste	The management of waste, arising from the KADP, must comply with the requirements of the Regulation.
Aarhus Convention (Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters) (1998)	The relevant requirements of the Aarhus Convention, in relation to public participation in decision making on environmental matters, have been incorporated into the EIA Directive 2011/92/EU.

A1.2 Relevant International Conventions

MARPOL Convention

MARPOL Convention, International Maritime Organisation (1978), is the main international convention covering prevention of pollution of the marine environment. It was developed in an effort to minimise pollution of the oceans and seas and to preserve the marine environment. Its aim is to eliminate planned discharge of pollutants to the marine environment and to minimise accidental spillage of deleterious substances.

The MARPOL Protocol was developed and adopted in 1978 in response to a number of tanker accidents in 1976 and 1977. As the 1973 Convention had not yet entered into force, the 1978 Protocol absorbed the parent Convention. It entered into force in 1983 and was updated by amendments over the years. In 1997, a new Protocol was adopted to amend the Convention and a new Annex VI added.

The Convention includes regulations aimed at preventing and minimising pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes.

Ireland ratified the Convention, the requirements of which are transposed in Sea Pollution Act, 1991 (No. 27 of 1991).

The Convention will apply to all shipping operations associated with the KADP.

UN Convention on the Law of the Sea (1982)

The UN Convention on the Law of the Sea (UNCLOS), UN (1982), defines the exclusive economic zone (not greater than 200 nautical miles from the low water mark) where the rights and jurisdiction of the coastal State are governed by the Convention. Within the exclusive economic zone, the convention gives a State the sovereign right to the exploitation of resources and exclusive jurisdiction over authorisation and regulation of any installations or structures (refer to Article 56, paragraph 1(a) and 1(b) and Article 60, paragraph 1 and 2).

Article 193 of UNCLOS further references the granting of exclusive rights to Coastal States to explore and exploit the natural (non-living) resources and states the following with regard to environmental protection:

“States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment”.

With regard to disused installations or structures, Article 60, paragraph 3, states the following:

“Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization [such as the International Maritime Organisation (IMO)]*. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed”.*

The ambiguity between the requirement to remove abandoned or disused installations and reference to publicity for structures not entirely removed has led to debate and different interpretations of the decommissioning requirements of UNCLOS.

UNCLOS also makes provision for the protection and preservation of the marine environment (Part XII, Articles 192 to 237 inclusive).

Coastal states are obliged to adopt national laws and take measures to prevent, reduce and control pollution of the marine environment, arising from, or in connection with, the exploration or exploitation of the natural resources of the seabed and subsoil, and from dumping within their jurisdiction.

A number of other articles are relevant to the proposed KADP, including the following:

- Article 194 – Measures to Prevent, Reduce and Control Pollution of the Marine Environment.
- Article 206 – Assessment of Potential Effects of Activities.
- Article 208 – Pollution from seabed activities subject to national jurisdiction
- Article 210 – Pollution by Dumping.
- Article 214 – Enforcement with respect to pollution from seabed activities.

Ireland and the European Union have ratified the Convention.

The Convention will apply to the granting by the competent authority of an authorisation for the KADP.

Basel Convention (1989)

The Basel Convention, UN (1989), is a comprehensive global environmental agreement on the management of hazardous and other wastes. The Convention aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movement and disposal of hazardous and other wastes. The Basel Convention was adopted in 1989 and entered into force in 1992. Ireland has ratified the Convention.

The Convention regulates the transboundary movements of hazardous and other wastes by applying the “Prior Informed Consent” procedure (shipments made without consent are illegal). The Convention obliges its Parties to ensure that hazardous and other wastes are managed and disposed of in an environmentally sound manner. To this end, Parties are expected to minimise the quantities that are moved across borders, to treat and dispose of wastes as close as possible to their place of generation, and to prevent or minimise the generation of wastes at source. Strong controls have to be applied from the moment of generation of a hazardous waste to its storage, transport, treatment, reuse, recycling, recovery and final disposal.

In 1995, an amendment to the Basel Convention (“the Ban Amendment”) was adopted. The amendment provided for the prohibition of:

- All transboundary movements to States, which are not included in Annex VII, of hazardous wastes covered by the Convention that are intended for final disposal, and
- All transboundary movements to States, which are not included in Annex VII, of hazardous wastes covered by paragraph 1 (a) of Article 1 of the Convention that are destined for reuse, recycling or recovery operations.

In 1998, Annexes VIII and IX were added to provide further elaboration as to the wastes regulated by the Convention as listed in Annexes I and III. Since then, various changes to these Annexes VIII and IX have also been adopted.

The Basel Convention has been implemented in European Union and Irish legislation.

Any waste generated by the KADP, which has to be exported from Ireland, will be subject to the Convention.

Espoo Convention (Convention on Environmental impact Assessment in a Transboundary Context) (1991)

Ireland is a Contracting Party to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo 1991) and thus an assessment is needed of the potential for the proposed activity to result in significant transboundary effects. The relevant requirements of the Espoo Convention, in relation to the environmental assessment of transboundary effects, have been incorporated into the EIA Directive 2011/92/EU.

OECD Decision on the Control of Transboundary Movements of Waste

Since March 1992, transboundary movements of wastes destined for recovery operations between member countries of the Organisation for Economic Co-operation and Development (OECD) have been supervised and controlled according to Decision C(92)39 on the Control of Transfrontier Movements of Wastes, OECD (1992). The 1992 decision was revised in 2001 and amended in 2002, 2004, 2005 and 2008, OECD (2001). The OECD Decision provided a framework for the OECD member countries to control transboundary movements of recoverable wastes within the OECD area in an environmentally sound and economically efficient manner. Compared to the Basel Convention, it gave a simplified and more explicit means of controlling such movements of wastes. It also facilitated transboundary movements of recoverable wastes between OECD member countries in the case where an OECD member country is not a Party to the Basel Convention.

The OECD Decision includes lists of wastes, which have been harmonised to a large extent with the lists of wastes of the Basel Convention.

Ireland is a member of the OECD. OECD Council Decisions are legally binding for member countries.

Any waste generated by the KADP, which will be exported from Ireland, will be subject to the OECD Decision.

OSPAR Convention (1992)

The OSPAR Convention, OSPAR (1992), is the current legislative instrument regulating international cooperation on environmental protection in the North-East Atlantic. It replaces the 1972 Oslo Convention on dumping waste at sea and the 1974 Paris Convention on land-based sources of marine pollution. Ireland has ratified the Convention.

The Convention applies to the internal waters and the territorial seas of the Contracting Parties, the sea beyond and adjacent to the territorial sea under the jurisdiction of the coastal State to the extent recognised by international law, and to the high seas, including the bed of all those waters and its subsoil, situated within specified limits of the Atlantic and Arctic Oceans.

The convention requires all parties to take all possible steps to prevent and eliminate pollution and apply the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve maritime ecosystems and, when practicable, restore marine areas which have been adversely affected. Parties are required to, individually and jointly, adopt programmes and measures and to harmonise policies and strategies.

In addition, in order to meet their obligations, Article 2, paragraph 2(a) and 2(b) states that Parties to the Convention must apply the following two principles:

- *"the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects;*

- *the polluter pays principle, by virtue of which the costs of pollution prevention, control and reduction measures are to be borne by the polluter."*

Annex II of the convention, which specifically addresses the prevention and elimination of pollution by dumping or incineration, states that *"No disused offshore installation or disused offshore pipeline shall be dumped and no disused offshore installation shall be left wholly or partly in place in the maritime area without a permit issued by the competent authority"* (Article 5, paragraph 1). The Annex further states that such permits shall not be issued if substances, which are likely to represent a hazard, are present (paragraph 2).

Article 8 of Annex II reinforces this, stating that "*No placement of a disused offshore installation or a disused offshore pipeline in the maritime area for a purpose other than that for which it was originally designed or constructed shall take place without authorisation or regulation by the competent authority of the relevant Contracting Party*".

For the purposes of the convention 'dumping' and 'wastes or other matter' are defined as follows:

Article 1 – Definitions

"(f) "Dumping" means

(i) any deliberate disposal in the maritime area of wastes or other matter

(1) from vessels or aircraft;

(2) from offshore installations;

(ii) any deliberate disposal in the maritime area of

(1) vessels or aircraft;

(2) offshore installations and offshore pipelines."

"(g) "Dumping" does not include:

(i) the disposal in accordance with the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, or other applicable international law, of wastes or other matter incidental to, or derived from, the normal operations of vessels or aircraft or offshore installations other than wastes or other matter transported by or to vessels or aircraft or offshore installations for the purpose of disposal of such wastes or other matter or derived from the treatment of such wastes or other matter on such vessels or aircraft or offshore installations;

(ii) placement of matter for a purpose other than the mere disposal thereof, provided that, if the placement is for a purpose other than that for which the matter was originally designed or constructed, it is in accordance with the relevant provisions of the Convention; and

(iii) for the purposes of Annex III, the leaving wholly or partly in place of a disused offshore installation or disused offshore pipeline, provided that any such operation takes place in accordance with any relevant provision of the Convention and with other relevant international law."

"(o) "Wastes or other matter" does not include:

(i) human remains;

(ii) offshore installations;

(iii) offshore pipelines;

(iv) unprocessed fish and fish offal discarded from fishing vessels."

OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations

Decisions 98/3, OSPAR (1998), amended the Convention in 1998. Under paragraph 2 of the Decisions 98/3, the dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area. However, paragraph 3 of the Decision provides a derogation to the paragraph 2 prohibition, providing that following an assessment, the competent authority of the relevant Contracting Party may give permission to leave disused installations or parts of disused installations in place.

The categories where derogations may be considered are outlined in Annex 1 to the Decision, which states the following:

"The following categories of disused offshore installations, excluding their topsides, are identified for the purpose of paragraph 3:

a) *steel installations weighing more than ten thousand tonnes in air* [and placed in the maritime area before 9th February 1999]*;*

b) *gravity based concrete installations;*

c) *floating concrete installations;*

d) *any concrete anchor-base which results, or is likely to result, in interference with other legitimate uses of the sea."*

A disused offshore installation is defined as an offshore installation, which is neither *"(a) serving the purpose of offshore activities for which it was originally placed within the maritime area, nor (b) serving another legitimate purpose in the maritime area authorised or regulated by the competent authority of the relevant Contracting Party*".

The definition of disused offshore installation does not include "*(c) any part of an offshore installation which is located below the surface of the sea-bed, or (d) any concrete anchor-base associated with a floating installation which does not, and is not likely to, result in interference with other legitimate uses of the sea*." OSPAR Decision 98/3 also does not refer to subsea pipelines, umbilicals and their protective materials and therefore are not covered by Decision 98/3.

Decision 98/3 is reviewed every 5 years. The most recent review, in 2013, made no change to the information outlined above.

The Kinsale Area platforms, Alpha and Bravo, each weigh less than 10,000 tonnes. Consequently, the derogation will not be applicable.

International Convention for the Control and Management of Ships' Ballast Water and Sediments

The Ballast Water Management Convention, adopted in 2004 and entered into force in September 2017, aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Under the Convention, all ships in international traffic are required to manage their ballast water and sediments to a certain standard, according to a ship-specific ballast water management plan. All ships will also have to carry a ballast water record book and an international ballast water management certificate.

A1.3 Relevant European Legislation

Water Framework Directive (2000/60/EC)

The Water Framework Directive, EC (2000), sets the objectives for water protection for the future and applies to inland surface waters, groundwater, transitional waters and coastal waters. Coastal waters are defined in the Directive as *'surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters'*.

The aim of the directive is to prevent and reduce pollution, promote sustainable water use, protect the aquatic environment, improve the status of aquatic ecosystems and mitigate the effects of floods and droughts. The directive addresses the management of water quality and water resources and affects conservation, fisheries, flood defence, development planning and environmental monitoring. It requires Member States to control all impacts, including physical, polluting or otherwise, on our water resource.

The Directive has been transposed in Irish legislation through a number of measures, including the European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003).

Most of the KADP activities will be located outside 'coastal waters', as defined in the Directive. The Directive requirements will apply only to near shore and onshore decommissioning activities.

Marine Strategy Framework Directive (2008/56/EC)

The 'Marine Strategy Framework Directive' was adopted in 2008, EC (2008a).

The Directive aims to achieve good environmental status for the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. It is the first EU legislative instrument related to the protection of marine biodiversity, as it contains the explicit regulatory objective that "biodiversity is maintained by 2020", as the cornerstone for achieving good environmental status.

In order to achieve its goal, the Directive establishes European marine regions and sub-regions on the basis of geographical and environmental criteria.

In order to achieve good environmental status by 2020, each Member State is required to develop a strategy for its marine waters, which will be updated every six years.

The Directive applies to water on the seaward side of the baseline to the outmost reach of the area where a Member State has rights, under UNCLOS i.e. 200 nautical miles. The geographical scope of the Marine Spatial Framework Directive overlaps with the Water Framework Directive by one nautical mile.

The Marine Strategy Framework Directive has been transposed into Irish legislation by a number of measures, including the European Communities (Marine Strategy Framework) Regulations (S.I. No. 249 of 2011).

Most of the KADP activities will be located within the marine area, to which the Directive applies. The Directive requirements will apply to KADP activities.

Waste Framework Directive (2008/98/EC)

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (known as the Waste Framework Directive) has been effective since 12 December 2010, EC (2008b). The new Directive repealed the codified Directive 2006/12/EC on Waste, the Hazardous Waste Directive (91/689/EEC) and the Waste Oils Directive (75/439/EEC).

The Directive seeks to implement the provisions of the Basel Convention, sets the basic concepts and definitions related to waste management and lays down the following waste management principles:

- The "polluter pays principle" which requires costs of waste management to be borne by the original waste producer or by current or previous waste holders; and
- The "waste hierarchy" which is a five-step hierarchy of waste management options which must be applied by Member States when developing their national waste policies, as follows:
  - Waste prevention (preferred option);
  - Re-use;
  - Recycling;
  - Recovery (including energy recovery); and
  - Safe disposal, as a last resort.

The Directive defines 'waste' as *"any substance or object which the holder discards or intends or is required to discard"* (Article 3 (1)).

The Directive also addresses when waste ceases to be waste and becomes a secondary raw material and how to distinguish between waste and 'by-products' and includes recycling and recovery targets.

Article 6 of the Directive provides that certain specified waste can cease to be waste when it has undergone a recovery operation and complies with certain criteria. Regulation No 333/2001 establishes criteria determining when iron, steel and aluminium scrap, including aluminium alloy scrap, ceases to be waste.

Article 13 requires Member States to take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment.

Article 23 specifies that Member States shall require any establishment or undertaking intending to carry out waste treatment to obtain a permit from the competent authority. Treatment is defined in Article 3 (14) as *"recovery or disposal operations, including preparation prior to recovery or disposal".*

The provisions of the Waste Framework Directive have been transposed into Irish Law through the Waste Management Act, 1996 (No. 10 of 1996) as amended and associated regulations.

Waste activities arising from the KADP must comply with the Directive.

Commission Decision 2000/532/EC on the list of wastes, as amended by Commission Decision 2014/955/EU

Commission Decision 2000/532/EC established a list of wastes, in support of the implementation of the Waste Framework Directive. Decision 2000/532/EC has been amended several times. The most recent amendment was by Commission Decision 2014/955/EU, EU (2014b). This Decision establishes the classification system for wastes, including a distinction between hazardous and non-hazardous wastes.

Waste, arising from the KADP, must be classified in accordance with the Decision.

Regulation (EC) No 1013/2006 on Shipments of Waste

Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste (as amended) specifies conditions under which waste can be shipped between/through Member States and other countries. Its aim is to strengthen and simplify procedures for controlling waste shipments in order to improve environmental protection and reduce the risk of uncontrolled shipments. The Regulation addresses all types of wastes, with the exception of radioactive waste or waste types subject to separate control regimes. It controls procedures for two classes of waste, as follows:

- The 'Green listed' procedure applies to non-hazardous waste intended for recovery; and

- The ‘Amber list’ notification procedure applies to shipments of all waste intended for disposal and hazardous waste intended for recovery.

This Regulation is transposed into Irish legislation by the Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007).

The management of waste, arising from the KADP, must comply with the requirements of the Regulation.

Aarhus Convention (Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters) (1998)

The Public Participation Directive (Directive 2003/35/EC) Directive implements the 1998 Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters. The Convention and Directive are intended to improve public access to environmental information and greater participation in the environmental decision-making process. The relevant requirements of the Aarhus Convention, in relation to public participation in decision making on environmental matters, have been incorporated into the EIA Directive 2011/92/EU.

KINSALE ENERGY

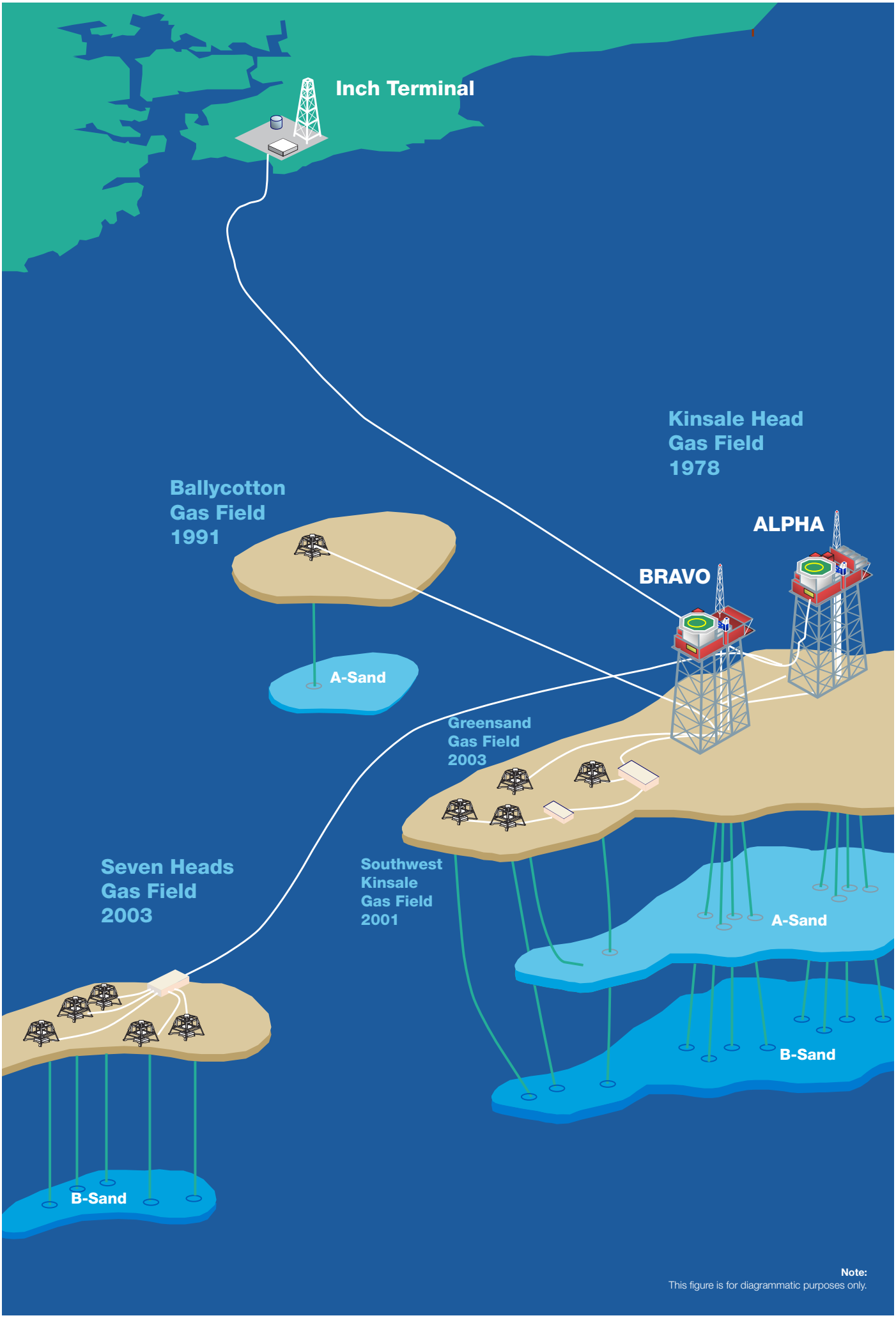
Kinsale Area Decommissioning Project

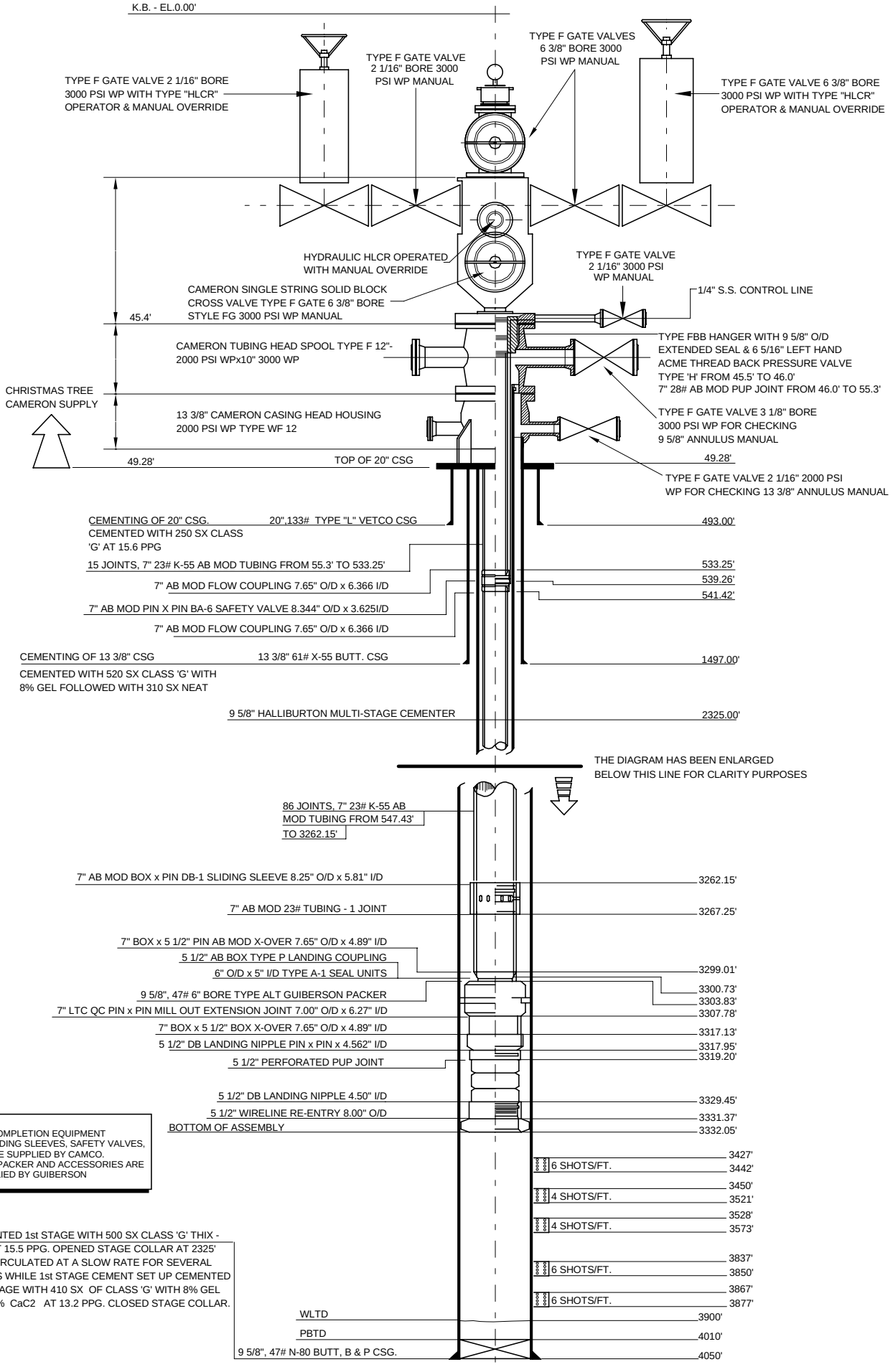
Appendix A2

Well Completion Diagrams

Hartley Anderson

ARUP


Inch Terminal
Kinsale Head
Gas Field
1978
Ballycotton
Gas Field
1991
ALPHA
BRAVO
A-Sand
Greensand
Gas Field
2003
Seven Heads
Gas Field
2003
Southwest
Kinsale
Gas Field
2001
A-Sand
B-Sand
B-Sand
Note:
This figure is for diagrammatic purposes only.



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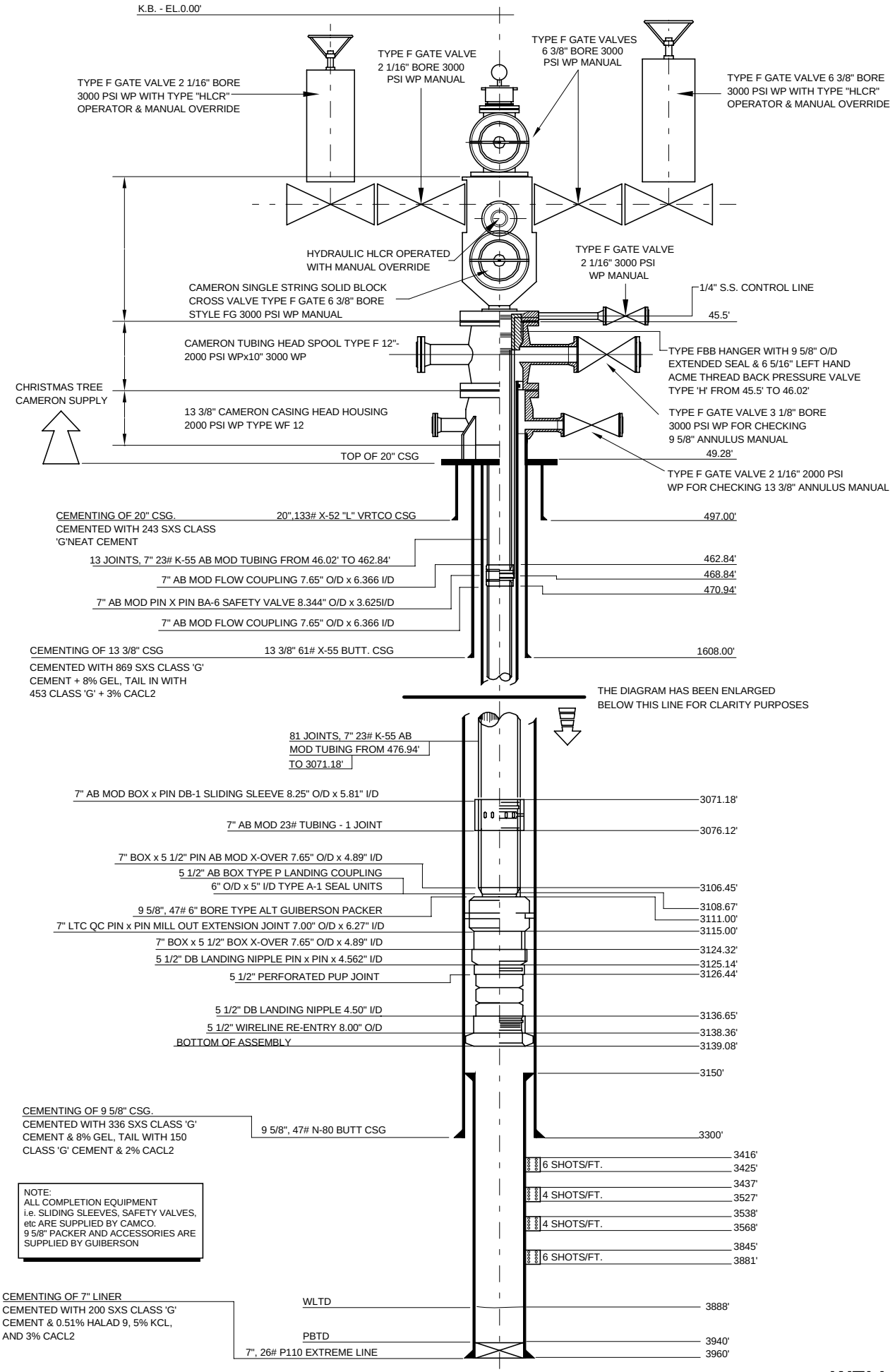

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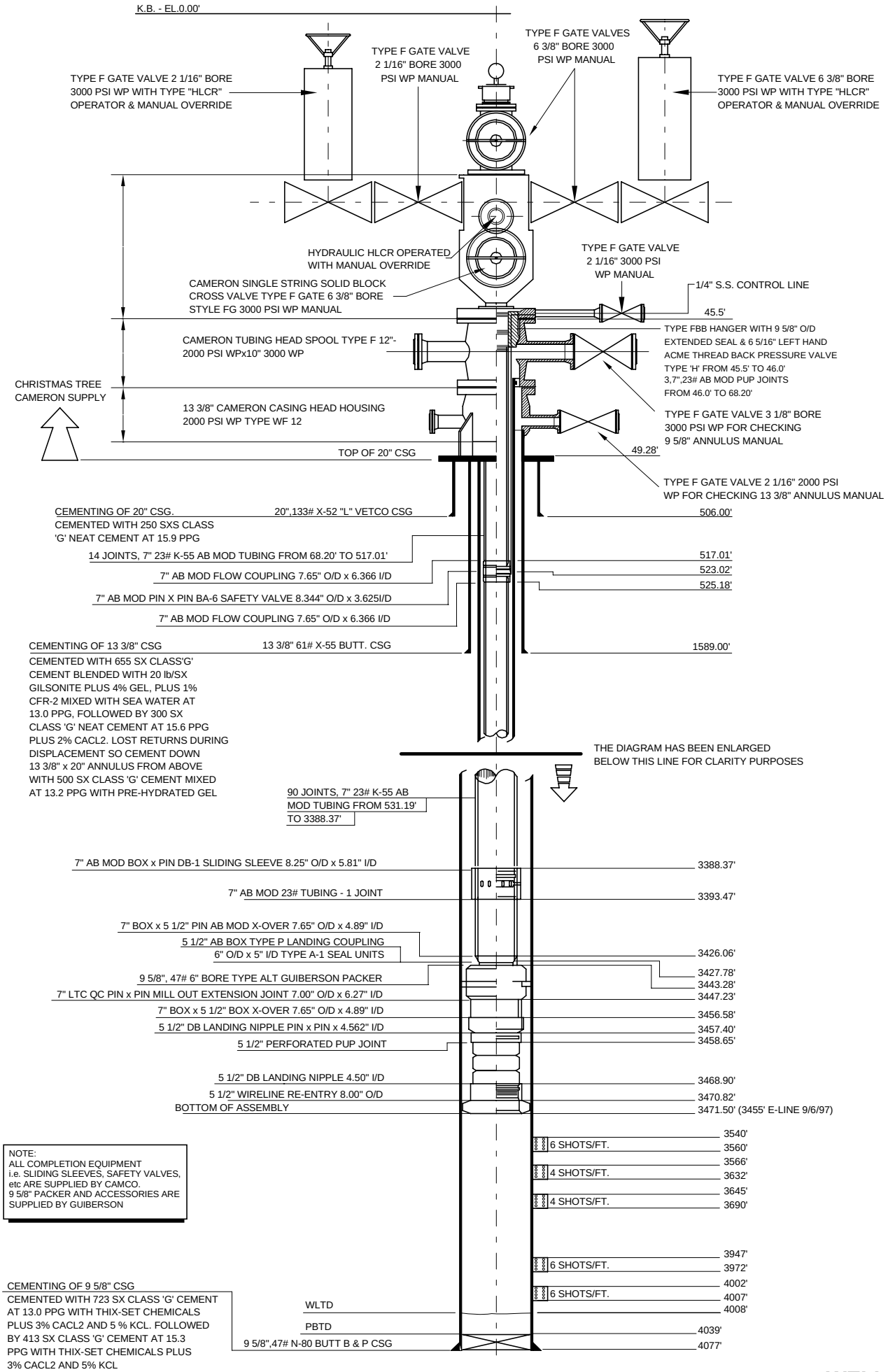

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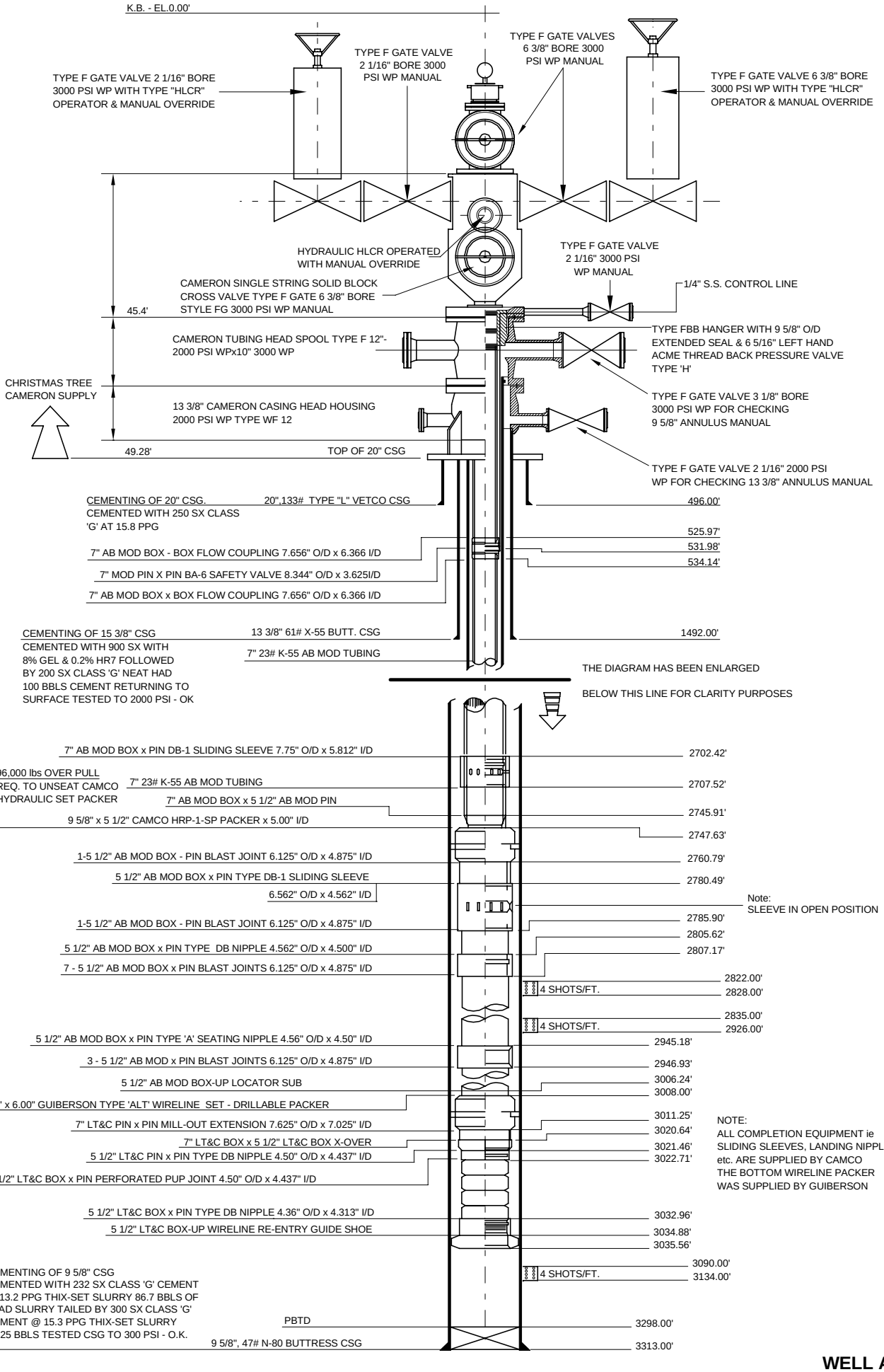
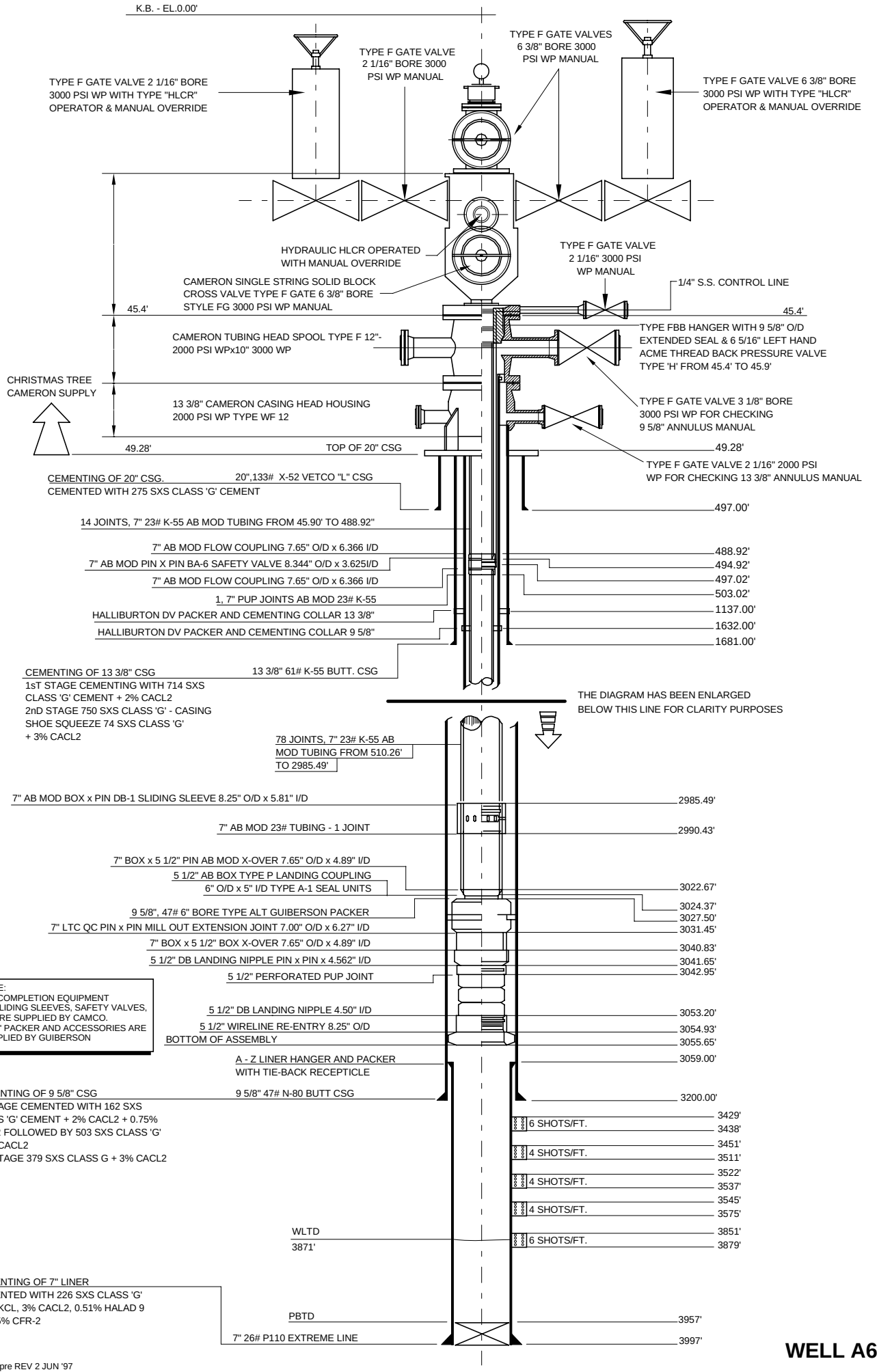

K.B. - EL.0.00'
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVES 6 3/8" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVE 6 3/8" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
HYDRAULIC HLCR OPERATED WITH MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" 3000 PSI WP MANUAL
CAMERON SINGLE STRING SOLID BLOCK CROSS VALVE TYPE F GATE 6 3/8" BORE STYLE FG 3000 PSI WP MANUAL
1/4" S.S. CONTROL LINE
45.4'
CAMERON TUBING HEAD SPOOL TYPE F 12"-2000 PSI WPx10" 3000 WP
TYPE FBB HANGER WITH 9 5/8" O/D EXTENDED SEAL & 6 5/16" LEFT HAND ACME THREAD BACK PRESSURE VALVE TYPE 'H'
CHRISTMAS TREE CAMERON SUPPLY
13 3/8" CAMERON CASING HEAD HOUSING 2000 PSI WP TYPE WF 12
TYPE F GATE VALVE 3 1/8" BORE 3000 PSI WP FOR CHECKING 9 5/8" ANNULUS MANUAL
49.28'
TOP OF 20" CSG
TYPE F GATE VALVE 2 1/16" 2000 PSI WP FOR CHECKING 13 3/8" ANNULUS MANUAL
CEMENTING OF 20" CSG. CEMENTED WITH 250 SX CLASS 'G' AT 15.8 PPG
20",133# TYPE "L" VETCO CSG
496.00'
525.97'
7" AB MOD BOX - BOX FLOW COUPLING 7.656" O/D x 6.366 I/D
531.98'
7" MOD PIN X PIN BA-6 SAFETY VALVE 8.344" O/D x 3.625I/D
534.14'
7" AB MOD BOX x BOX FLOW COUPLING 7.656" O/D x 6.366 I/D
CEMENTING OF 15 3/8" CSG CEMENTED WITH 900 SX WITH 8% GEL & 0.2% HR7 FOLLOWED BY 200 SX CLASS 'G' NEAT HAD 100 BBLS CEMENT RETURNING TO SURFACE TESTED TO 2000 PSI - OK
13 3/8" 61# X-55 BUTT. CSG
1492.00'
7" 23# K-55 AB MOD TUBING
THE DIAGRAM HAS BEEN ENLARGED
BELOW THIS LINE FOR CLARITY PURPOSES
7" AB MOD BOX x PIN DB-1 SLIDING SLEEVE 7.75" O/D x 5.812" I/D
2702.42'
96,000 lbs OVER PULL REQ. TO UNSEAT CAMCO HYDRAULIC SET PACKER
7" 23# K-55 AB MOD TUBING
2707.52'
7" AB MOD BOX x 5 1/2" AB MOD PIN
2745.91'
9 5/8" x 5 1/2" CAMCO HRP-1-SP PACKER x 5.00" I/D
2747.63'
1-5 1/2" AB MOD BOX - PIN BLAST JOINT 6.125" O/D x 4.875" I/D
2760.79'
5 1/2" AB MOD BOX x PIN TYPE DB-1 SLIDING SLEEVE
2780.49'
6.562" O/D x 4.562" I/D
Note: SLEEVE IN OPEN POSITION
1-5 1/2" AB MOD BOX - PIN BLAST JOINT 6.125" O/D x 4.875" I/D
2785.90'
5 1/2" AB MOD BOX x PIN TYPE DB NIPPLE 4.562" O/D x 4.500" I/D
2805.62'
7 - 5 1/2" AB MOD BOX x PIN BLAST JOINTS 6.125" O/D x 4.875" I/D
2807.17'
2822.00'
4 SHOTS/FT.
2828.00'
2835.00'
4 SHOTS/FT.
2926.00'
5 1/2" AB MOD BOX x PIN TYPE 'A' SEATING NIPPLE 4.56" O/D x 4.50" I/D
2945.18'
3 - 5 1/2" AB MOD x PIN BLAST JOINTS 6.125" O/D x 4.875" I/D
2946.93'
5 1/2" AB MOD BOX-UP LOCATOR SUB
3006.24'
3008.00'
9 5/8" x 6.00" GUIBERSON TYPE 'ALT' WIRELINE SET - DRILLABLE PACKER
3011.25'
7" LT&C PIN x PIN MILL-OUT EXTENSION 7.625" O/D x 7.025" I/D
3020.64'
7" LT&C BOX x 5 1/2" LT&C BOX X-OVER
3021.46'
5 1/2" LT&C PIN x PIN TYPE DB NIPPLE 4.50" O/D x 4.437" I/D
3022.71'
5 1/2" LT&C BOX x PIN PERFORATED PUP JOINT 4.50" O/D x 4.437" I/D
NOTE: ALL COMPLETION EQUIPMENT ie SLIDING SLEEVES, LANDING NIPPLES. etc. ARE SUPPLIED BY CAMCO THE BOTTOM WIRELINE PACKER WAS SUPPLIED BY GUIBERSON
5 1/2" LT&C BOX x PIN TYPE DB NIPPLE 4.36" O/D x 4.313" I/D
3032.96'
5 1/2" LT&C BOX-UP WIRELINE RE-ENTRY GUIDE SHOE
3034.88'
3035.56'
3090.00'
4 SHOTS/FT.
3134.00'
CEMENTING OF 9 5/8" CSG CEMENTED WITH 232 SX CLASS 'G' CEMENT @ 13.2 PPG THIX-SET SLURRY 86.7 BBLS OF LEAD SLURRY TAILED BY 300 SX CLASS 'G' CEMENT @ 15.3 PPG THIX-SET SLURRY 71.25 BBLS TESTED CSG TO 300 PSI - O.K.
PBTD
3298.00'
9 5/8", 47# N-80 BUTTRESS CSG
3313.00'

WELL A5


K.B. - EL.0.00'
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVES 6 3/8" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVE 6 3/8" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
HYDRAULIC HLCR OPERATED WITH MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" 3000 PSI WP MANUAL
CAMERON SINGLE STRING SOLID BLOCK CROSS VALVE TYPE F GATE 6 3/8" BORE STYLE FG 3000 PSI WP MANUAL
1/4" S.S. CONTROL LINE
45.4'
45.4'
CAMERON TUBING HEAD SPOOL TYPE F 12"-2000 PSI WPx10" 3000 WP
TYPE FBB HANGER WITH 9 5/8" O/D EXTENDED SEAL & 6 5/16" LEFT HAND ACME THREAD BACK PRESSURE VALVE TYPE 'H' FROM 45.4' TO 45.9'
CHRISTMAS TREE CAMERON SUPPLY
13 3/8" CAMERON CASING HEAD HOUSING 2000 PSI WP TYPE WF 12
TYPE F GATE VALVE 3 1/8" BORE 3000 PSI WP FOR CHECKING 9 5/8" ANNULUS MANUAL
49.28'
TOP OF 20" CSG
49.28'
TYPE F GATE VALVE 2 1/16" 2000 PSI WP FOR CHECKING 13 3/8" ANNULUS MANUAL
CEMENTING OF 20" CSG.
CEMENTED WITH 275 SXS CLASS 'G' CEMENT
20",133# X-52 VETCO "L" CSG
497.00'
14 JOINTS, 7" 23# K-55 AB MOD TUBING FROM 45.90' TO 488.92"
7" AB MOD FLOW COUPLING 7.65" O/D x 6.366 I/D
488.92'
7" AB MOD PIN X PIN BA-6 SAFETY VALVE 8.344" O/D x 3.625I/D
494.92'
7" AB MOD FLOW COUPLING 7.65" O/D x 6.366 I/D
497.02'
1, 7" PUP JOINTS AB MOD 23# K-55
503.02'
HALLIBURTON DV PACKER AND CEMENTING COLLAR 13 3/8"
1137.00'
HALLIBURTON DV PACKER AND CEMENTING COLLAR 9 5/8"
1632.00'
1681.00'
CEMENTING OF 13 3/8" CSG
1sT STAGE CEMENTING WITH 714 SXS CLASS 'G' CEMENT + 2% CACL2
2nD STAGE 750 SXS CLASS 'G' - CASING SHOE SQUEEZE 74 SXS CLASS 'G' + 3% CACL2
13 3/8" 61# K-55 BUTT. CSG
THE DIAGRAM HAS BEEN ENLARGED BELOW THIS LINE FOR CLARITY PURPOSES
78 JOINTS, 7" 23# K-55 AB MOD TUBING FROM 510.26' TO 2985.49'
7" AB MOD BOX x PIN DB-1 SLIDING SLEEVE 8.25" O/D x 5.81" I/D
2985.49'
7" AB MOD 23# TUBING - 1 JOINT
2990.43'
7" BOX x 5 1/2" PIN AB MOD X-OVER 7.65" O/D x 4.89" I/D
5 1/2" AB BOX TYPE P LANDING COUPLING
6" O/D x 5" I/D TYPE A-1 SEAL UNITS
3022.67'
9 5/8", 47# 6" BORE TYPE ALT GUIBERSON PACKER
3024.37'
3027.50'
7" LTC QC PIN x PIN MILL OUT EXTENSION JOINT 7.00" O/D x 6.27" I/D
3031.45'
7" BOX x 5 1/2" BOX X-OVER 7.65" O/D x 4.89" I/D
3040.83'
5 1/2" DB LANDING NIPPLE PIN x PIN x 4.562" I/D
3041.65'
5 1/2" PERFORATED PUP JOINT
3042.95'
NOTE:
ALL COMPLETION EQUIPMENT i.e. SLIDING SLEEVES, SAFETY VALVES, etc ARE SUPPLIED BY CAMCO.
9 5/8" PACKER AND ACCESSORIES ARE SUPPLIED BY GUIBERSON
5 1/2" DB LANDING NIPPLE 4.50" I/D
3053.20'
5 1/2" WIRELINE RE-ENTRY 8.25" O/D
3054.93'
BOTTOM OF ASSEMBLY
3055.65'
A - Z LINER HANGER AND PACKER WITH TIE-BACK RECEPTICLE
3059.00'
CEMENTING OF 9 5/8" CSG
lst STAGE CEMENTED WITH 162 SXS CLASS 'G' CEMENT + 2% CACL2 + 0.75% CFR-2 FOLLOWED BY 503 SXS CLASS 'G' + 1% CACL2
2nd STAGE 379 SXS CLASS G + 3% CACL2
9 5/8" 47# N-80 BUTT CSG
3200.00'
3429'
6 SHOTS/FT.
3438'
3451'
4 SHOTS/FT.
3511'
3522'
4 SHOTS/FT.
3537'
3545'
4 SHOTS/FT.
3575'
WLTD
3871'
3851'
6 SHOTS/FT.
3879'
CEMENTING OF 7" LINER
CEMENTED WITH 226 SXS CLASS 'G' + 5% KCL, 3% CACL2, 0.51% HALAD 9 AND 5% CFR-2
PBTD
3957'
7" 26# P110 EXTREME LINE
3997'
WELL A6
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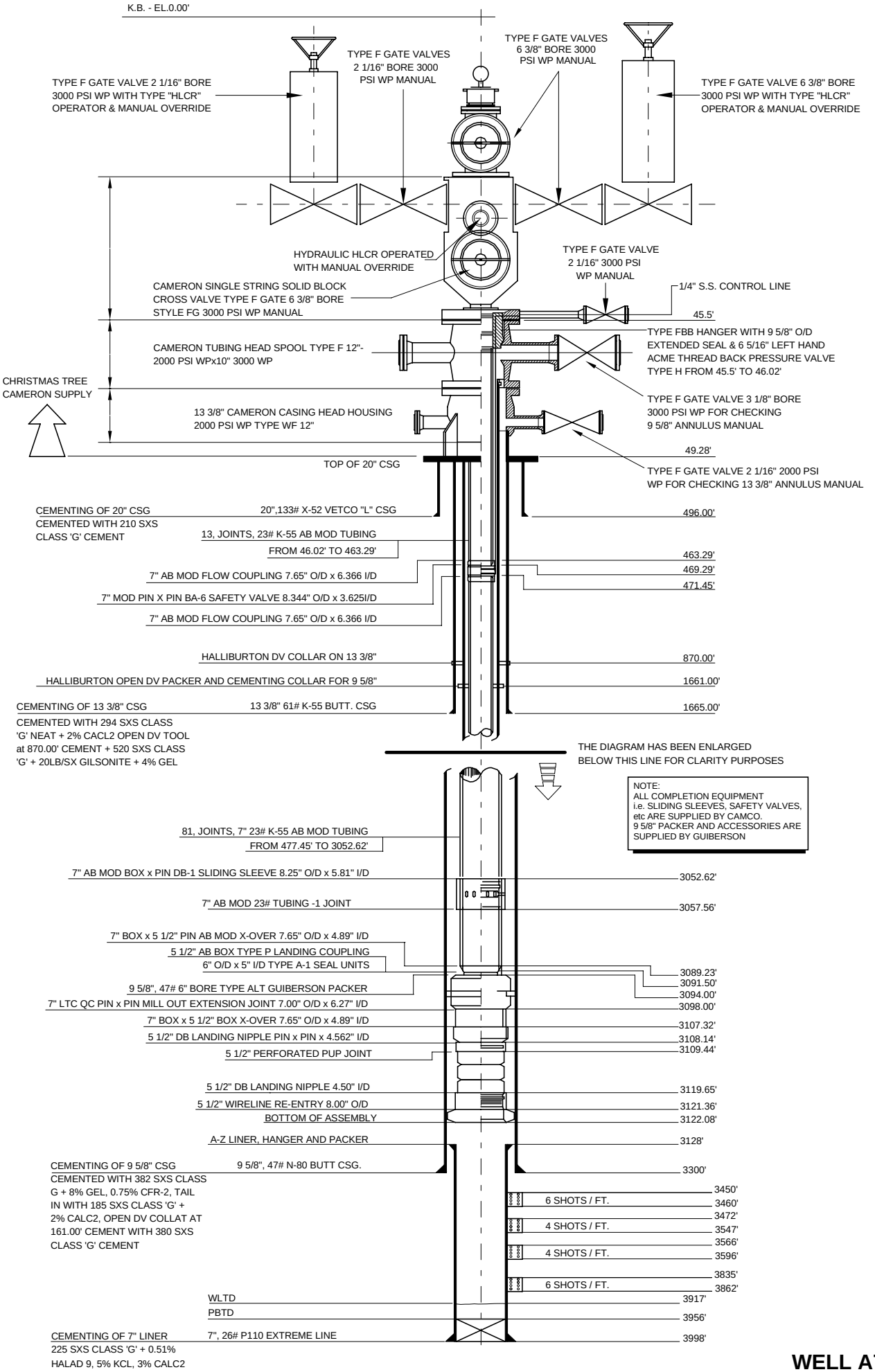
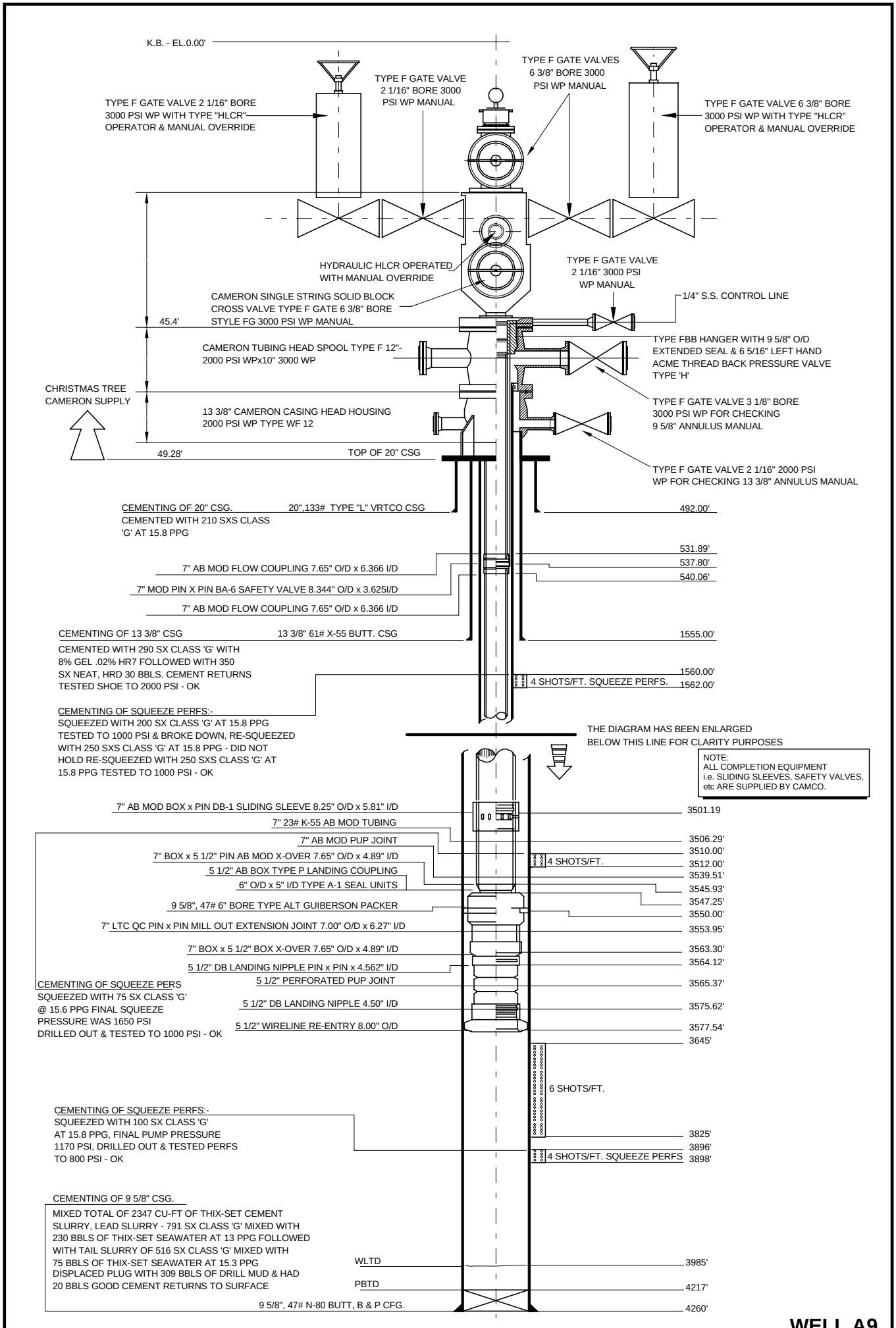


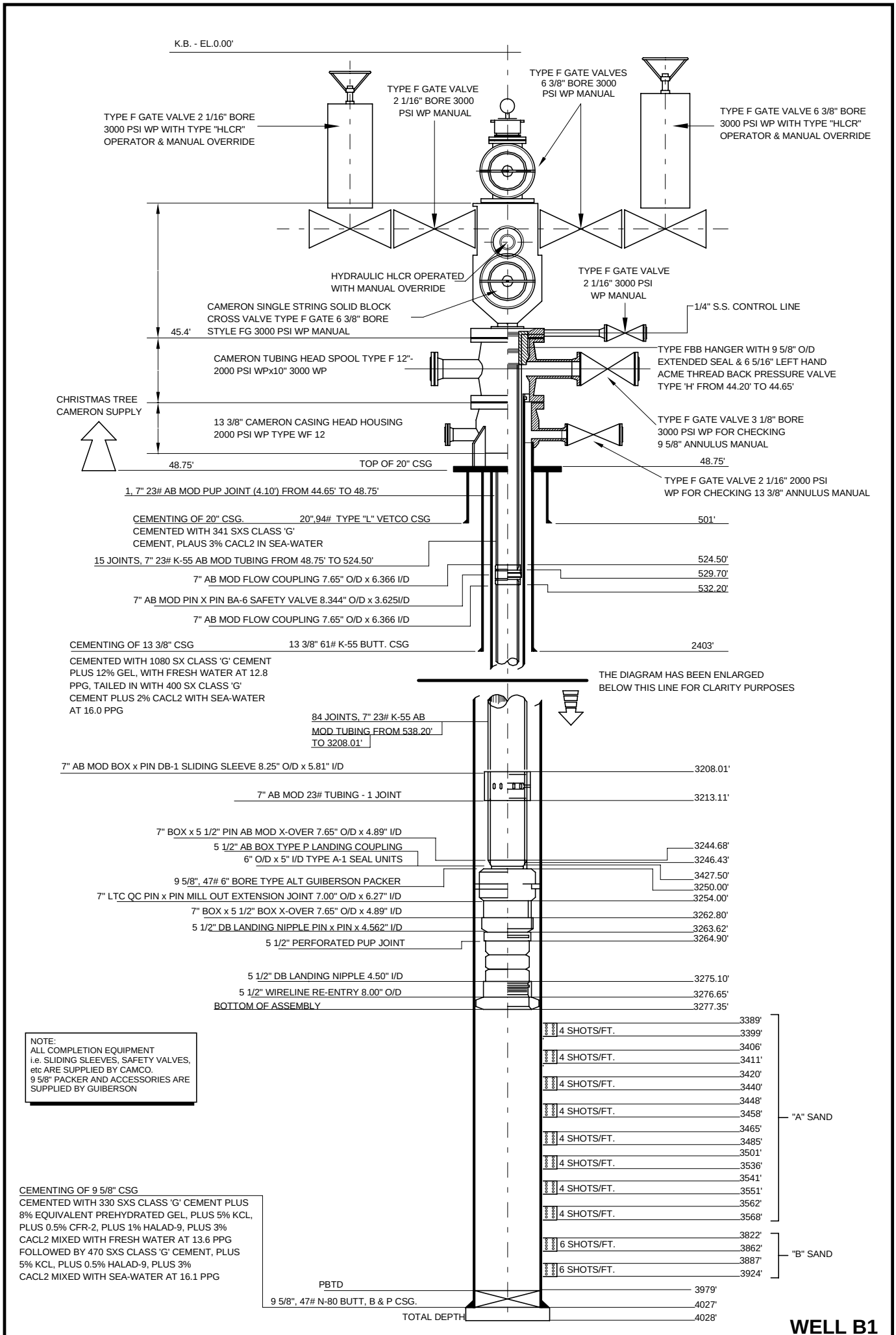
WELL A7

16033.pre REV. 2 JUN '97



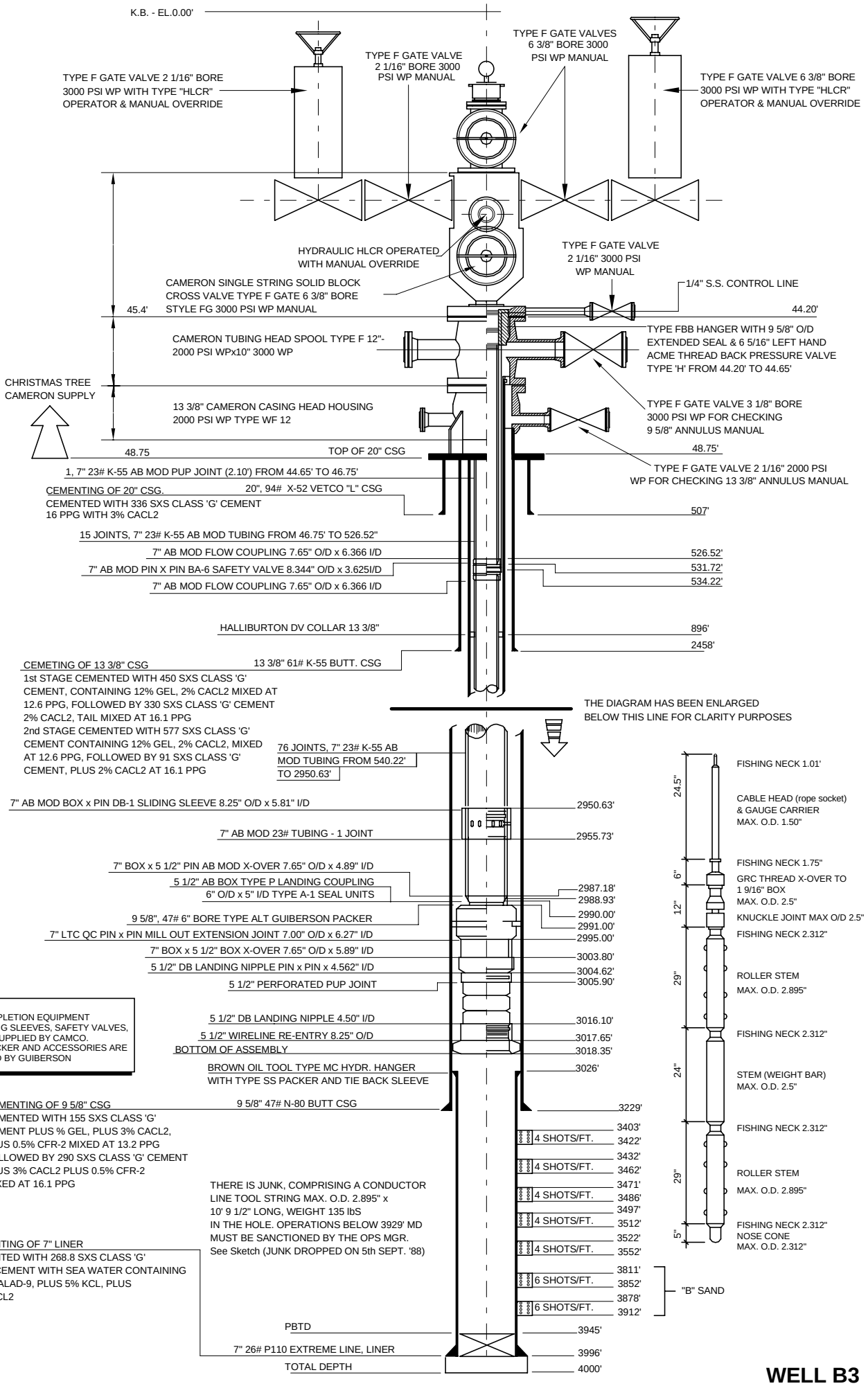
WELL A9

16034.pre REV 2 DEC '97



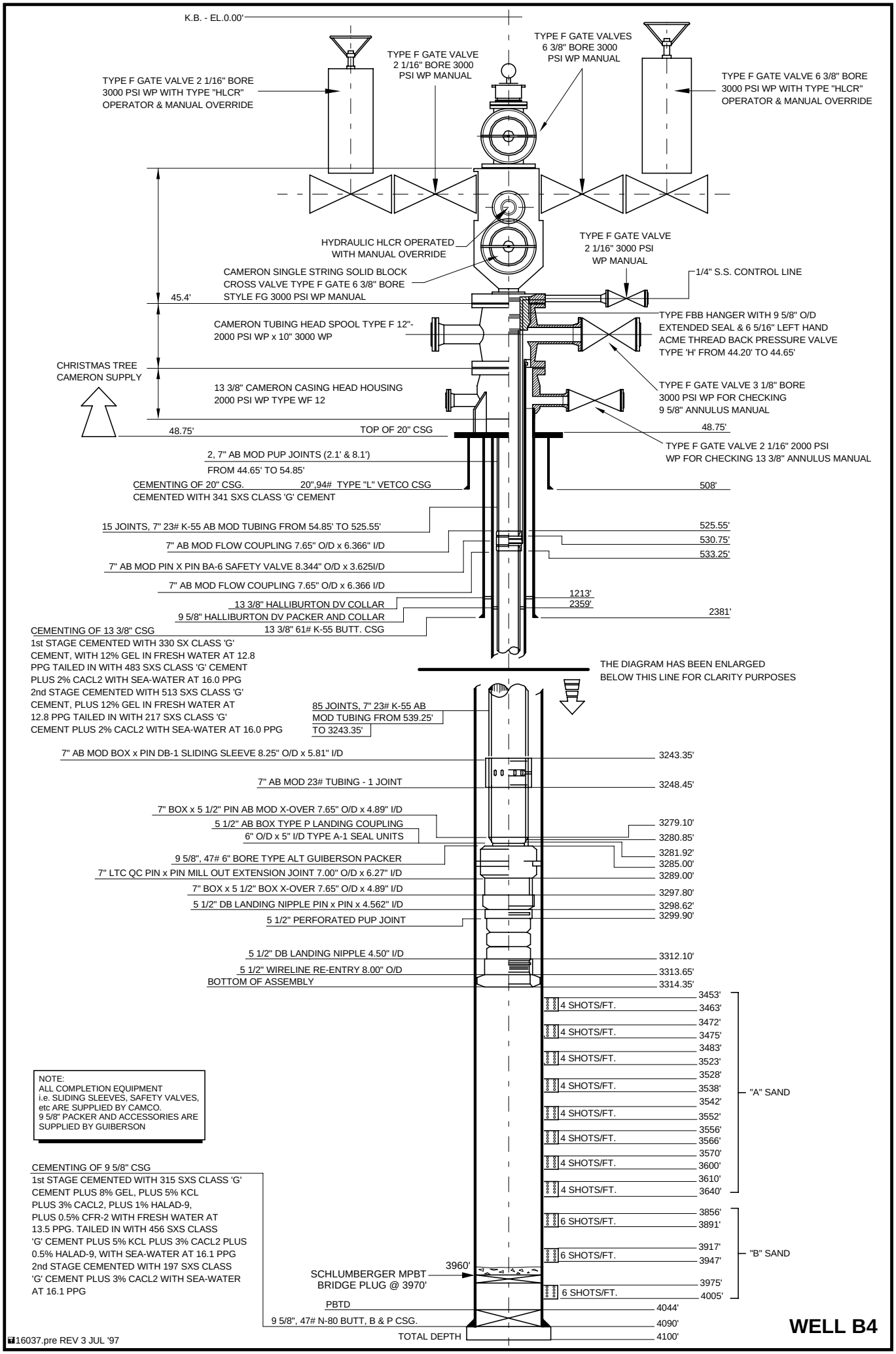
WELL B1

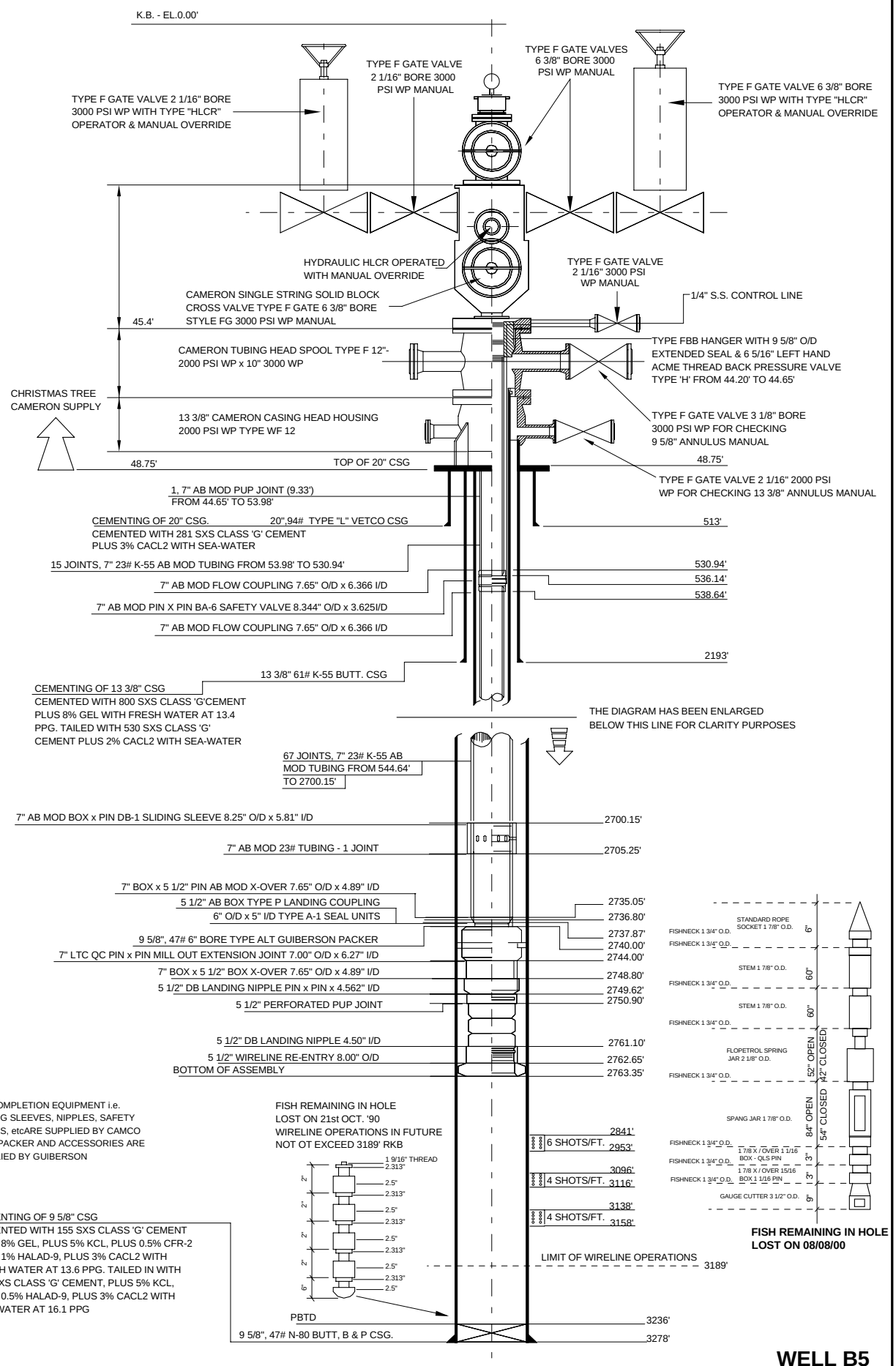
16035.pre REV 1 DEC. '96



WELL B3

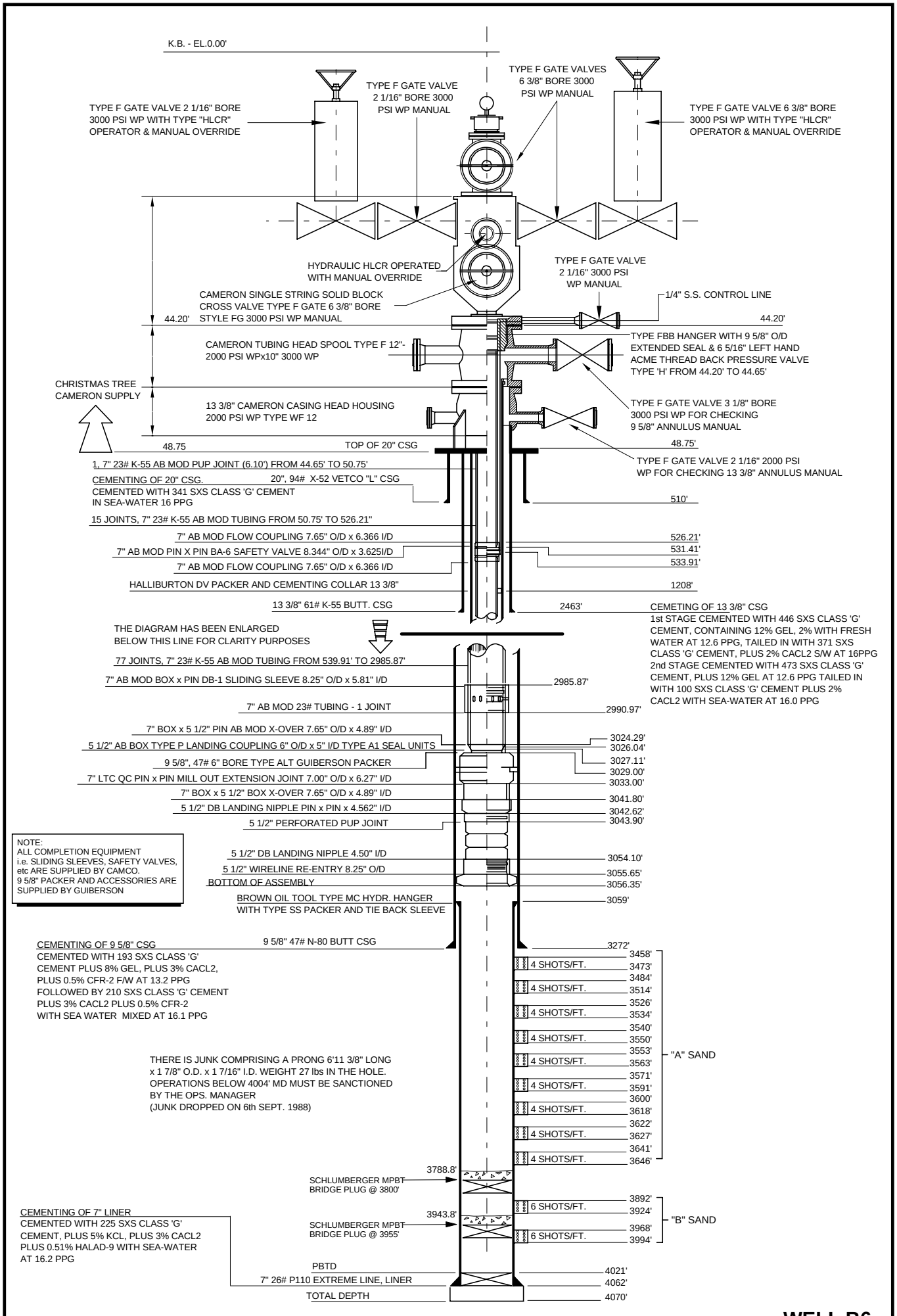
16036.pre REV 1 DEC '96


K.B. - EL.0.00'
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVES 6 3/8" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVE 6 3/8" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
HYDRAULIC HLCR OPERATED WITH MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" 3000 PSI WP MANUAL
CAMERON SINGLE STRING SOLID BLOCK CROSS VALVE TYPE F GATE 6 3/8" BORE STYLE FG 3000 PSI WP MANUAL
1/4" S.S. CONTROL LINE
45.4'
CAMERON TUBING HEAD SPOOL TYPE F 12"-2000 PSI WP x 10" 3000 WP
TYPE FBB HANGER WITH 9 5/8" O/D EXTENDED SEAL & 6 5/16" LEFT HAND ACME THREAD BACK PRESSURE VALVE TYPE 'H' FROM 44.20' TO 44.65'
CHRISTMAS TREE CAMERON SUPPLY
13 3/8" CAMERON CASING HEAD HOUSING 2000 PSI WP TYPE WF 12
TYPE F GATE VALVE 3 1/8" BORE 3000 PSI WP FOR CHECKING 9 5/8" ANNULUS MANUAL
48.75'
TOP OF 20" CSG
48.75'
TYPE F GATE VALVE 2 1/16" 2000 PSI WP FOR CHECKING 13 3/8" ANNULUS MANUAL
2, 7" AB MOD PUP JOINTS (2.1' & 8.1') FROM 44.65' TO 54.85'
CEMENTING OF 20" CSG. 20",94# TYPE "L" VETCO CSG
CEMENTED WITH 341 SXS CLASS 'G' CEMENT
508'
15 JOINTS, 7" 23# K-55 AB MOD TUBING FROM 54.85' TO 525.55'
525.55'
7" AB MOD FLOW COUPLING 7.65" O/D x 6.366" I/D
530.75'
7" AB MOD PIN X PIN BA-6 SAFETY VALVE 8.344" O/D x 3.625I/D
533.25'
7" AB MOD FLOW COUPLING 7.65" O/D x 6.366 I/D
1213'
13 3/8" HALLIBURTON DV COLLAR
2359'
9 5/8" HALLIBURTON DV PACKER AND COLLAR
2381'
CEMENTING OF 13 3/8" CSG
13 3/8" 61# K-55 BUTT. CSG
1st STAGE CEMENTED WITH 330 SX CLASS 'G' CEMENT, WITH 12% GEL IN FRESH WATER AT 12.8 PPG TAILED IN WITH 483 SXS CLASS 'G' CEMENT PLUS 2% CACL2 WITH SEA-WATER AT 16.0 PPG
2nd STAGE CEMENTED WITH 513 SXS CLASS 'G' CEMENT, PLUS 12% GEL IN FRESH WATER AT 12.8 PPG TAILED IN WITH 217 SXS CLASS 'G' CEMENT PLUS 2% CACL2 WITH SEA-WATER AT 16.0 PPG
THE DIAGRAM HAS BEEN ENLARGED BELOW THIS LINE FOR CLARITY PURPOSES
85 JOINTS, 7" 23# K-55 AB MOD TUBING FROM 539.25' TO 3243.35'
7" AB MOD BOX x PIN DB-1 SLIDING SLEEVE 8.25" O/D x 5.81" I/D
3243.35'
7" AB MOD 23# TUBING - 1 JOINT
3248.45'
7" BOX x 5 1/2" PIN AB MOD X-OVER 7.65" O/D x 4.89" I/D
3279.10'
5 1/2" AB BOX TYPE P LANDING COUPLING
3280.85'
6" O/D x 5" I/D TYPE A-1 SEAL UNITS
3281.92'
9 5/8", 47# 6" BORE TYPE ALT GUIBERSON PACKER
3285.00'
7" LTC QC PIN x PIN MILL OUT EXTENSION JOINT 7.00" O/D x 6.27" I/D
3289.00'
7" BOX x 5 1/2" BOX X-OVER 7.65" O/D x 4.89" I/D
3297.80'
5 1/2" DB LANDING NIPPLE PIN x PIN x 4.562" I/D
3298.62'
5 1/2" PERFORATED PUP JOINT
3299.90'
5 1/2" DB LANDING NIPPLE 4.50" I/D
3312.10'
5 1/2" WIRELINE RE-ENTRY 8.00" O/D
3313.65'
BOTTOM OF ASSEMBLY
3314.35'
3453'
4 SHOTS/FT.
3463'
3472'
4 SHOTS/FT.
3475'
3483'
4 SHOTS/FT.
3523'
3528'
4 SHOTS/FT.
3538'
3542'
4 SHOTS/FT.
3552'
3556'
4 SHOTS/FT.
3566'
3570'
4 SHOTS/FT.
3600'
3610'
4 SHOTS/FT.
3640'
"A" SAND
3856'
6 SHOTS/FT.
3891'
3917'
6 SHOTS/FT.
3947'
"B" SAND
3960'
SCHLUMBERGER MPBT BRIDGE PLUG @ 3970'
3975'
6 SHOTS/FT.
4005'
PBTD
4044'
9 5/8", 47# N-80 BUTT, B & P CSG.
4090'
TOTAL DEPTH
4100'
NOTE:
ALL COMPLETION EQUIPMENT i.e. SLIDING SLEEVES, SAFETY VALVES, etc ARE SUPPLIED BY CAMCO.
9 5/8" PACKER AND ACCESSORIES ARE SUPPLIED BY GUIBERSON
CEMENTING OF 9 5/8" CSG
1st STAGE CEMENTED WITH 315 SXS CLASS 'G' CEMENT PLUS 8% GEL, PLUS 5% KCL PLUS 3% CACL2, PLUS 1% HALAD-9, PLUS 0.5% CFR-2 WITH FRESH WATER AT 13.5 PPG. TAILED IN WITH 456 SXS CLASS 'G' CEMENT PLUS 5% KCL PLUS 3% CACL2 PLUS 0.5% HALAD-9, WITH SEA-WATER AT 16.1 PPG
2nd STAGE CEMENTED WITH 197 SXS CLASS 'G' CEMENT PLUS 3% CACL2 WITH SEA-WATER AT 16.1 PPG
WELL B4
16037.pre REV 3 JUL '97



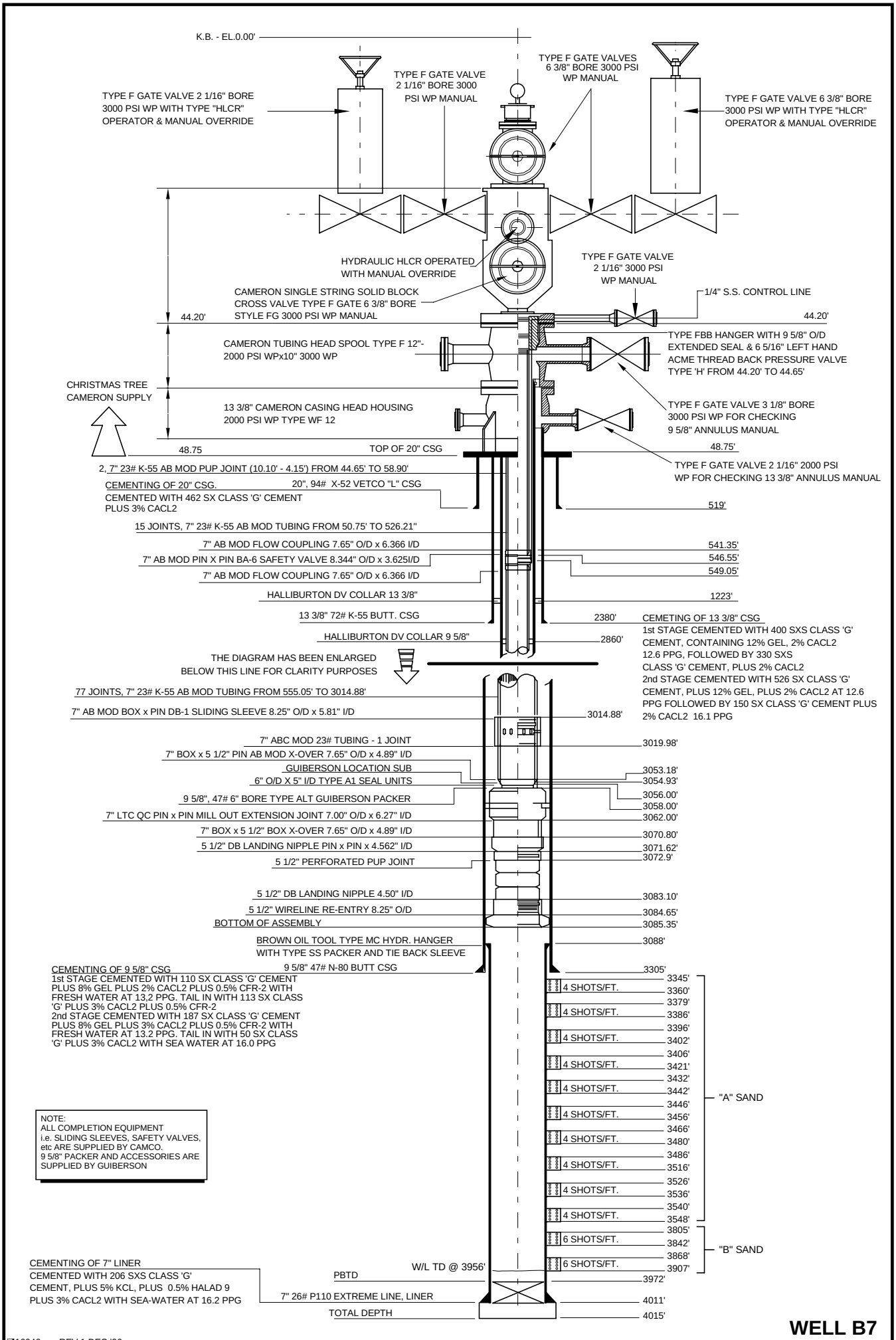
WELL B5

16038.DWG REV 3 - AUG. '00



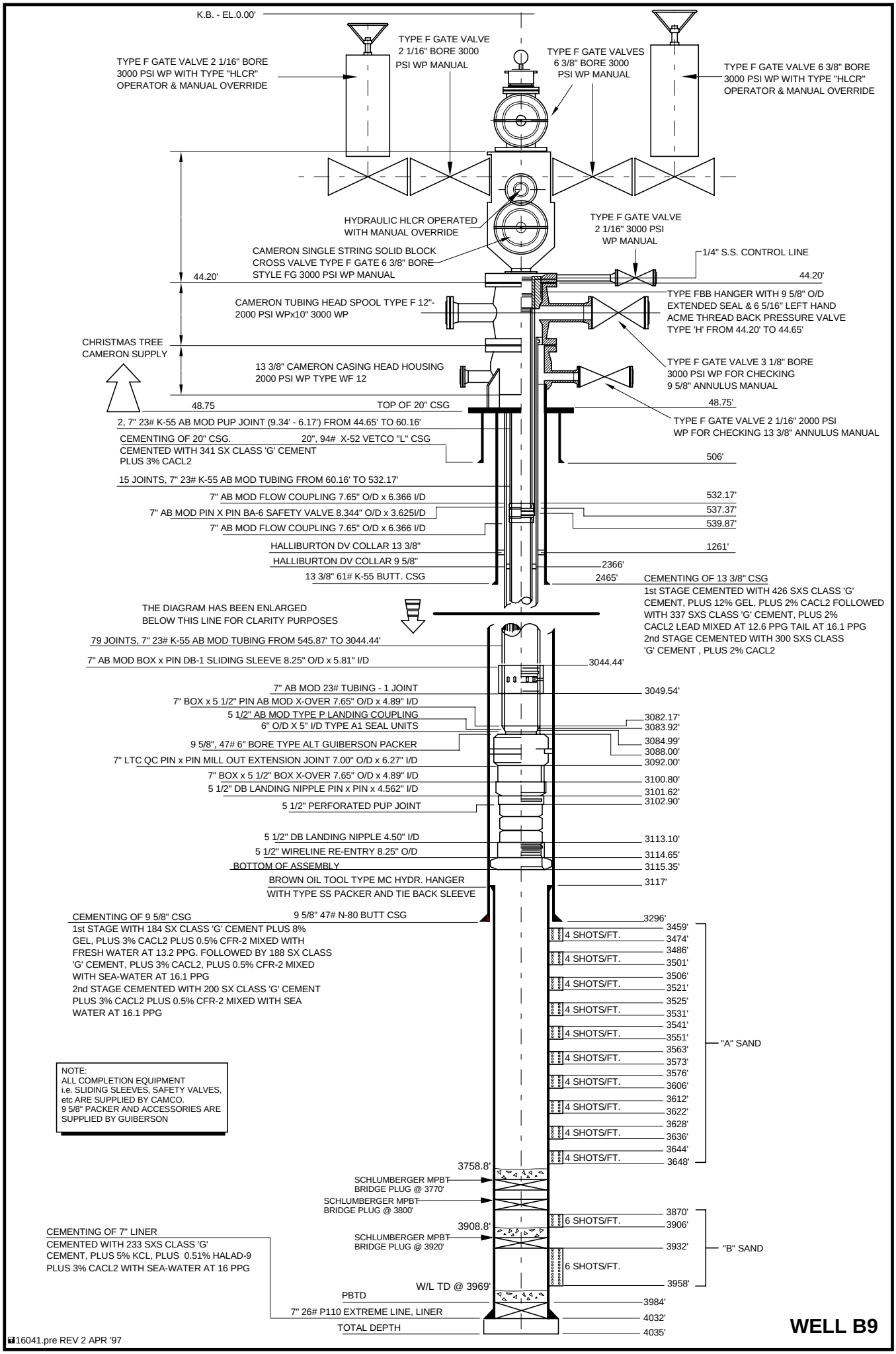
WELL B6

16039.pre REV 2 APR '97

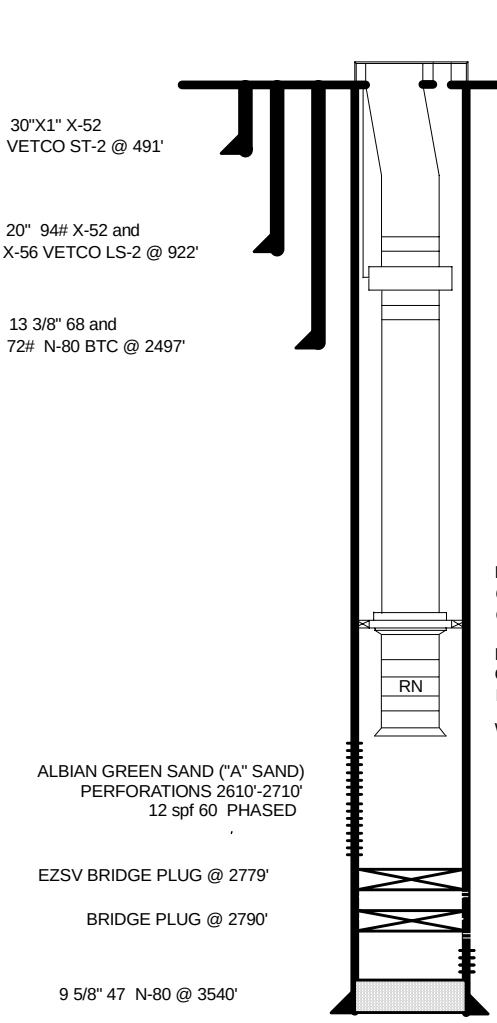


WELL B7

16040.pre REV 1 DEC '96


K.B. - EL.0.00'
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVES 6 3/8" BORE 3000 PSI WP MANUAL
TYPE F GATE VALVE 6 3/8" BORE 3000 PSI WP WITH TYPE "HLCR" OPERATOR & MANUAL OVERRIDE
HYDRAULIC HLCR OPERATED WITH MANUAL OVERRIDE
TYPE F GATE VALVE 2 1/16" 3000 PSI WP MANUAL
CAMERON SINGLE STRING SOLID BLOCK CROSS VALVE TYPE F GATE 6 3/8" BORE STYLE FG 3000 PSI WP MANUAL
1/4" S.S. CONTROL LINE
44.20'
44.20'
TYPE FBB HANGER WITH 9 5/8" O/D EXTENDED SEAL & 6 5/16" LEFT HAND ACME THREAD BACK PRESSURE VALVE TYPE 'H' FROM 44.20' TO 44.65'
CAMERON TUBING HEAD SPOOL TYPE F 12"-2000 PSI WPx10" 3000 WP
CHRISTMAS TREE CAMERON SUPPLY
13 3/8" CAMERON CASING HEAD HOUSING 2000 PSI WP TYPE WF 12
TYPE F GATE VALVE 3 1/8" BORE 3000 PSI WP FOR CHECKING 9 5/8" ANNULUS MANUAL
48.75
TOP OF 20" CSG
48.75'
TYPE F GATE VALVE 2 1/16" 2000 PSI WP FOR CHECKING 13 3/8" ANNULUS MANUAL
2, 7" 23# K-55 AB MOD PUP JOINT (9.34' - 6.17') FROM 44.65' TO 60.16'
CEMENTING OF 20" CSG.
CEMENTED WITH 341 SX CLASS 'G' CEMENT PLUS 3% CACL2
20", 94# X-52 VETCO "L" CSG
506'
15 JOINTS, 7" 23# K-55 AB MOD TUBING FROM 60.16' TO 532.17'
7" AB MOD FLOW COUPLING 7.65" O/D x 6.366 I/D
532.17'
7" AB MOD PIN X PIN BA-6 SAFETY VALVE 8.344" O/D x 3.625I/D
537.37'
7" AB MOD FLOW COUPLING 7.65" O/D x 6.366 I/D
539.87'
HALLIBURTON DV COLLAR 13 3/8"
1261'
HALLIBURTON DV COLLAR 9 5/8"
2366'
13 3/8" 61# K-55 BUTT. CSG
2465'
CEMENTING OF 13 3/8" CSG
1st STAGE CEMENTED WITH 426 SXS CLASS 'G' CEMENT, PLUS 12% GEL, PLUS 2% CACL2 FOLLOWED WITH 337 SXS CLASS 'G' CEMENT, PLUS 2% CACL2 LEAD MIXED AT 12.6 PPG TAIL AT 16.1 PPG
2nd STAGE CEMENTED WITH 300 SXS CLASS 'G' CEMENT , PLUS 2% CACL2
THE DIAGRAM HAS BEEN ENLARGED BELOW THIS LINE FOR CLARITY PURPOSES
79 JOINTS, 7" 23# K-55 AB MOD TUBING FROM 545.87' TO 3044.44'
7" AB MOD BOX x PIN DB-1 SLIDING SLEEVE 8.25" O/D x 5.81" I/D
3044.44'
7" AB MOD 23# TUBING - 1 JOINT
3049.54'
7" BOX x 5 1/2" PIN AB MOD X-OVER 7.65" O/D x 4.89" I/D
5 1/2" AB MOD TYPE P LANDING COUPLING
3082.17'
6" O/D X 5" I/D TYPE A1 SEAL UNITS
3083.92'
9 5/8", 47# 6" BORE TYPE ALT GUIBERSON PACKER
3084.99'
3088.00'
7" LTC QC PIN x PIN MILL OUT EXTENSION JOINT 7.00" O/D x 6.27" I/D
3092.00'
7" BOX x 5 1/2" BOX X-OVER 7.65" O/D x 4.89" I/D
3100.80'
5 1/2" DB LANDING NIPPLE PIN x PIN x 4.562" I/D
3101.62'
5 1/2" PERFORATED PUP JOINT
3102.90'
5 1/2" DB LANDING NIPPLE 4.50" I/D
3113.10'
5 1/2" WIRELINE RE-ENTRY 8.25" O/D
3114.65'
BOTTOM OF ASSEMBLY
3115.35'
BROWN OIL TOOL TYPE MC HYDR. HANGER WITH TYPE SS PACKER AND TIE BACK SLEEVE
3117'
CEMENTING OF 9 5/8" CSG
1st STAGE WITH 184 SX CLASS 'G' CEMENT PLUS 8% GEL, PLUS 3% CACL2 PLUS 0.5% CFR-2 MIXED WITH FRESH WATER AT 13.2 PPG. FOLLOWED BY 188 SX CLASS 'G' CEMENT, PLUS 3% CACL2, PLUS 0.5% CFR-2 MIXED WITH SEA-WATER AT 16.1 PPG
2nd STAGE CEMENTED WITH 200 SX CLASS 'G' CEMENT PLUS 3% CACL2 PLUS 0.5% CFR-2 MIXED WITH SEA WATER AT 16.1 PPG
9 5/8" 47# N-80 BUTT CSG
3296'
3459'
4 SHOTS/FT.
3474'
3486'
4 SHOTS/FT.
3501'
3506'
4 SHOTS/FT.
3521'
3525'
4 SHOTS/FT.
3531'
3541'
4 SHOTS/FT.
3551'
3563'
4 SHOTS/FT.
3573'
3576'
4 SHOTS/FT.
3606'
3612'
4 SHOTS/FT.
3622'
3628'
4 SHOTS/FT.
3636'
3644'
4 SHOTS/FT.
3648'
"A" SAND
NOTE:
ALL COMPLETION EQUIPMENT i.e. SLIDING SLEEVES, SAFETY VALVES, etc ARE SUPPLIED BY CAMCO.
9 5/8" PACKER AND ACCESSORIES ARE SUPPLIED BY GUIBERSON
3758.8'
SCHLUMBERGER MPBT BRIDGE PLUG @ 3770'
SCHLUMBERGER MPBT BRIDGE PLUG @ 3800'
3870'
6 SHOTS/FT.
3906'
3908.8'
SCHLUMBERGER MPBT BRIDGE PLUG @ 3920'
3932'
"B" SAND
6 SHOTS/FT.
W/L TD @ 3969'
3958'
CEMENTING OF 7" LINER
CEMENTED WITH 233 SXS CLASS 'G' CEMENT, PLUS 5% KCL, PLUS 0.51% HALAD-9 PLUS 3% CACL2 WITH SEA-WATER AT 16 PPG
PBTD
3984'
7" 26# P110 EXTREME LINE, LINER
4032'
TOTAL DEPTH
4035'
WELL B9
16041.pre REV 2 APR '97

Final Subsea Completion Schematic
Ballycotton Well 48/20-2



VETCO-GRAY DUAL BORE SUBSEA HANGER:
PRODUCTION BORE - 4.625" I.D.
ANNULUS BORE - 1.875" I.D.

30"X1" X-52
VETCO ST-2 @ 491'

20" 94# X-52 and
X-56 VETCO LS-2 @ 922'

13 3/8" 68 and
72# N-80 BTC @ 2497'

FLOW COUPLING @ 967'
OTIS "SP-1" SCSSV w/ 4.562"
PROFILE @ 973'

FLOW COUPLING @ 980'

PRODUCTION TUBING :
5 1/2" 17# N-80 SM-TC2

RATCH-LATCH SEAL ASSEMBLY (129K)
@ 2390'
OTIS "HVT" PACKER @ 2391'

FLOW COUPLING @ 2442'
OTIS 4.313" "RN" PROFILE NIPPLE @ 2448'
FLOW COUPLING @ 2449'

WIRELINE RE-ENTRY GUIDE @ 2509'

ALBIAN GREEN SAND ("A" SAND)
PERFORATIONS 2610'-2710'
12 spf 60 PHASED

EZSV BRIDGE PLUG @ 2779'

BRIDGE PLUG @ 2790'

9 5/8" 47 N-80 @ 3540'

ABANDONED DST No.1 PERFORATIONS
2808'-2838' (UPPER WEALDON)

Ballycotton 48-20-2

PLATFORM : Greensand **WELL NUMBER :** 48/25-6

WELL TYPE:	Horizontal Gas Producer
COMPLETED DATE :	May 19, 2003
WORKOVER DATE :	N/A
ANN FLIUD :	Nitrogen
FLUID WT :	1.9 ppg

CASING DATA

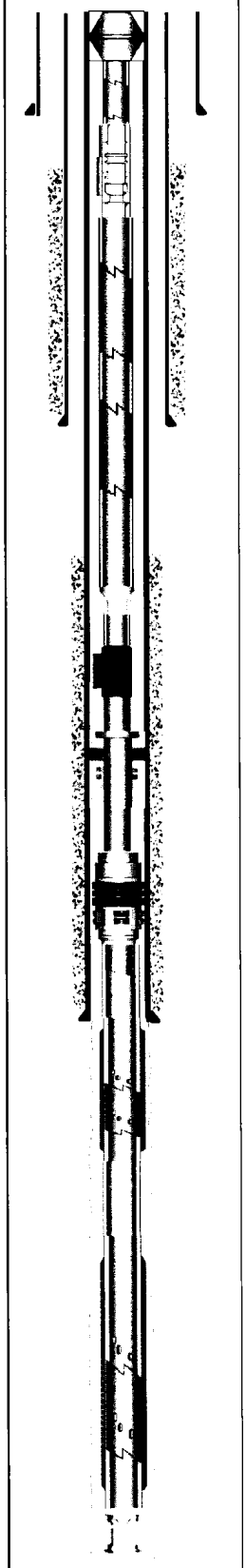
SIZE (IN)	WT (LB/FT)	GRADE	CONN	ID	DRIFT	MD	TVD
30	1.0"	X52	ALT-2	28		551	551
13-3/8	68	L80	BTC	12.415	12.259	2,453	2,219
9-5/8	47	L80	NSCC / NEW VAM	8.681	8.525	3,722	2,771

WELLHEAD DATA

	MAKER	TYPE	BORE	RATING (psi)
X/MAS TREE	Vetco	Horizontal drill thro'	12.25"	5000
WELLHEAD	Vetco	MS700/SG1	13.625"	5000
TUBING SPOOL				
TUBING HANGER	Vetco	5-1/2"		5000

LINER / TUBING DATA

SIZE (IN)	WT (LB/FT)	GRADE	CONN	ID	DRIFT	MD	TVD
6-5/8 sand control screens	20	L80/316 SS		5.921	5.796	8089	2873
7	29	L80		6.184	6.059		
5-1/2	17	L80		4.892	4.767		

MD RKB	TVD RKB	WELL SCHEMATIC	DEVIATION	DESCRIPTION	MAKER TYPE	MIN I.D.	MAX O.D.	COMMENTS / DEVIATION	MIN NUMBER
382	382		0	Tubing hanger	ABB Vetco	TBC	18.75		
				5-1/2", 17#, L80 tubing	New Vam	4.892		Drift 4.767	
551	551		0	30" casing shoe					
849	849			5-1/2" SP-2 TRSCSSV		4.562	8.375	c/w 4.562" RQ nipple profile	
863				5-1/2" x 7" Crossover		4.892	7.00		
864				7", 29#, L80 tubing	New Vam	6.184	7.654	Drift 6.059	
2453	2219		52	13-3/8", 68#, casing shoe		12.347		Drift 12.259"	
3442				7" x 5-1/2" Crossover		4.892	7.654		
3458			74	Gas lift mandrel		4.892		Drift 4.676"	
3481			75	Halliburton HHC hydrostatic set packer		4.85	8.313		
				5-1/2", 17 ppf flush joint tubing		4.892	5.50		
3567			76	Quantum screen hanger packer		6.00	8.33		
3581			76	Mule shoe					
3610			77	Schlumberger FIV c/w trip saver		4.56		Shifting profile @ +/- 3617 ft	
3637				6-5/8", 24 ppf, L80 liner		5.921		Drift 5.796"	
3,722	2771			9-5/8", 47# Casing Shoe		8.681		Drift 8.525"	
3753			80	6-5/8" wire wrap sand control screens, 24#, L80 base pipe, 316 SS filter media, 9 gauge slots.					
5264			90	6-5/8", 24 ppf, L80 liner					
5690			90	6-5/8" wire wrap sand control screens, 24#, L80 base pipe, 316 SS filter media, 9 gauge slots.		5.921	7.39	Drift 5.796"	
				PBR (6ft)		4.5			
8087			90	Vent Screen		5.921			
8089	2873		90	Shoe					
9,234	2,872		90	TD Drawn by: Tor Ellis 19/05/03					

PERFORATION INTERVALS

Perforation Depth	Date	Type

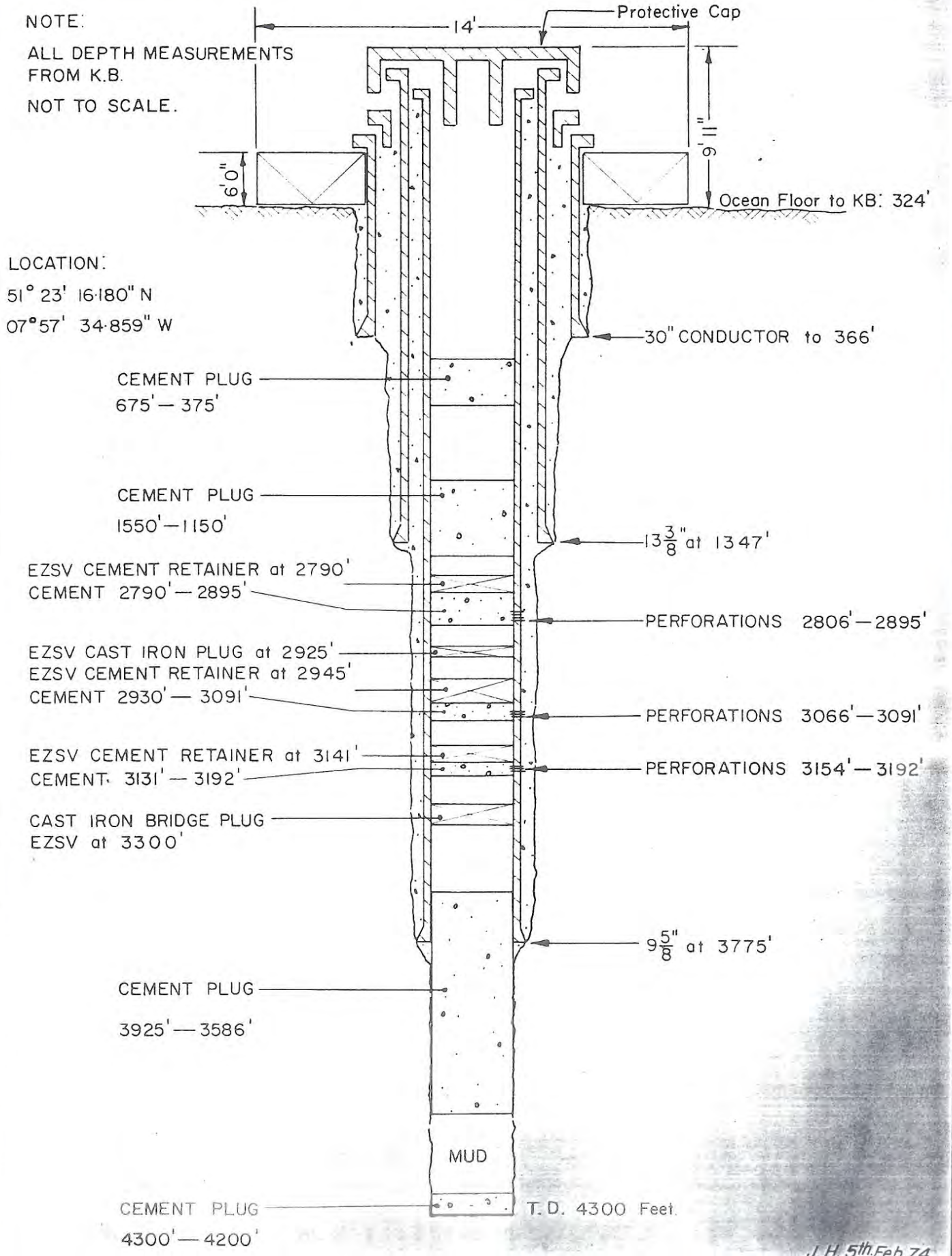
All depths referenced from RKB LAT. Sedco 711 RKB - LAT 86.5 ft, LAT - seabed 305 ft

* Denotes approximate depth

MARATHON PETROLEUM IRELAND LTD.

TEMPORARY PLUGGING DIAGRAM FOR WELL 49/16-2

OPERATION COMPLETED 3rd AUGUST 1973



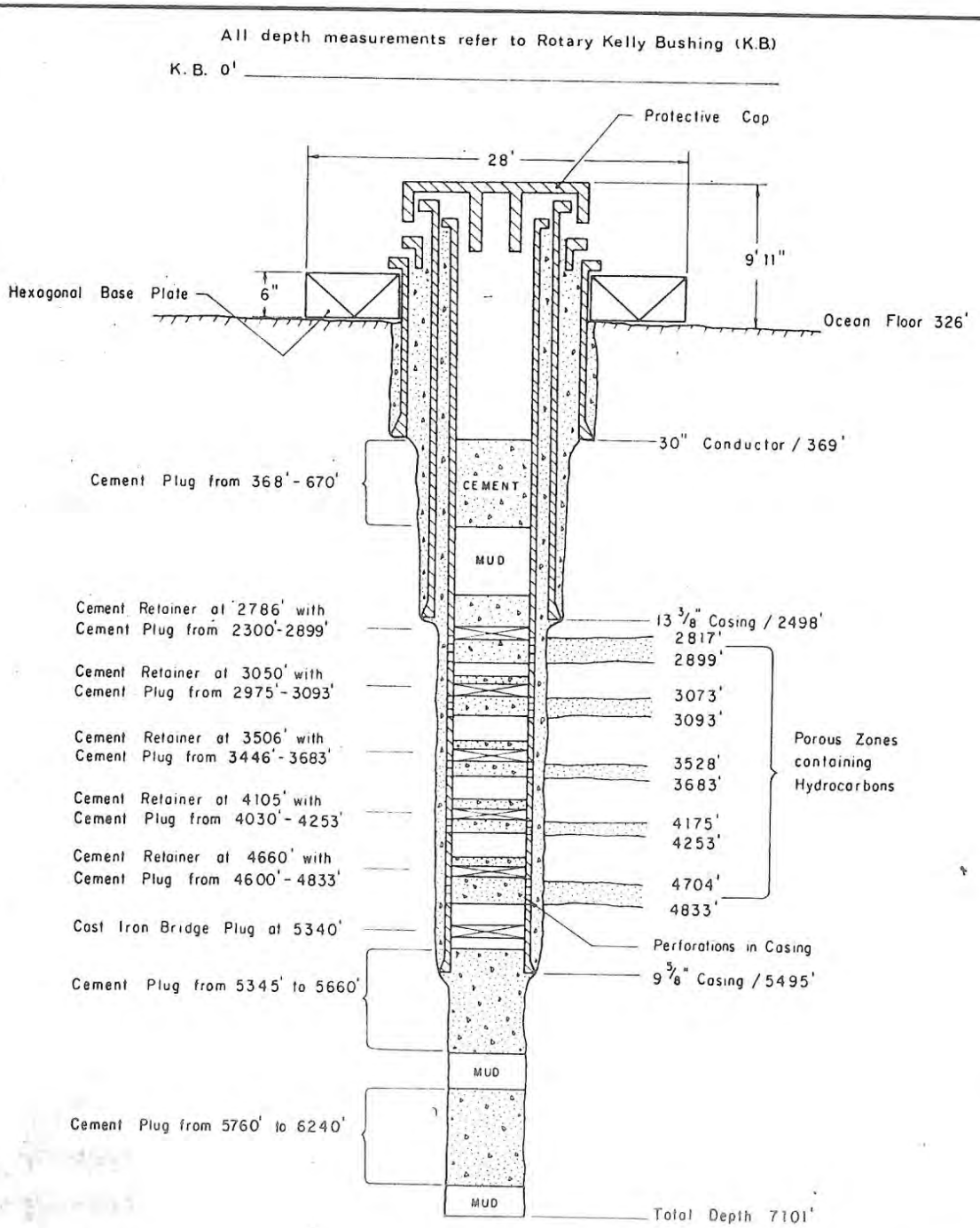
J. H. 5th Feb. 74

MARATHON

MARATHON PETROLEUM IRELAND LTD.

PLUGGING DIAGRAM FOR WELL 48/20-1A

OPERATIONS COMPLETED ON 25th. JULY 1972



C.D.W. August 1972

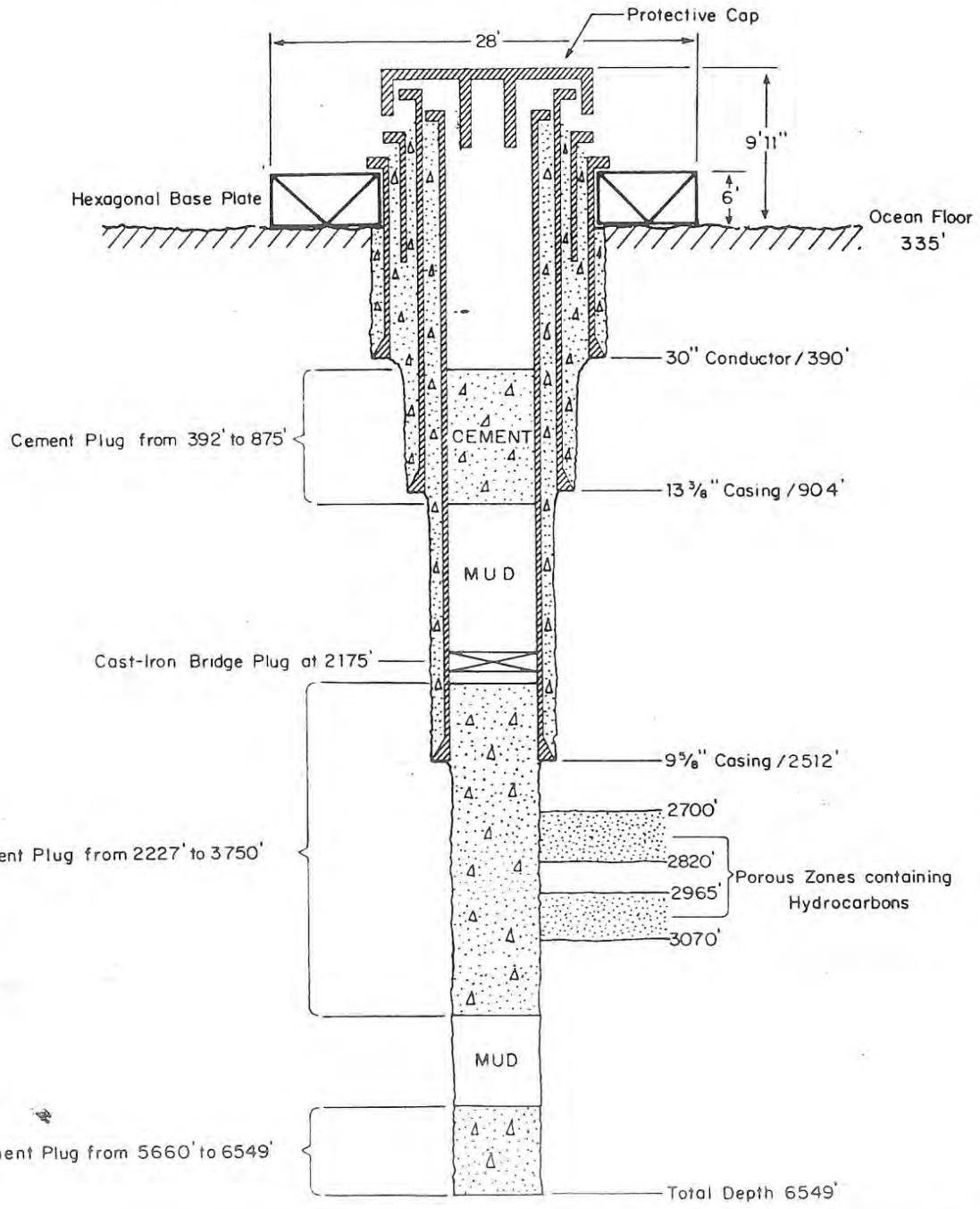
MARATHON

MARATHON PETROLEUM IRELAND LTD.

TEMPORARY ABANDONMENT DIAGRAM FOR WELL 48/25-2

OPERATIONS COMPLETED ON 7th NOV. 1971

All depth measurements refer to Rotary Kelly Bushing (K.B.)



RN. Mar

SOUTH WEST KINSALE WELLBORE SCHEMATIC
COMPLETION - WELL 48/25-3

WELL No: 48/25-3
WELL TYPE: GAS PRODUCER

TUBING DETAILS

5-1/2" 17# L-80
390 - 2,166'
(ID: 4.892", **DRIFT:** 4.767")

COMPLETION DATE:
JULY 1999

ANNULUS FLUID:
9.5 ppg INHIBITED NaCl BRINE

PRODUCTION CASING

9-5/8" 47# N80, 384' - 2,601'
(ID: 8.681", **DRIFT:** 8.525")

LINER STRING

7" 29#, L-80, NEW VAM 2,301' - 3,539'
(ID: 6.184", **DRIFT:** 6.059")

WELL DEVIATION (Definative)

MDRKB	DEG
931	0.25
1,900	1.00
2,624	0.75
2,950	1.46
3,150	2.15
3,550	4.83

PERFORATIONS (MDRKB)

3,018' - 3,089'	15/8/95

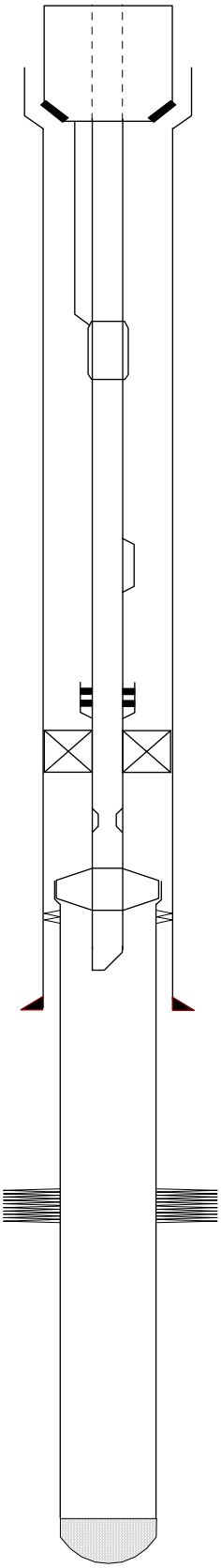
REPERFORATIONS (MDRKB)

3,024' - 3,032'	08/7/99
3,040' - 3,048'	08/7/99
3,058' - 3,062'	08/7/99
3,077' - 3,084'	08/7/99

WORKOVER PERFS (MDRKB)

NOTE:

KAN TAN IV	MDRKB - 85' = MDSL (LAT)
G. ARTIC III	MDRKB - 85' = MDSL (LAT)



	DEPTH MDRKB	DEPTH TVDRKB	MIN I.D.	Max O.D.
TUBING HANGER 5-1/2" HORIZOINTAL TREE STYLE - (DATUM DEPTH)	384	384	4.892	17.625
5-1/2" TUBING RETRIEVABLE SAFETY VALVE WITH 4.562" NIPPLE PROFILE	769	769	4.562	8.375
5-1/2" SIDE POCKET MANDREL WITH 0.5" ORIFICE VALVE	2,056	2,056	4.892	7.844
5-1/2" ANCHOR SEAL ASSEMBLY	2,161	2,161	4.875	6.50
9-5/8" HYDRAULIC SET PACKER	2,166	2,166	4.75	8.25
4.312" NIPPLE PROFILE	2,186	2,186	4.312	6.051
SHEARABLE LOCATOR	2,328	2,328	4.892	7.40
LINER HANGER	2,301	2,301	6.07	
WIRELINE ENTRY GUIDE	2,363	2,363	4.892	5.50
9-5/8" CASING SHOE	2,601	2,601		
Top Perforation	3,018	3,018		
PBTD	3,425	3,425		
7" LINER SHOE	3,539	3,539		

WELL STATUS RECORD — FIELD: SWK — PLATFORM: Subsea — WELL NO. 48/25-4

WELL TYPE: Prod/Injec	RTE:	MAX. DOGLEG: @
FIRST COMPLETED: May 2001	SWAB:	MAX. DEVIATION: 45 deg@
WORKOVER DATE: N/A	KOP:	AV. ANGLE THRU PAY: 45 deg
WORKOVER NO: N/A	HUD:	MINIMUM I.D.: 4.562 @ 738.95
ANN. FLUID: Nitrogen	DEPTH UNITS: ft	
FLUID WT: 1.9 ppg	REF. LOG:	

CASING DATA

SIZE (in)	WT (LB/FT)	GRADE	CONN.	MD	TVD
9-5/8"	47#	N80		3,075*	

LINER DATA

SIZE (in)	WT (LB/FT)	GRADE	CONN.	MD	TVD
7"	29#	L80	New Vam	4,125*	

WELLHEAD DATA

	MAKER	TYPE	BORE (in)	FLANGES (in)	RATING (psi)
XMAS TREE	VETCO GRAY	HORIZONTAL			5,000 psi
WELLHEAD	VETCO GARY	MS700			5,000 psi
TUBING HANGER	VETCO GRAY				5,000 psi

TUBING DATA

SIZE (in)	JOINTS	WT (lb/ft)	GRADE	THREAD TYPE
5-1/2"		20#	L80	NSCC-K1

MD BRT	TVD BRT	DESCRIPTION	MAKER/ TYPE	MIN. I.D.	MAX. O.D	COMMENTS
401	401	TUBING HANGER LOP				
		5-1/2", 20#, L80, Tubing		4.778		4.695 SPECIAL DRIFT
739	739	T.R.S.C.S.S.V. 5-1/2"	HALLIBURTON SP-2	4.562		13% Cr c/w 4.562 RPT NIPPLE
		5-1/2", 20#, L80, Tubing		4.778		4.695 SPECIAL DRIFT
2,306		S.P.M. 1/4" Orifice valve		4.778		
		TUBING				
2,453		PERMANENT PACKER 9-5/8"		4.75		
		MILLOUT EXTENSION				
		CROSSOVER				
		5-1/2" FLUSH JOINT TUBING				
		SELF ALIGNING MULESHOE	Halliburton	4.58	5.96	
2,556		TIEBACK PBR				
		LINER TOP PACKER				
2560		LINER HANGER 7 x 9-5/8	NODECO PHR			
3,075		9-5/8" CASING SHOE				
		LINER 7" 29#	New Vam	6.184		6.059
3,950		PBTD				
4,125		TD				
		Depths in BRT LAT, NTVL RT – LAT = 106 ft				

B SANDS

ZONE	INTERVAL	STATUS	GUN TYPE	SPF	PHS	DATE
B SAND	3648-3664	PROD	3-3/8 PWR JET	6	60	18/05/01
B SAND	3697-3707	PROD	3-3/8 PWR JET	6	60	18/05/01
B SAND	3621-3637	PROD	3-3/8 PWR JET	6	60	18/05/01
B SAND	3649-3659	PROD	3-3/8 PWR JET	6	60	18/05/01

PREPARED BY: Tor Ellis CHECKED BY: DATE: 15/06/01

WELL STATUS RECORD

FIELD: SW KINSALE | PLATFORM: Subsea | WELL NO. 48/25-5

WELL TYPE: Prod/Injec	RTE: 106	MAX. DOGLEG: @
FIRST COMPLETED: JUNE 2001	SWAB:	MAX. DEVIATION: 48 deg@
WORKOVER DATE: N/A	KOP:	AV. ANGLE THRU PAY: 45 deg
WORKOVER NO: N/A	HUD:	MINIMUM I.D.: 4.562 @ 739
ANN. FLUID: Nitrogen	DEPTH UNITS: ft	
FLUID WT: 1.9 ppg	REF. LOG:	

CASING DATA

SIZE (in)	WT (LB/FT)	GRADE	CONN.	MD	TVD
9-5/8"	47#	N80			2,600*

WELLHEAD DATA

	MAKER	TYPE	BORE (in)	FLANGES (in)	RATING (psi)
XMAS TREE	VETCO GRAY	HORIZONTAL			5,000 psi
WELLHEAD	VETCO GARY	MS700/SG5			5,000 psi
TUBING HANGER	VETCO GRAY				5,000 psi

LINER DATA

SIZE (in)	WT (LB/FT)	GRADE	CONN.	MD	TVD
7"	29#	L80	New Vam	3,600*	3,085*

MD BRT	TVD BRT	WELL SCHEMATIC	DESCRIPTION	MAKER/ TYPE	MIN. I.D.	MAX. O.D.	COMMENTS
400	400		TUBING HANGER LOP				TUBING DATA: 5-1/2" / 50 / 20# / L80 / NSCC-K1
			5-1/2", 20#, L80, Tubing		4.778		4.695 SPECIAL DRIFT
739	739		T.R.S.C.S.S.V. 5-1/2	HALLIBURTON SP-2	4.562		13% Cr c/w 4.562 RPT NIPPLE
			5-1/2", 20#, L80, Tubing		4.778		4.695 SPECIAL DRIFT
2349			S.P.M. 1/4" Orifice valve		4.778		
			TUBING				
2494			PERMANENT PACKER 9-5/8"		4.75		
			MILLOUT EXTENSION				
			CROSSOVER				
			5-1/2" FLUSH JOINT TUBING				
2598			SELF ALIGNING MULESHOE 5-1/2"	Halliburton	4.58	5.96	
2566			TIEBACK PBR				
2582			LINER TOP PACKER				
2586			LINER HANGER				
3063			9-5/8" CASING SHOE				
			LINER 7" 29#	New Vam	6.184		6.059
		B SAND					
4105			PBTD				
4200			TD				
			ALL DEPTHS BRT LAT. NTVL RT - LAT 106 ft				

ZONE	INTERVAL	STATUS	GUN TYPE	SPF	PHS	DATE
B SAND	3673-3688	PROD	3-3/8 PWR JET	6	60	06/06/01
B SAND	3694-3706	PROD	3-3/8 PWR JET	6	60	06/06/01
B SAND	3742-3756	PROD	3-3/8 PWR JET	6	60	06/06/01

PREPARED BY: Tor Ellis CHECKED BY: DATE: 15/06/01

KINSALE ENERGY

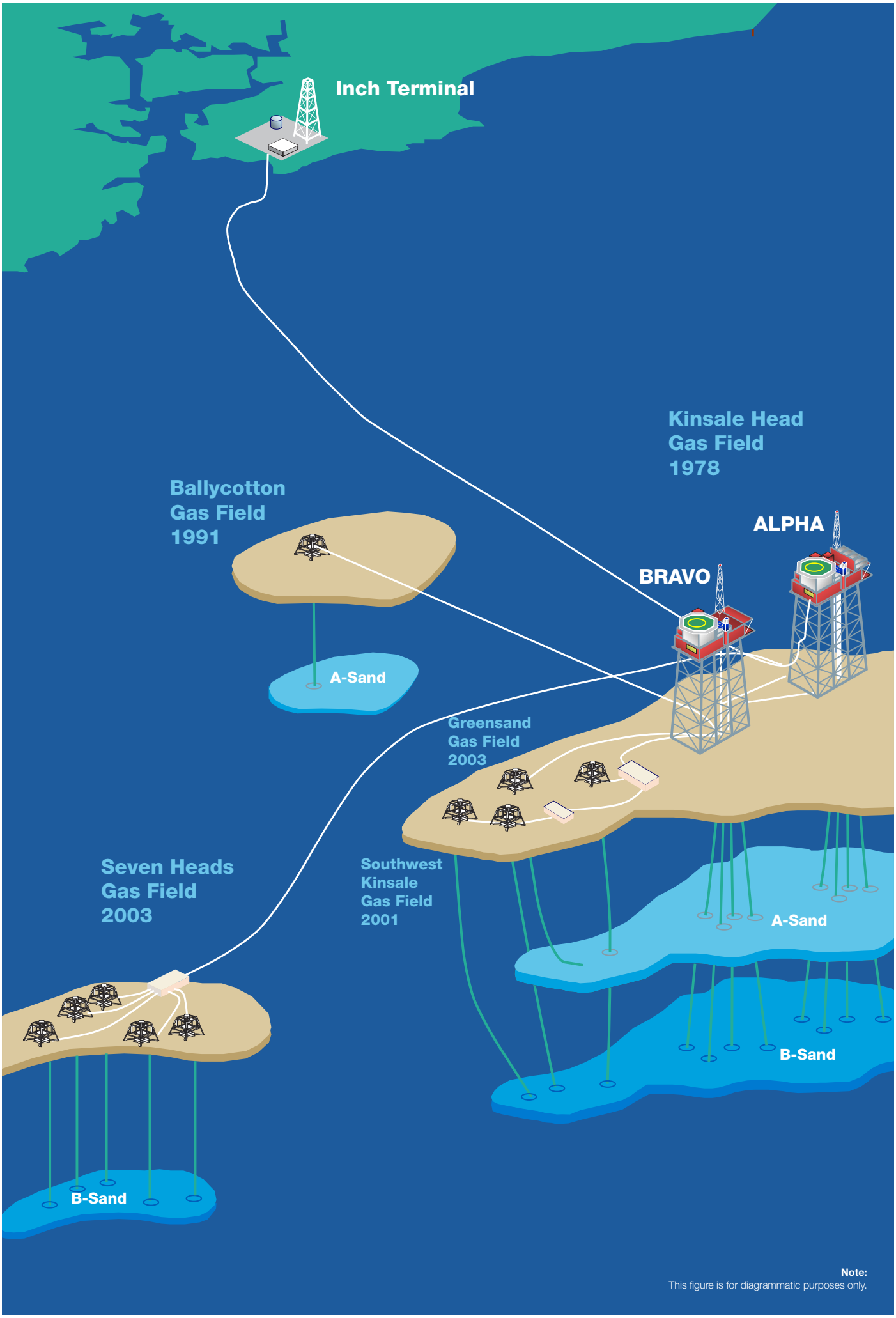
Kinsale Area Decommissioning Project

Appendix A3

Layout Drawings

Hartley Anderson

ARUP


Inch Terminal
Kinsale Head
Gas Field
1978
Ballycotton
Gas Field
1991
ALPHA
BRAVO
A-Sand
Greensand
Gas Field
2003
Seven Heads
Gas Field
2003
Southwest
Kinsale
Gas Field
2001
A-Sand
B-Sand
B-Sand
Note:
This figure is for diagrammatic purposes only.

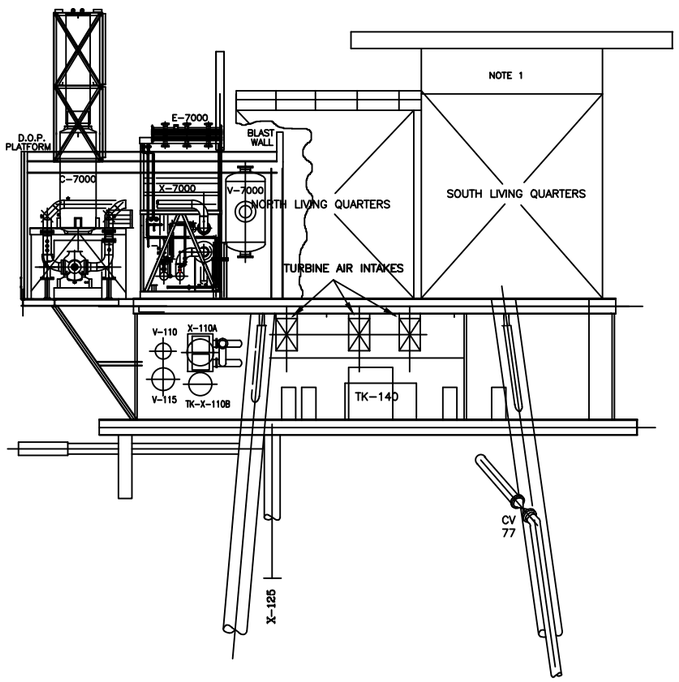
A3 Layout Drawings

Drawing No.	Drawing Name	Revision
AP-05-DR-ENG-21908	Alpha Platform Equipment Layout South / West Elevations	E1
AP-05-DR-ENG-21910	Alpha Platform Equipment Layout North / East Elevations	D1
AP-05-DR-ENG-21906	Alpha Platform Equipment Layout Main/Sub-Cellar Deck Plans	G1
AP-05-DR-ENG-21904	Alpha Platform Equipment Layout Cellar Deck Plan	G1
BP-05-DR-ENG-23954	Bravo Platform Equipment Layout South / West Elevations	F1
BP-05-DR-ENG-23784	Bravo Platform Equipment Layout North / East Elevations	F1
BP-05-DR-ENG-26828	Bravo Platform Equipment Layout Main/Sub-Cellar Deck Plans	F1
BP-05-DR-ENG-23776	Bravo Platform Equipment Layout Cellar Deck Plan	F1
KG-21-DR-ENG-36229	Kinsale Head, SWK, Greensand & Ballycotton Gas Fields Location	A

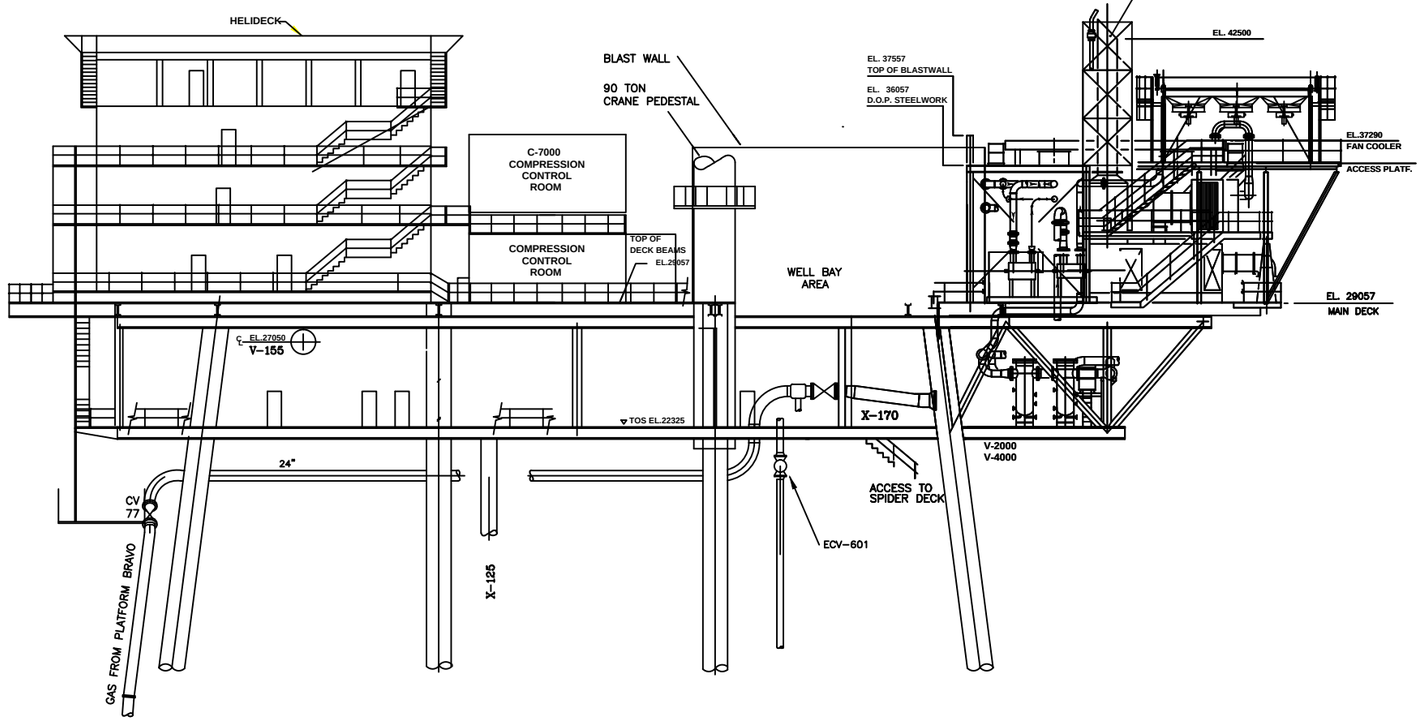
NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. A-142-05-09214

NOTES:

1) WESTSIDE WALKWAY & STAIRS NOT SHOWN FOR CLARITY



WEST ELEVATION



SOUTH ELEVATION

E1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE
REV	DATE	BY	CH'KD	APP'D	COMMENTS

KINSALE ENERGY

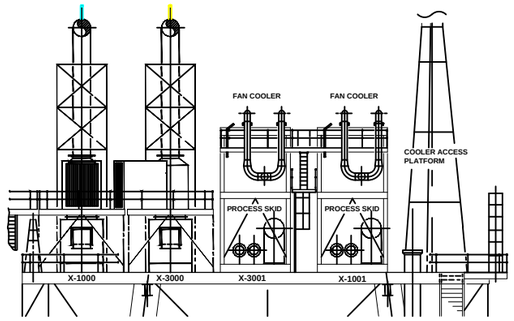
Alpha Platform
Equipment Layout
South / West Elevations

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. AP-05-DR-ENG-21908

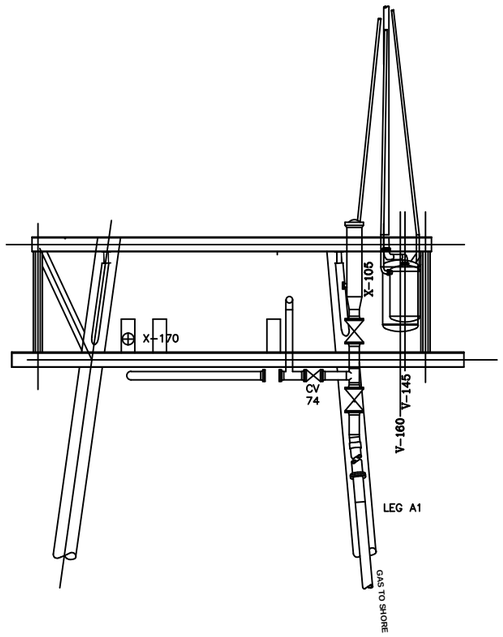
NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. A-142-05-09230

NOTES:

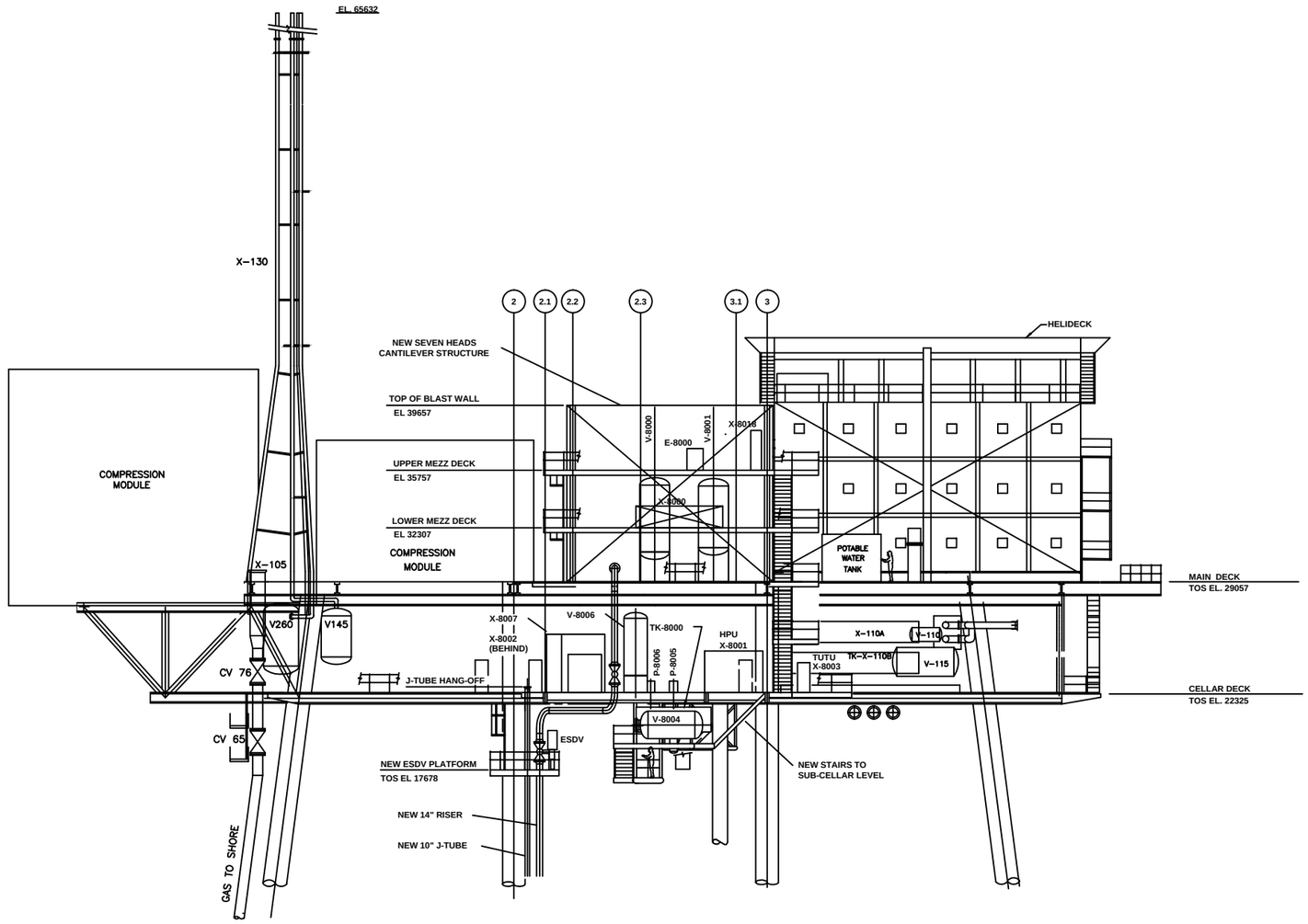
1) WESTSIDE WALKWAY & STAIRS NOT SHOWN FOR CLARITY



EAST ELEVATION (EXCL. STACK)



EAST ELEVATION (PARTIAL)



NORTH ELEVATION

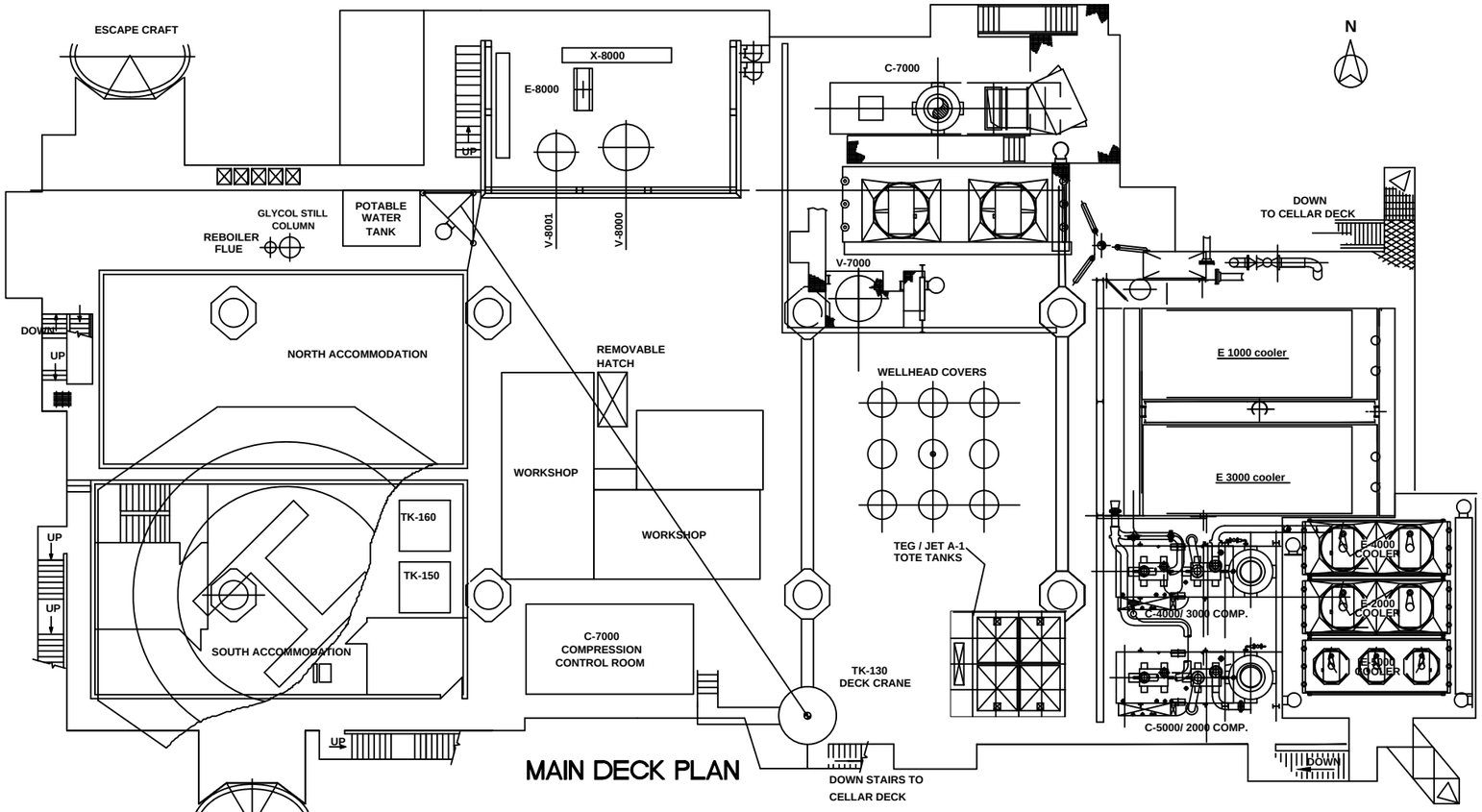
REV	DATE	BY	CH'KD	APP'D	COMMENTS
D1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE

KINSALE ENERGY

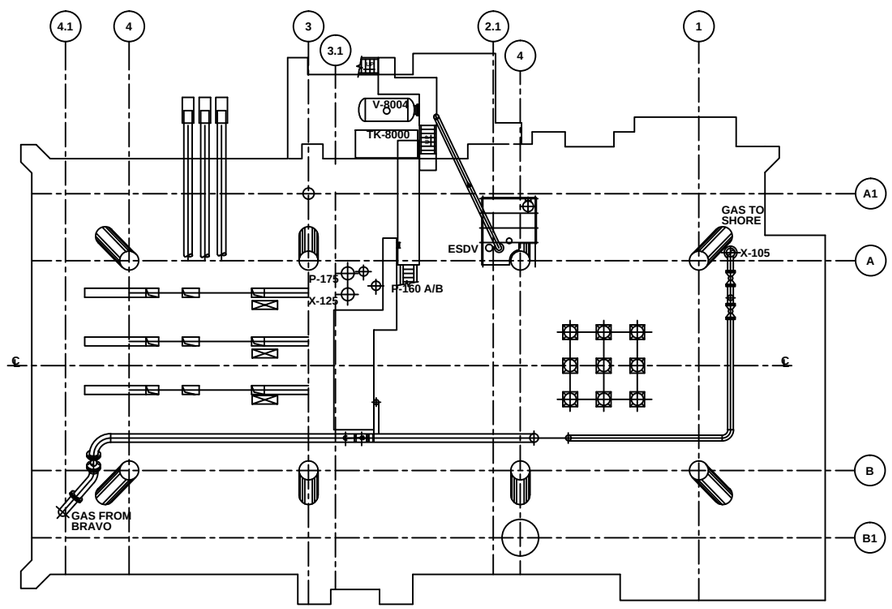
Alpha Platform Equipment Layout North / East Elevations

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. AP-05-DR-ENG-21910

NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. A-142-05-09212



MAIN DECK PLAN



SUB-CELLAR DECK PLAN

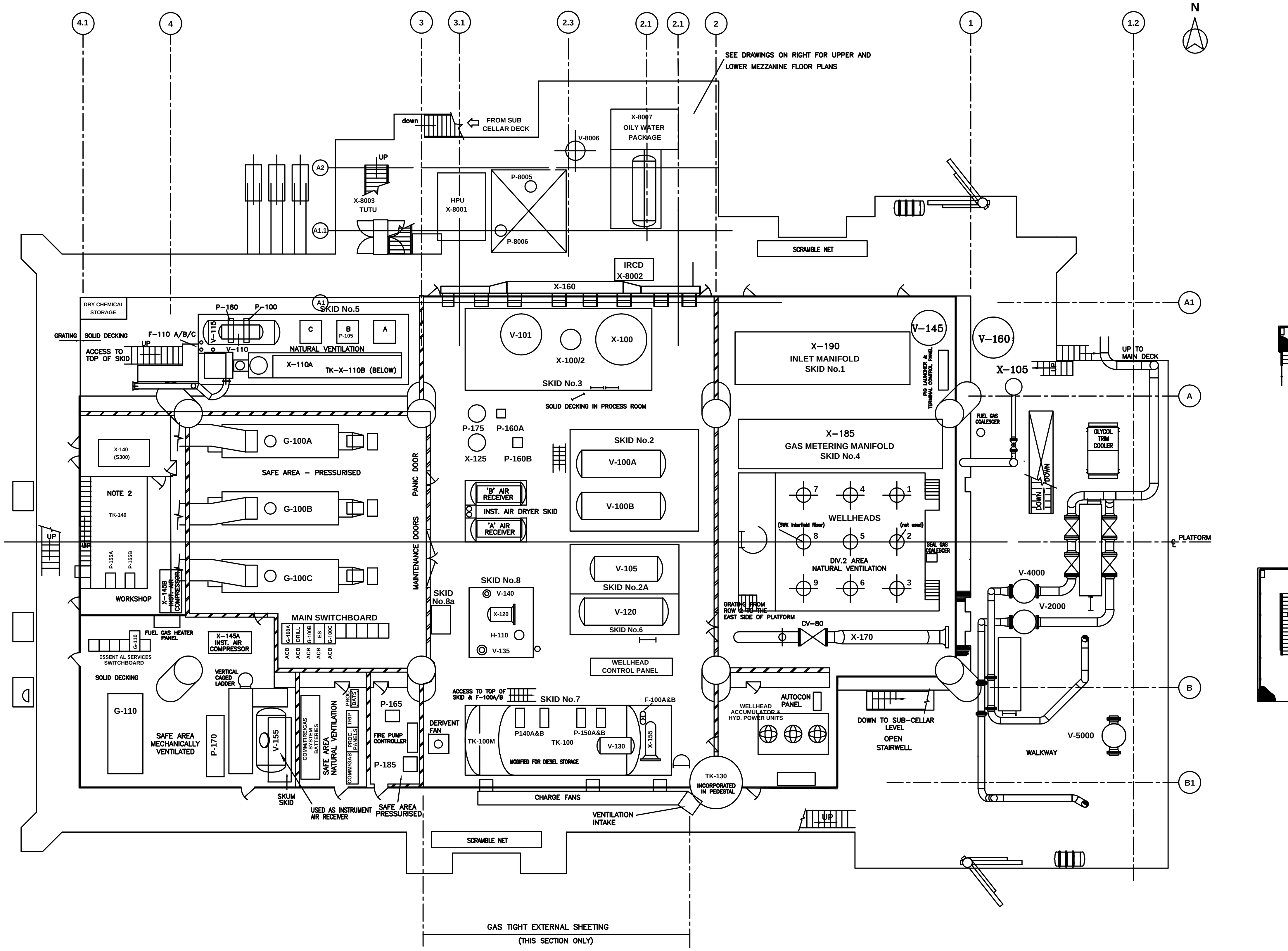
REV	DATE	BY	CH'KD	APP'D	COMMENTS
G1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE

KINSALE ENERGY

Alpha Platform
Equipment Layout
Main/Sub-Cellar Deck Plans

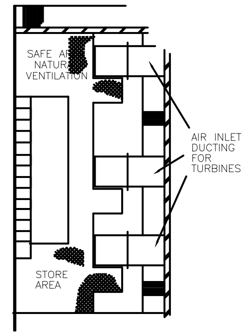
DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. AP-05-DR-ENG-21906

NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. A-142-05-09210

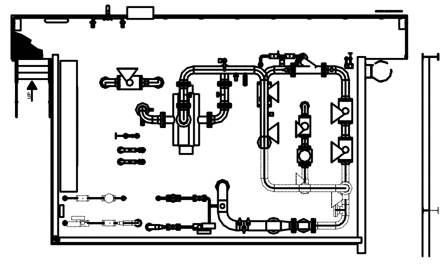


N
4.1
4
3
3.1
2.3
2.1
2.1
2
1
1.2
SEE DRAWINGS ON RIGHT FOR UPPER AND LOWER MEZZANINE FLOOR PLANS
down
FROM SUB CELLAR DECK
X-8007 OILY WATER PACKAGE
V-8006
UP
A2
A1.1
X-8003 TUTU
HPU X-8001
P-8005
P-8006
SCRAMBLE NET
IRCD X-8002
X-160
A1
DRY CHEMICAL STORAGE
GRATING
SOLID DECKING
F-110 A/B/C
UP
ACCESS TO TOP OF SKID
P-180
P-100
SKID No.5
V-115
V-110
C
B P-105
A
NATURAL VENTILATION
X-110A
TK-X-110B (BELOW)
V-101
X-100
X-100/2
SKID No.3
SOLID DECKING IN PROCESS ROOM
X-190 INLET MANIFOLD SKID No.1
V-145
V-160
X-105
PIG LAUNCHER & TERMINAL CONTROL PANEL
UP TO MAIN DECK
X-185 GAS METERING MANIFOLD SKID No.4
FUEL GAS COALESCER
GLYCOL TRIM COOLER
X-140 (S300)
G-100A
SAFE AREA – PRESSURISED
P-175
P-160A
X-125
P-160B
PANIC DOOR
SKID No.2
V-100A
V-100B
'B' AIR RECEIVER
INST. AIR DRYER SKID
'A' AIR RECEIVER
WELLHEADS
7 4 1
8 5 2
9 6 3
(SBK Interfield Riser)
(not used)
DIV.2 AREA NATURAL VENTILATION
SEAL GAS COALESCER
DOWN
DOWN
PLATFORM
NOTE 2
TK-140
G-100B
UP
P-155A
P-155B
MAINTENANCE DOORS
G-100C
WORKSHOP
X-145B INST. AIR COMPRESSOR
V-105
SKID No.2A
SKID No.8
V-140
X-120
H-110
V-135
SKID No.8a
V-120
SKID No.6
GRATING FROM ROW G TO THE EAST SIDE OF PLATFORM
CV-80
X-170
V-4000
V-2000
MAIN SWITCHBOARD
ACB ACB ACB ACB ACB
G-100A DRILL G-100B ES G-100C
FUEL GAS HEATER PANEL
G-110
X-145A INST. AIR COMPRESSOR
ESSENTIAL SERVICES SWITCHBOARD
SOLID DECKING
VERTICAL CAGED LADDER
WELLHEAD CONTROL PANEL
G-110
SAFE AREA MECHANICALLY VENTILATED
P-170
V-155
COMMS/F&G SYSTEM BATTERIES
SAFE AREA NATURAL VENTILATION
COMMS/F&G
PROC. PANELS
TRIP
PROC. BATS
P-165
FIRE PUMP CONTROLLER
P-185
DERVENT FAN
ACCESS TO TOP OF SKID & F-100A/B
SKID No.7
F-100A&B
TK-100M
P140A&B
P-150A&B
TK-100
V-130
X-155
MODIFIED FOR DIESEL STORAGE
WELLHEAD ACCUMULATOR & HYD. POWER UNITS
AUTOCON PANEL
DOWN TO SUB-CELLAR LEVEL
OPEN STAIRWELL
B
V-5000
WALKWAY
B1
TK-130 INCORPORATED IN PEDESTAL
CHARGE FANS
SKUM SKID
USED AS INSTRUMENT AIR RECEIVER
SAFE AREA PRESSURISED
VENTILATION INTAKE
UP
SCRAMBLE NET
GAS TIGHT EXTERNAL SHEETING
(THIS SECTION ONLY)

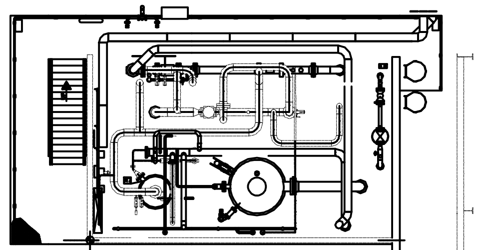
CELLAR DECK PLAN



PLENIUM AREA OVER WORKSHOP



UPPER MEZZANINE 7 HEADS



LOWER MEZZANINE 7 HEADS

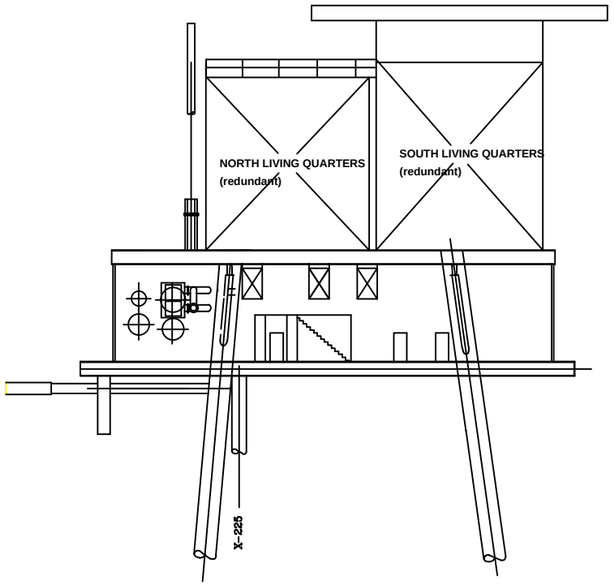
REV	DATE	BY	CH'KD	APP'D	COMMENTS
G1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE

KINSALE ENERGY

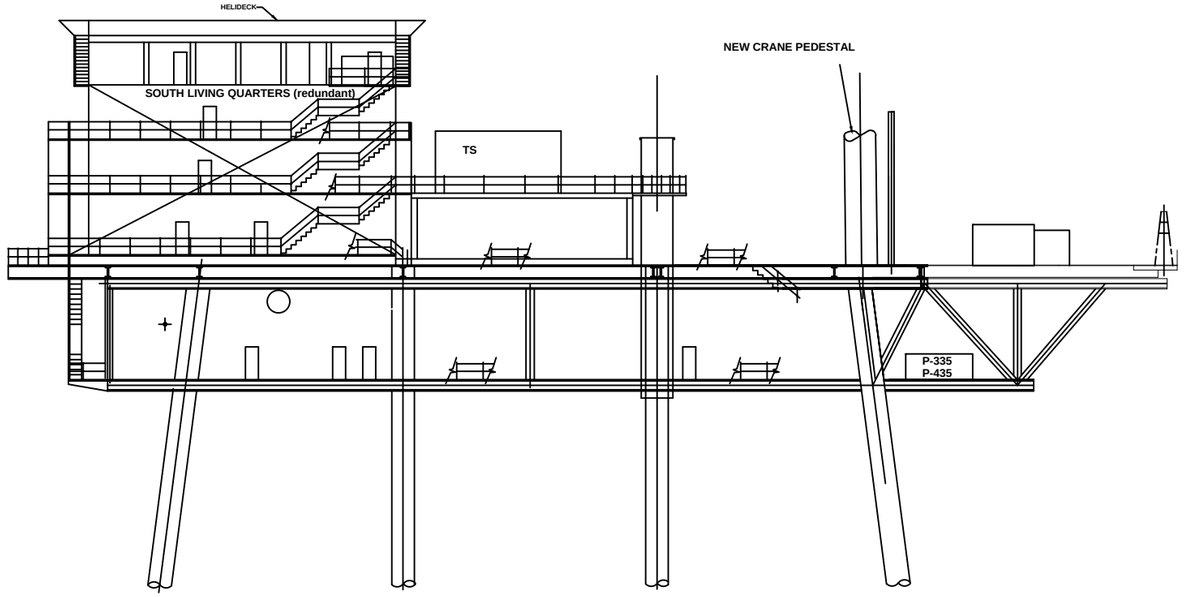
Alpha Platform
Equipment Layout
Cellar Deck Plan

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. AP-05-DR-ENG-21904

NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. B-142-05-09220



WEST ELEVATION



SOUTH ELEVATION

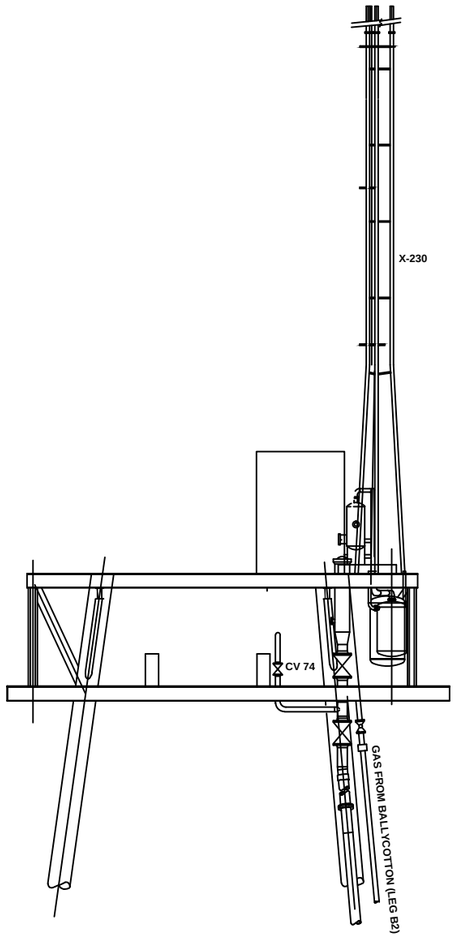
REV	DATE	BY	CH'KD	APP'D	COMMENTS
F1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE

KINSALE ENERGY

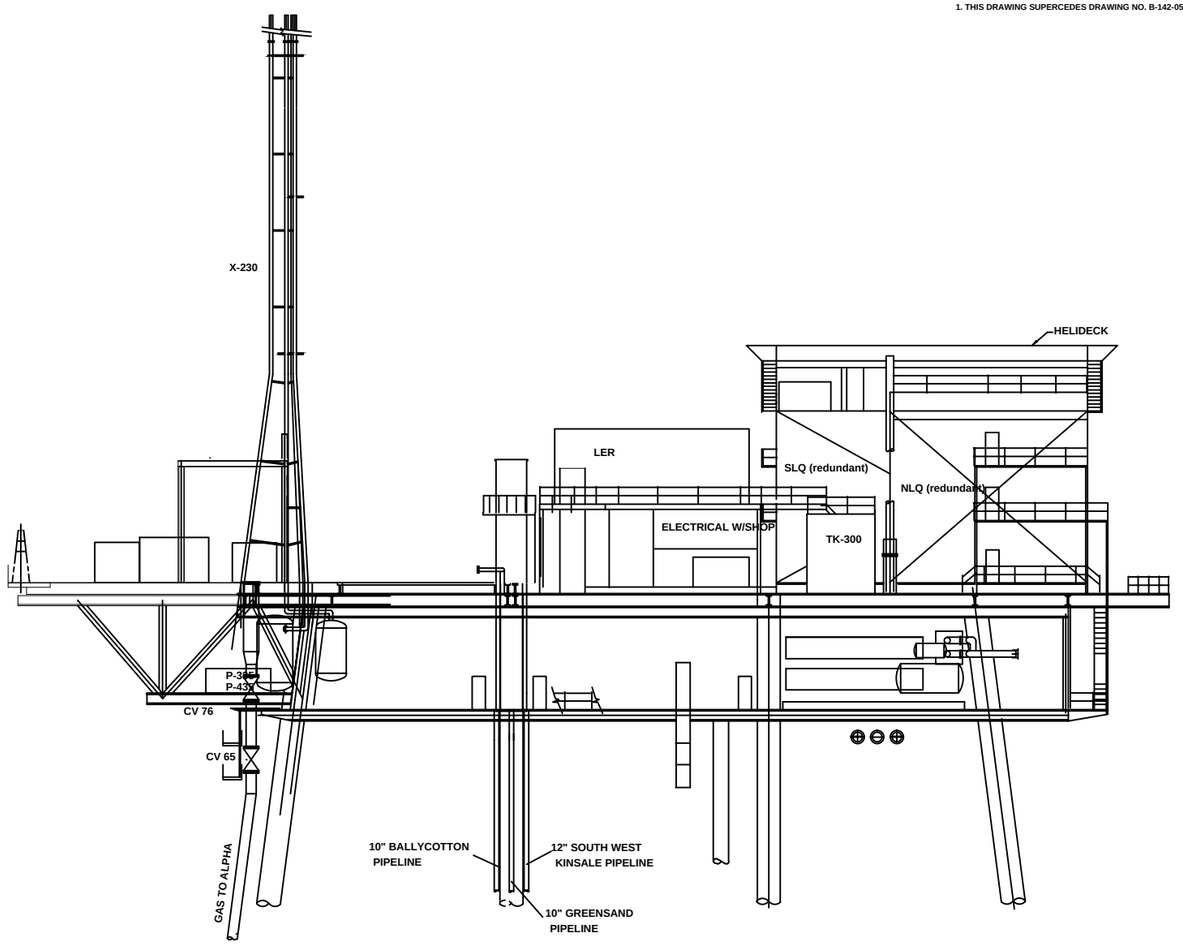
Bravo Platform
Equipment Layout
South / West Elevations

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. BP-05-DR-ENG-23954

NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. B-142-05-09229



EAST ELEVATION



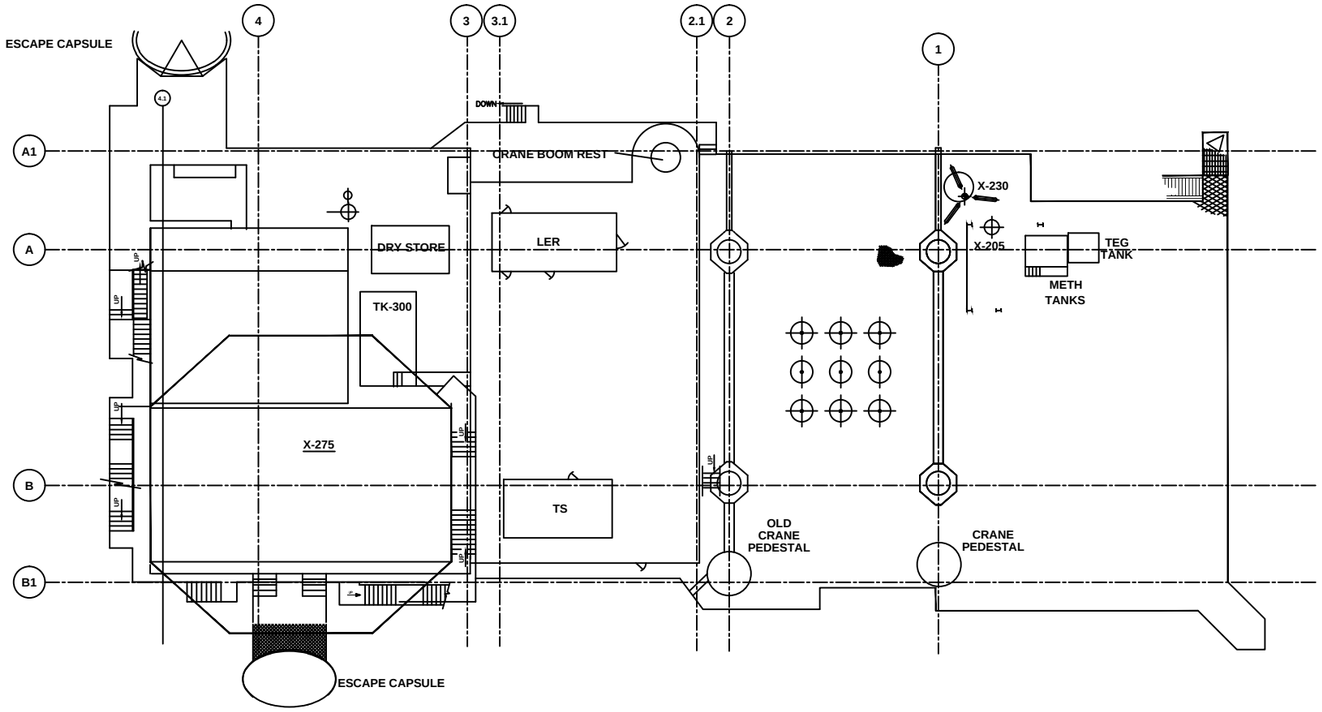
NORTH ELEVATION

REV	DATE	BY	CH'KD	APP'D	COMMENTS
F1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE

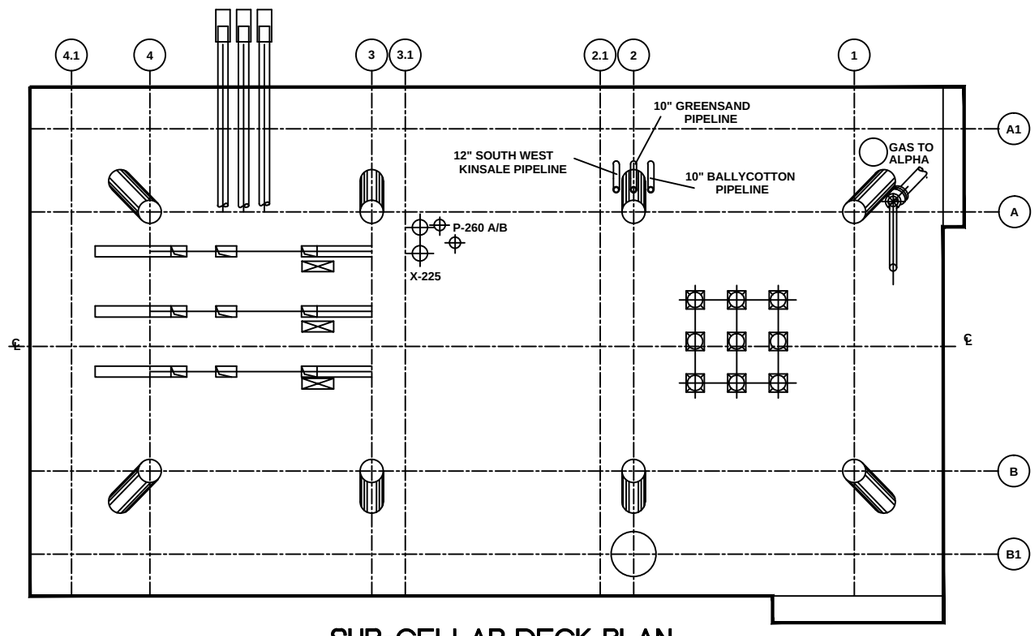
KINSALE ENERGY

Bravo Platform Equipment Layout North / East Elevations

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. BP-05-DR-ENG-23784



MAIN DECK PLAN



SUB-CELLAR DECK PLAN

N

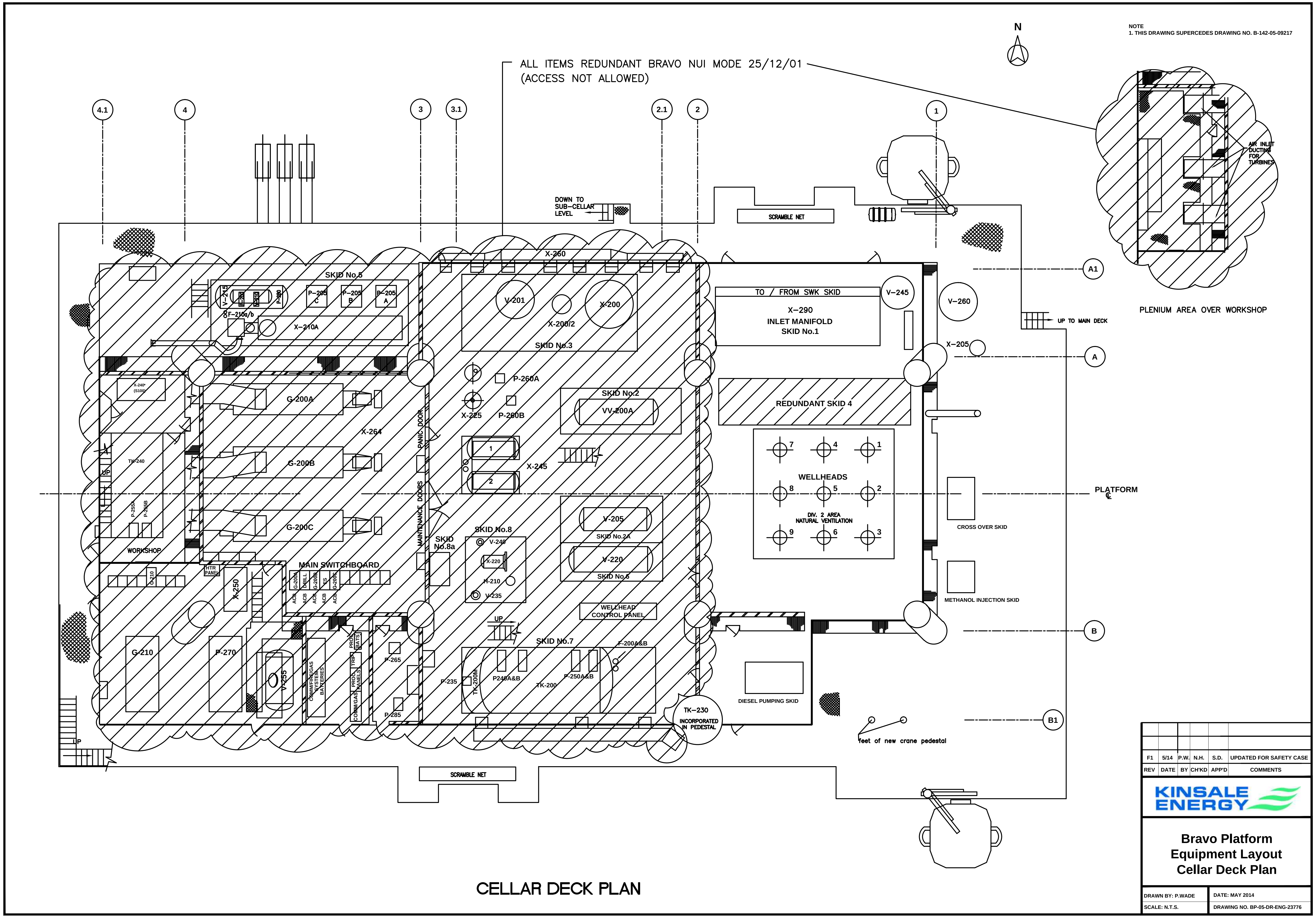
NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. B-142-05-09219

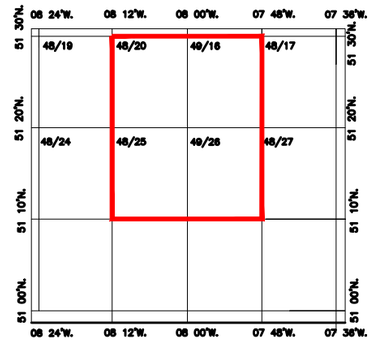
REV	DATE	BY	CH'KD	APP'D	COMMENTS
F1	5/14	P.W.	N.H.	S.D.	UPDATED FOR SAFETY CASE

KINSALE ENERGY

Bravo Platform
Equipment Layout
Main/Sub-Cellar Deck Plans

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. BP-05-DR-ENG-26828


NOTE
1. THIS DRAWING SUPERCEDES DRAWING NO. B-142-05-09217
N
ALL ITEMS REDUNDANT BRAVO NUI MODE 25/12/01
(ACCESS NOT ALLOWED)
4.1
4
3
3.1
2.1
2
1
DOWN TO SUB-CELLAR LEVEL
SCRAMBLE NET
AIR INLET DUCTING FOR TURBINES
PLENIUM AREA OVER WORKSHOP
X-260
SKID No.5
V-215
P-205 C
P-205 B
P-205 A
F-210a/b
X-210A
V-201
X-200
X-200/2
SKID No.3
TO / FROM SWK SKID
X-290
INLET MANIFOLD
SKID No.1
V-245
V-260
A1
UP TO MAIN DECK
X-205
A
P-260A
X-225
P-260B
SKID No.2
VV-200A
REDUNDANT SKID 4
G-200A
X-264
G-200B
G-200C
PANIC DOOR
MAINTENANCE DOORS
X-245
WELLHEADS
DIV. 2 AREA
NATURAL VENTILATION
PLATFORM
CROSS OVER SKID
METHANOL INJECTION SKID
TK-240
WORKSHOP
UP
SKID No.8a
SKID No.8
V-240
X-220
H-210
V-235
V-205
SKID No.2A
V-220
SKID No.6
WELLHEAD CONTROL PANEL
MAIN SWITCHBOARD
HTR PANEL
X-250
G-210
P-270
V-255
SKID No.7
F-200A&B
P-265
P-235
TK-200A
P240A&B
TK-200
P-250A&B
P-285
TK-230
INCORPORATED IN PEDESTAL
DIESEL PUMPING SKID
B
B1
feet of new crane pedestal
CELLAR DECK PLAN
F1 | 5/14 | P.W. | N.H. | S.D. | UPDATED FOR SAFETY CASE
REV | DATE | BY | CH'KD | APP'D | COMMENTS
KINSALE ENERGY
Bravo Platform
Equipment Layout
Cellar Deck Plan
DRAWN BY: P.WADE
DATE: MAY 2014
SCALE: N.T.S.
DRAWING NO. BP-05-DR-ENG-23776



Kinsale Head Petroleum Lease Area.

5700000N

5700000N

5700000N

560000E

570000E

580000E

08 West.

Block 48.

Block 49.

N

500m Exclusion Zone

Ballycotton
Well 48/20-2
51 27' 07.000" N
08 07' 28.407" W

Water Depth 87.9m

KEL 24" Gas Export Pipeline

KINSALE 'B' PLATFORM
(JACKET CENTRE)
51 21' 38.913"N
08 00' 55.769"W

Water Depth 94.8m

Suspended Well 49/16-2.
51 23'16.180"N.
07 57'34.859"W.

KP 001

Exclusion Zone

SH's 18" Gas Pipeline

KEL 24" Inter-platform Gas Pipeline

KEL 12" Inter-Platform Gas Pipeline

Greensand
Well 48/25-6
51 19' 35.118"N.
08 05' 56.726"W.

Water Depth 92.5m

5690000N

5690000N

5690000N

KINSALE 'A' PLATFORM
(JACKET CENTRE)
51 22' 14.953" N
07 56' 41.770" W

Water Depth 91.5m

Suspended Well 48/20-1A.
51 21'07.772"N.
08 00'21.764"W.

Greensand 10" Pipeline.

SWK 12" Pipeline & Umbilical

Suspended Well 48/25-2.
51 19'39.505"N.
08 05'48.595"W.

Exclusion Zone

South West Kinsale
Well 48/25-3
51 19' 37.609"N.
08 05' 54.358"W.

Water Depth 91.1m

SWK 12" Pipeline & Umbilical.

Seven Heads 18" Pipeline & Umbilical

See Drawing:
KH13-SV-16999. / I.D. KH/SWK/GS-02

South West Kinsale
Well 48/25-4
51 19' 25.326"N.
08 06' 51.374"W.

Water Depth 93.0m

South West Kinsale
Well 48/25-5
51 19' 25.424"N.
08 06' 50.169"W.

Water Depth 93.0m

NOTES –

1. COORDINATES ARE BASED ON INTERNATIONAL SPHEROID, EUROPEAN DATUM 1950, UNIVERSAL TRANSVERSE MERCATOR PROJECTION, UTM ZONE 29, CENTRAL MERIDIAN 9° WEST

2. Ref: ADMIRALTY CHART No. 2424. (2010) "KENMARE RIVER to CORK HARBOUR"

REV	DATE	BY	CH'KD	APP'D	COMMENTS
A	5/14	P.W.	N.H.	S.D.	ISSUED FOR SAFETY CASE

KINSALE ENERGY

Kinsale Head, SWK, Greensand & Ballycotton Gas Fields Location

DRAWN BY: P.WADE	DATE: MAY 2014
SCALE: N.T.S.	DRAWING NO. KG-21-DR-ENG-36229