

Materials and Corrosion Experience List (2012 – 2024)

No	Contract Title	Description	Year	Approx. duration (month)	Location	Contractor	Asset Owner	Nature of Work
1	Besar A - CMP, CDBM and material selection	To develop CMP, CDBM and material selection for Besar A & B satellite platforms, pipelines and onshore receiving facilities.	2012	3	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
2	Bukit Tua Development – Corrosion Management Plan (CMP), Corrosion Design Basis Memorandum (CDBM)	To develop and to review CMP, CDBM and material selection for Bukit Tua WHP, in-field flowline and pipeline.	2012	3	Indonesia	PT Ketapang II Ltd	Petronas	Engineering - PREFEED/FEED
3	Block A project	To perform corrosion risk assessment and material selection for topsides equipment and piping.	2013	1	Indonesia	PT Synergy Engineering	PT MEDCO E&P Malaka	Engineering - PREFEED/FEED
4	Revision of ANDRA and ANPGA CDBM for ANGSI booster compressor upgrade	To review and to update the existing CDBM and CMP, gap analysis of the existing facilities resulted by the new booster compressor upgrade on ANPGA.	2013	2	Malaysia	MMC Oil & Gas	Petronas	Engineering - DDE/EPCC
5	Development of CMP for Permas and Belum Pipelines	To develop CMP for MOC's new Permas and Belum export pipelines.	2013	1.5	Malaysia	Pegasus APEC	Murphy Oil	Engineering - DDE/EPCC
6	Development of Integrity Management Plan for Santos Maleo MOPU	To develop overall asset integrity management plan (IMP) for the Mobile Offshore Production Unit (MOPU) topside facilities.	2013	2	Indonesia	PT Synergy Engineering	Santos Maleo	Engineering - DDE/EPCC
7	Corrosion and material studies for Premier Oil West Lobe Development	To perform corrosion impact studies and material selection for the in-field flowline, West Lobe and AGX platforms.	2013	2	Indonesia	PT Synergy Engineering	Premier Oil	Engineering - PREFEED/FEED

8	Seawater Booster Pump Failure Analysis	To perform offshore in-service inspection and failure analysis of the seawater booster pumps on the Cakerawala Platform.	2013	1	Malaysia	Intetech Ltd	CHOC	Audit & Inspection
9	Pulai A to Tinggi A Pipeline Replacement Project	To develop CDBM & CMP for Pulai A to Tinggi A pipe-in-pipe reinforced thermoplastic (RTP) pipeline Replacement Project.	2013	2	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
10	Development of CDBM for SBO Samarang Pipeline Replacement Project	To develop CDBM & CMP for SBO Samarang pipeline replacement project.	2013	1	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
11	Development of CDBM for Pre-FEED and FEED PFLNG Tie-in	To develop CDBM for PFLNG Tie-in facilities, brownfield modification and export pipelines.	2013	2	Malaysia	MMC Oil & Gas	Petronas	Engineering - PREFEED/FEED
12	Study of Duplex and Super Duplex Stainless Steels or Equivalent for High Temperature Services	To evaluate suitability of Duplex and Super Duplex stainless steels or equivalent materials for wet gas service above 150°C for Bunga Raya field (BRE) Gas Improvement Project (GIP).	2013	0.5	Malaysia	MMC Oil & Gas	Talisman	Specialist Corrosion Study
13	Material Selection for CPOC B17 Block Phase 3 Development Project	To perform corrosion studies and material selection report for CPOC B17 block Phase-3 pipelines, topsides and brownfield modification.	2013	2	Malaysia-Thailand JDA	RNZ Integrated	CPOC	Engineering - PREFEED/FEED
14	Bardegg 2 & Baronia EOR, Tukau Timur A & B – Material Selection, CDBM and CMP	To develop CDBM, CMP for various greenfield development and new pipelines.	2013	5	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
15	Bardegg 2 & Baronia EOR, Tukau Timur A & B – Asset Integrity assessment	To perform asset integrity assessment, gap analysis, remaining life analysis investigation, API579 Fit-For-Service examination (Level 1 and 2) for brownfield and impact studies resulted by the new development.	2013	2	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC

16	Diamond Development Project EPCC CMP and RBI development	To develop CMP, asset register, database population, development of piping loop/circuit and P-RBI for Diamond Development Project, PCVL.	2013	5	Vietnam	RNZ Integrated	PCVL	Engineering - DDE/EPCC
17	Diamond Development Project EPCC UT Inspection	To perform baseline UT/G inspection for Diamond Development EPCC Project, PCVL.	2013	5	Vietnam	RNZ Integrated	PCVL	Audit & Inspection
18	CDBM of the FEED for the TGA-OSC-GPPA (TOG) Modification Project	To perform corrosion studies and to develop CDBM for the TGA-OSC-GPPA (TOG) modification project.	2013	1.5	Malaysia	MMC Oil & Gas	Petronas	Engineering - PREFEED/FEED
19	Corrosion Studies and Material Selection for EPS-TPF Topside	To perform corrosion analysis and material selection for EPS-TPF topside.	2013	1	Indonesia	PT Synergy Engineering	Gryphon Energy	Engineering - PREFEED/FEED
20	Corrosion Impact Studies for ANOA-FPSO Liquid Pipeline	To perform corrosion impact analysis for 8 inch liquid pipeline from ANOA to PLEM, rigid riser at ANOA and flexible riser from PLEM to FPSO based upon changed of production conditions.	2013	0.5	Indonesia	PT Synergy Engineering	Premier Oil	Engineering - PREFEED/FEED
21	Corrosion Studies and Material Selection of FEED for KRA South Infill	To perform corrosion analysis and to propose material selection corrosion mitigation measures for the new facilities on KRA-S platform.	2013	0.5	Indonesia	PT Synergy Engineering	Star Energy (KAKAP) Ltd	Engineering - PREFEED/FEED
22	Corrosion Study And Material Selection For The Madura BD WHP Topside Facilities	To perform corrosion analysis and to propose material selection corrosion mitigation measures for the new Madura Straits Block BD WH platform.	2013	1	Indonesia	PT Synergy Engineering	Husky-CNOOC Madura Ltd	Engineering - PREFEED/FEED
23	Cendor Gas Lift De-Bottlenecking Corrosion Assessment	To perform asset integrity study, gap analysis and API579 Fit-For-Service examination (Level 1 and 2) of the existing CDW-B gas lift system.	2013	2	Malaysia	RNZ Integrated	Petrofac Malaysia	Engineering - DDE/EPCC

24	CO ₂ Corrosion Assessment and Material Selection Review for Cendor CO ₂ Removal Package	To assess the extent of CO ₂ corrosion expected in the CO ₂ removal package, to identify the high corrosion risk areas and to propose corrective measures to mitigate the corrosion threats to the carbon steel facilities.	2013	1	Malaysia	Sedia Teguh	MMHE	Specialist Corrosion Study
25	Expert Witness for Molten Sulphur Tank Failure	To perform in-service inspection and to deliver expert evidence from the domain of metallurgy and corrosion which led to the premature molten sulphur tank failure.	2013	2	Malaysia	Undisclosed	Undisclosed	Audit & Inspection
26	Corrosion Study and Material Selection for Layang FPSO Topsides	To provide the corrosion assessment, to identify the optimal material selection and to outlines general corrosion mitigation for the Layang FPSO topside facilities.	2014	0.5	Malaysia	Blackstone Process Solutions / THHE	JX NIPPON OIL & GAS EXPLORATION	Engineering - PREFEED/FEED
27	Critical Review of Material Selection report for Kinabalu Field Re-development Project	To provide critical (third party) review of corrosion study and material selection report of Kinabalu CPP and WHP.	2014	0.5	Malaysia	DRL Engineering	Talisman Malaysia	Specialist Corrosion Study
28	Tungku Gas Plant NG Pipeline Corrosion Study and Material Selection – Feasibility and Conceptual	To provide corrosion studies and material selection for the natural gas pipeline project from Tungku Gas Plant to Puala Maura Besar. The pipeline project also consist of the booster compressor facility, condensate handling facility, gas conditioning facility, fire water network.	2014	0.5	Brunei	Petrokon Utama	Berakas Power Management Company	Engineering - PREFEED/FEED
29	Lengo Facilities Study Corrosion and Material Selection Study - Conceptual	To provide the corrosion assessment, to identify the material selection and to outlines general corrosion mitigation for the Lengo field WHP topsides and export pipeline.	2014	1	Indonesia	PT Synergy Engineering	Kris Energy	Engineering - PREFEED/FEED

30	Corrosion Assessment and Material Selection for KG-D6 Onshore Terminal Booster Compressor Station (OTBC)	To perform material selection and corrosion assessment of the new and existing facilities impacted by the installation of OTBC.	2014	1	India	Aker Powergas	Reliance Industries	Engineering - PREFEED/FEED
31	Corrosion Assessment Of The In-Service Pangkah Gaslift and Multiphase Pipelines	To perform corrosion risk analysis, pipeline integrity assessment, to develop detailed corrosion mitigation program of the HESS Pangkah gaslift and multiphase pipelines.	2014	1	Indonesia	PT Synergy Engineering	Hess Indonesia	Engineering - DDE/EPCC
32	Floating Water Injection Feasibility Study Material Selection, CMP-Conceptual	To perform material selection and to develop corrosion management plan for the Water Injection System to deliver 30,000 bbl/day on a floating unit offshore.	2014	2	Malaysia	Overdick Consulting Engineers	Petronas	Engineering - PREFEED/FEED
33	SK310 B15 Topside and Export Pipeline Corrosion Study and Material Selection – Conceptual	To perform corrosion analysis and material selection for the SK310 B15 platform topside and export pipeline to B11.	2014	1	Malaysia	DRL Engineering	SK Energy	Engineering - PREFEED/FEED
34	ANGSI TCEOR (Terengganu Chemical EOR) CDBM – FEED	To perform corrosion analysis and material selection for the seawater intake system, onshore seawater treatment plant (chlorinated/dechlorinated, deaerated, chemical treatment) and the export systems.	2014	3	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
35	ANGSI TCEOR (Terengganu Chemical EOR) Asset Integrity Assessment (AIA) – FEED	To perform asset and pipeline integrity assessment, gap analysis, remaining life investigation, API579 Fit-For-Service examination (Level 1 and 2) for existing offshore facilities impacted by the new TCEOR program.	2014	1	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC
36	ANGSI-B Revisit Project CDBM – Conceptual	To provide the corrosion assessment and material selection for the infill drilling project on AnDP-B platform.	2014	2	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED

37	ANGSI-B Revisit Project CMP, RBI development – Conceptual	To develop asset database register and population, and development of piping loop/circuit.	2014	1	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC
38	F-9 Infill Drilling Project CDBM – Detailed Design	To perform corrosion analysis and material selection for the F9JT-A infill drilling project.	2014	1	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC
39	Bunga Pakma Topside, Tie-in Corrosion and Material, CMP – FEED	To perform corrosion analysis, evaluation of corrosion mitigation measures (e.g. material selection), and recommendation of the corrosion management plan for the topsides facilities.	2014	1	Malaysia	MMC Oil & Gas	Talisman Malaysia	Engineering - PREFEED/FEED
40	OSC Modification Project CDBM – detailed design	To provide corrosion assessment and material selection, recommendation of the corrosion management plan for the tie-in facilities.	2014	2	Malaysia	MMC Oil & Gas	Petronas	Engineering - DDE/EPCC
41	OSC Modification Project CMP + RBI + baseline UT survey – detailed design	To develop asset register, database population, development of piping loop/circuit, in-situ baseline inspection for the OSC modification facilities.	2014	3	Malaysia	MMC Oil & Gas	Petronas	Engineering - DDE/EPCC
42	North Malay Basin Pipeline Internal Corrosion Study – Detailed Design	To review and update FEED corrosion study and to confirm material selection and corrosion allowance for all the for 5 rigid subsea pipelines in North Malay Basin.	2014	2	Malaysia	RNZ Integrated	Hess EP Malaysia	Engineering - DDE/EPCC
43	North Malay Basin Pipeline CMP – Detailed Design	To develop CMP for 5 subsea pipelines in North Malay Basin.	2014	2	Malaysia	RNZ Integrated	Hess EP Malaysia	Engineering - DDE/EPCC
44	B15 topsides and pipeline CDBM and CMP	To develop FEED CDBM and CMP for the B15 topside facilities and 80 km export pipeline.	2014	2	Malaysia	RNZ Integrated	SapuraKencana Energy	Engineering - PREFEED/FEED
45	BLOCK SK 311 Wangsa Field Pipeline Project CDBM - FEED	To provide the corrosion rate assessment and material selection for the 8 inch multiphase gas pipeline from WG-SA to SE-PA Platform.	2014	1	Malaysia	RNZ Integrated	Murphy Oil	Engineering - PREFEED/FEED

46	South Acis Field 10" Multiphase Gas Pipeline CMP – FEED	To outline corrosion monitoring, mitigation and inspection plans for the 10" multiphase gas pipeline from SA-SA to SA-PA platform.	2014	1	Malaysia	RNZ Integrated	Murphy Oil	Engineering - PREFEED/FEED
47	Bardegg 2 & Baronia EOR, Phase 2 – Brownfield CDBM and asset integrity studies	To develop CDBM, CMP for various tie-in piping and pipelines; to perform impact studies and asset integrity studies for brownfield.	2014	2.5	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
48	Corrosion study and material selection for Bangka Topside facilities	To perform the corrosion rate assessment and material selection for the Bangka topside facilities.	2014	1	Indonesia	Meindo	Chevron	Engineering - PREFEED/FEED
49	CDBM for Dalak Gas receiving facilities	To provide the corrosion assessment and material selection for the new onshore gas receiving facilities.	2014	2	Malaysia	Toyo Engineering	Petronas	Engineering - PREFEED/FEED
50	CMP for Dalak Gas receiving facilities	To develop asset database register and population, and development of piping loop/circuit.	2014	2	Malaysia	Toyo Engineering	Petronas	Engineering - DDE/EPCC
51	Kasawari field development – CDBM, asset integrity study	To develop CDBM for greenfield and tie-in piping and pipelines; to perform impact studies and asset integrity studies for brownfield.	2014	1.5	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
52	Magtymguly gas recycling development – CDBM	To develop CDBM for 5 greenfield and brownfield platforms for the Magtymguly gas recycling project.	2014	2	Turkmenistan	RNZ Integrated	Petronas Turkmenistan	Engineering - PREFEED/FEED
53	PMO Pipeline rehabilitation project – internal and external corrosion studies	To perform internal and external corrosion assessment for two aging pipelines, as part of the pipeline rehabilitation project.	2014	1	Malaysia	MMC Oil & Gas	Petronas	Specialist Corrosion Study
54	Angsi Water Flood Optimisation (WFO) project – CDBM and asset integrity study.	To develop CDBM for water injection platform and to perform impact studies and asset integrity studies for impacted brownfield.	2014	1.5	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED

55	Material of construction review for (4) new infill wells of Berantai Phase 2a WHP	To review the material selection the flowlines connecting the four (4) new infill wells (BR-C1-B, BR-C1-C, BR-C2-A and A08-ST) and the tie-in header with respect to carbon steel and duplex stainless steel.	2014	1	Malaysia	RNZ Integrated	Petrofac Malaysia	Specialist Corrosion Study
56	B4 and B6 MOAB FEED Study – Corrosion study and Material Selection	To perform corrosion study and material selection for the topside facilities of the B4 and B6 MOAB platforms.	2014	2	Baltic Sea	Overdick Consulting Engineers	CalEnergy Resources	Engineering - PREFEED/FEED
57	Bardegg 2 & Baronina EOR, Detailed Design Package 3 – Brownfield CDBM	To perform FEED verification, review and update DD CDBM various tie-in piping and pipelines.	2015	2	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC
58	Bardegg 2 & Baronina EOR, Detailed Design Package 2 – TTJT-A and BNJT-K CDBM	To perform FEED verification, review and update DD CDBM for BNJT-K and TTJT-A platforms.	2015	2	Malaysia	Sapura Kencana Engineering	Petronas	Engineering - DDE/EPCC
59	Melor topside modification CMP And LCC analysis	To develop corrosion management plan and to perform life cycle cost (LCC) analysis for the melor topside piping replacement.	2015	2	Malaysia	MMC Oil & Gas Engineering	Petronas	Engineering - DDE/EPCC
60	Thai Binh Field Development Project – CDBM, CMP and RBI	To update DD CDBM and CMP, to develop Post-AFC asset register, database population, development of piping loop/circuit, baseline inspection and P-RBI for Thai Binh Field Development Project, PCVL.	2015	5	Vietnam	PVE	PCVL	Engineering - DDE/EPCC
61	Corrosion impact assessment and material study for PM 304 gas utilisation project for WD MOPU to FPSO pipeline	To perform Conceptual and feasibility study, including corrosion and material impact studies for the gas utilisation project, to utilise the WD MOPU to FPSO pipeline to transport excess gas for re-injection.	2015	1	Malaysia	Overdick Consulting Engineers	Petrofac Malaysia	Specialist Corrosion Study
62	Layang & HIP Material selection study and Corrosion Management Plan (CMP)	To perform corrosion analysis and material selection for the Layang WHP and HIP modification project; subsequently to develop	2015	2	Malaysia	Sapura Kencana Engineering	JX NIPPON OIL & GAS EXPLORATION	Engineering - PREFEED/FEED

		corrosion management plan (CMP) for the said facilities.						
63	Ghana OCTP FPSO corrosion and material selection study	To perform corrosion assessment and material selection for the OCTP offshore FPSO topside facilities.	2015	2	Vietnam	PTSC	Ghana ENI	Engineering - PREFEED/FEED
64	NMB FSO topside conversion	To perform corrosion assessment and material selection for the NMB FSO topside conversion facilities.	2015	1.5	Malaysia	Armada TCPE	Hess EP Malaysia	Engineering - PREFEED/FEED
65	Lengo WHP, export pipeline and ORF Corrosion Study and Material Selection - FEED	To revisit corrosion assessment, and to identify the material selection for the Lenggo field WHP topsides, export pipeline and onshore receiving facilities.	2015	1.5	Indonesia	PT Synergy Engineering	Kris Energy	Engineering - PREFEED/FEED
66	Bardegg 2 & Baronia EOR, Detailed Design Package 2 –CMP	To develop CMP for BNJT-K and TTJT-A platforms.	2015	2	Malaysia	Sapura Kencana Engineering	Petronas	Engineering - DDE/EPCC
67	Corrosion assessment and material study for PM 304 gas utilisation project for WD MOPU to FPSO pipeline	To perform FEED corrosion and material impact studies for the gas utilisation project, to utilise the WD MOPU to FPSO pipeline to transport excess gas for re-injection.	2015	1	Malaysia	Overdick Consulting Engineers	Petrofac Malaysia	Engineering - PREFEED/FEED
68	Corrosion study and material selection for FEED Bokor (CPP and Tie-in) phase 3 EOR project	To perform FEED corrosion study and material selection of new BOKOR CPP and tie-in facilities, for the phase 3 EOR project.	2015	2	Malaysia	MMC Oil & Gas Engineering	Petronas	Engineering - PREFEED/FEED
69	Corrosion study and material selection for FEED Bokor WHPs phase 3 EOR project	To perform FEED corrosion study and material selection of new BOKOR WHPs topside facilities, for the phase 3 EOR project.	2015	2	Malaysia	MMC Oil & Gas Engineering	Petronas	Engineering - PREFEED/FEED
70	Material, Corrosion and Inspection (MCI) engineering for Baronia Rejuvenation project	To provide MCI supports for Baronia Rejuvenation project consists of 14 platforms. Tasks including identification of piping replacement, impact assessment, remaining life	2015	4	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC

		analysis; and developing of CDBM, CMP and RBI for the required facilities.						
71	Materials & Corrosion study for Alur Rambong (AR) production facilities	To perform corrosion analysis and to evaluate feasibility of selecting carbon steel as material of construction, for AR production facilities, including export trunkline.	2016	1	Indonesia	PT Synergy Engineering	MEDCO Energy	Engineering - PREFEED/FEED
72	Assessment of PMI and Ferrite test requirement for Alur Siwah (AS) CPP facilities	To perform risk assessment on the AS CPP facilities, subsequent to the probable absence of PMI and Ferrite tests on CRA materials.	2016	2	Indonesia	PT Synergy Engineering	MEDCO Energy	Specialist Corrosion Study
73	Internal corrosion Prevention, Mitigation and Material Selection for the New 30" 144 km Salman Sirri Subsea Gas Pipeline FEED Project	To perform corrosion analysis, recommend corrosion mitigation measure and to propose material of construction for the pipeline FEED.	2016	1	Iran	Nautic AWT	Iranian Offshore Oil Company	Engineering - PREFEED/FEED
74	Existing 30" 144 km abandoned Salman-Sirri Subsea Gas Pipeline Corrosion and Integrity Assessment	To assess the historical corrosion monitoring/ inspection data, coupled with FFS analysis and future corrosion modelling – to contribute to the overall pipeline integrity assessment, to decide if the existing pipeline is safe to further operate.	2016	3	Iran	Nautic AWT	Iranian Offshore Oil Company	Audit & Inspection
75	Corrosion and material studies for Premier Oil LAMA and West Lobe Development	To perform material selection for West Lobe infill wells and corrosion impact studies for flowline, pipeline and process facilities.	2016	2	Indonesia	PT Synergy Engineering	Premier Oil	Engineering - PREFEED/FEED
76	Dulang Heat Management and Corrosion Under Insulation (CUI) Study	To perform heat management, corrosion and RBI analysis in order to identify CUI-prone areas, to eliminate insulation	2016	2	Malaysia	Overdick Consulting Engineers	Petronas	Specialist Corrosion Study

		wherever possible and mitigate CUI for Dulang platforms.						
77	Bokor-Betty Rejuvenation DED - CDBM	To develop CDBM for Bokor and Betty rejuvenation for topsides, downholes and pipelines detailed engineering design.	2016	2.5	Malaysia	MMC Oil & Gas	Petronas	Engineering - DDE/EPCC
78	Block A Gas development flowlines, trunklines and pipelines (FTP) EPC supports	To support Owner in Materials and Corrosion for Block A gas development FTP project EPC.	2016	1	Indonesia	PT Synergy Engineering	MEDCO E & P	Engineering - DDE/EPCC
79	LWP to HIP jumper hose mode – materials and corrosion studies	To develop corrosion analysis and material selection for Layang WHP and HIP CPP jumper hose mode.	2016	2	Malaysia	Sapura Kencana	JX NIPPON OIL & GAS EXPLORATION	Specialist Corrosion Study
80	Sao Vang Dai Nguyet Project – Pipeline material selection reports	To lead PVE Consultancy MCI Team in developing material selection for pipelines.	2016	1	Vietnam	PVEC / Idemitsu	PetroVietnam	Specialist Corrosion Study
81	Corrosion analysis and pigging studies for Belida and North Belut pipelines	To perform corrosion and material integrity studies to support client in establishing pipeline pigging philosophy.	2016	1	Indonesia	PT Synergy Engineering	ConocoPhilips	Specialist Corrosion Study
82	SO2 scrubber integrity study and material selection for Ujung Pangkah development onshore processing facilities	To perform failure analysis, integrity study of the premature damaged SO2 scrubber (OT > 800°C); to perform material selection exercise for the new scrubber replacement.	2016	3	Indonesia	PT Synergy Engineering	SAKA Energi	Specialist Corrosion Study
83	Topside Material Selection Report and Corrosion Management Plan	To provide critical review of the Topside Material Selection Report and Corrosion Management Plan for the Pegaga field development project.	2016	1	Malaysia	Aker Solutions	Mubadala Petroleum	Engineering - DDE/EPCC
84	Bokor CPP EPCC	Lead material and corrosion engineer of the EPCC team, to support overall material and	2017	5	Malaysia	MMC-MMHE	Petronas	Engineering - DDE/EPCC

		corrosion tasks and to develop DDE BOCPP CDBM.						
85	Bardegg package 3, P-RBI and CMP support	To develop CMP and to support for development of P-RBI for the Bardegg Package-3 facilities.	2017	4	Malaysia	RNZ Integrated	Petronas	Engineering - DDE/EPCC
86	Besar exhaust material study	To perform impact assessment of SS310S material as the GEG and DEG exhaust piping. Specifically looking at the T-T-Sensitisation correlation and loss of strength in the specified temperature regime.	2017	1	Malaysia	RNZ Integrated	Petronas	Specialist Corrosion Study
87	Conceptual engineering for Baram Integrated Re-development project	To provide materials and corrosion studies, asset integrity assessment, P-RBI examination, and to support the decision to repair/replace for rejuvenation and redevelopment of Baram field.	2017	4	Malaysia	MMC	Petronas	Engineering - PREFEED/FEED
88	Garagol Deniz extension	To provide corrosion assessment and material selection for the new process scheme of Garagol Deniz West Drilling Platform A.	2017	2	Turkmenistan	RNZ	Petronas (Turkmenistan)	Engineering - PREFEED/FEED
89	FEED for Bayan gas development project phase 2	To develop CDBM for Bayan Topsides and export pipelines, and to perform P-RBI examination on HTI pipeworks.	2017	3	Malaysia	MMC	Petronas	Engineering - PREFEED/FEED
90	Provision of Feasibility Study Service for Betty Redevelopment Project	To predict the extent of the corrosion rate that would occur on the carbon steel and to justify the use of carbon steel with 3 mm CA for the BEDP-A water injection pipeline.	2018	2	Miri, Malaysia	MMC	Petronas	Specialist Corrosion Study
91	Bakong, Larak, Gorek development project	To establish CDBM, CMP and CMF for the Bakong Larak, Gorek and BIM (Brownfield Integrated Module).	2018	3	Malaysia	RNZ, SEB	Shell	Engineering - DDE/EPCC
92	Limbayong Conceptual Engineering Design	To develop CDBM for Limbayong Deepwater development project, the scopes include SURF (Subsea, Umbilical, Flowline,	2018	3	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED

		Riser), the FPSO topside and the HTI at Kinabalu.						
93	PM304 – East Cendor Phase 1 Development Project	To develop material selection and CMF for topside and export pipelines for East Cendor Phase 1 Development Project.	2018	2	Malaysia	Petrofac-RNZ	Petrofac Malaysia	Engineering - DDE/EPCC
94	Engineering and Detailed Design For D35 Simultaneous Production & Drilling (SIPROD)	To develop CDBM and CMP to support for DDE of D35 SIPROD project, scope includes D35DP-B, D35DP-A and D35JT-C platforms.	2018	4	Malaysia	Petrofac-RNZ	ROC Oil	Engineering - DDE/EPCC
95	FEED for PM9 Simplification project	To develop CDBM and asset integrity impact studies for the PM9 simplification project involving Bekok-A, B, C and Tiong A platforms and the interfiled pipelines.	2018	2	Malaysia	Petrofac-RNZ	Petronas	Engineering - PREFEED/FEED
96	EPCC of Pegaga WHD and ICPP	To develop CDBM, CMP, RBI and to support EPCC for Pegaga WHD and ICPP topside development project.	2018	9	Malaysia	PRW	MDC	Engineering - DDE/EPCC
97	FEED for Dulang A Infill Project Kumang West Development Project	To develop CDBM and preliminary asset integrity study for the Dulang A Infill Project Kumang West Development Project.	2018	9	Malaysia	PRW	Petronas	Engineering - PREFEED/FEED
98	EPCC of D18 Phase 2 and D28 Phase 1 project	To develop CDBM and to support EPCC for D18, D28 EPCC.	2018	2	Malaysia	MMC	Petronas	Engineering - DDE/EPCC
99	DDE for HESS NMB Phase 2 development project	To develop material selection report for Anggerik, Zetung WHPs, intrafield pipeline and HTI at Kusumba.	2018	4	Malaysia	RNZ, SEB	Hess EP Malaysia	Engineering - DDE/EPCC
100	Detailed Design Competition Of Mobile Offshore Production Unit (MOPU) For K5 Strategic Technology Project (STP)	To develop CDBM for the K5 MOPU topside and pipelines, DRCF and TTP.	2018	4	Malaysia	RNZ, SEB	Petronas	Engineering - DDE/EPCC

101	MEPA Deep high CO2 NAG well feasibility study	To perform corrosion and material selection studies and integrity study for the MEPA Deep high CO2 NAG well feasibility study project.	2018	2	Malaysia	MMC	Murphy Oil	Engineering - PREFEED/FEED
102	DDE for Beryl Development	To develop CDBM for the infill drilling Beryl wells and impact studies for the existing HIP facilities.	2018	3	Malaysia	MMC	JX NIPPON OIL & GAS EXPLORATION	Engineering - DDE/EPCC
103	EPCC of Pegaga export Pipeline and Tie-in	To develop material selection and CMP for Pegaga 38" PL-395 export pipeline.	2018	3	Malaysia	Synergy, Pegasus	MDC	Engineering - DDE/EPCC
104	Tembikai OWF Project	To develop CDBM for Tembikai OWF WHP topside.	2018	2	Malaysia	Synergy	Vestigo	Engineering - PREFEED/FEED
105	FEED for Pemanis (PESA) - CDBM	To develop CDBM for the PESA platform, export pipeline from PESA to MEPA and hist-tie-in at MEPA.	2019	3	Malaysia	MMC	Murphy Oil	Engineering - PREFEED/FEED
106	Salman Development Project	To develop CDBM for topside facilities, water injection and export oil pipelines.	2019	5	Brunei	Sapura Fabrication (SFSB)	Brunei Shell	Engineering - PREFEED/FEED
107	SK408W Jerun Field Development Project - FEED	To develop CDBM and CMP for JRN-A and JRN-K topside facilities and export pipeline.	2019	2	Malaysia	RNZ	SapuraOMV Upstream (Sarawak)	Engineering - PREFEED/FEED
108	EPCC for Heavy Oil Transportation System 2 (HOTS2)	To develop CMP, RBI study, and pipeline integrity management system for the onshore HOTS2 pipeline and connecting facilities.	2019	2	Iraq	Dar Energy	Petronas Carigali Iraq Holding	Engineering - DDE/EPCC
109	EPCC of Oil Gathering Facilities Phase 4 (OGF4)	To develop CMP and RBI study for the new wellpads and trunklines on OGF.	2019	2	Iraq	Dar Energy	Petronas Carigali Iraq Holding	Engineering - DDE/EPCC
110	EPCC of Water Management System (Phase 1)	To develop CMP, RBI study and the Condition Monitor Location for the waste water management facilities.	2019	3	Iraq	Dar Energy	Petronas Carigali Iraq Holding	Engineering - DDE/EPCC
111	Pre-FEED design for HI Development Project Nigeria	To develop material selection and corrosion management study for topside facilities.	2019	1	Nigeria	Dar Energy	Shell Petroleum	Engineering - PREFEED/FEED
112	Basic Engineering Design for Effluent Management at	To perform corrosion assessment and material	2019	3	Malaysia	MIE	MRCSB	Engineering - PREFEED/FEED

	Source (EMAS) Project	selection studies for EMAS project.						
113	M1 Produced Water Treatment (PWT) Upgrade Project	To develop CDBM for new M1 PWT system.	2019	2	Malaysia	MIE	Petronas	Engineering - PREFEED/FEED
114	Provision Engineering Services for Sand Technology Pilot Implementation at Baram Field	To develop CDBM for the new sand management facilities in Baram South.	2019	1	Malaysia	MIE	Petronas	Engineering - PREFEED/FEED
115	Detail Engineering Design Services for Tukau Appraisal Project	To develop the Material Selection Report for the flowlines and gaslift injection lines on TKJT-E platform.	2019	1	Malaysia	Dar Energy	Petronas	Engineering - DDE/EPCC
116	EPCIC for Yetagun Acid Gas Removal Unit (AGRU) Project	To develop CDBM for AGRU package, the modification and tie-ins due to installation of AGRU. Material selection of alloyed Titanium for elevated temperature (c.a. 230°C), oxygenated and chlorinated seawater.	2019	2	Myanmar	MMC/SLB	PC Myanmar (Hong Kong) Limited	Engineering - DDE/EPCC
117	RBI assessment and piping circuitization for Asean Bintulu Fertilizer (ABF)	To assist to establish the RBI study and inspection plan for the existing Urea, Ammonia and Utility plants which have been operated for decades without inspection.	2019	14	Malaysia	ABF	ABF	Audit & Inspection
118	Bid support for Marjan Field Development	To verify the recommended material of construction, and to suggest material optimization and upgrade to suit the corrosion needs of the facilities.	2019	1	Saudi Arabia	Sapura	Saudi Arabian Oil Company	Specialist Corrosion Study
119	Umbrella Contract Engineering Services for Facilities Improvement Proposal (FIP) & Plant Change for Petronas	To develop CDBM for the new FWS pipeline (PL431) and gas lift pipeline (PL436).	2019	2	Malaysia	MIE	Petronas	Engineering - PREFEED/FEED

120	Provision FEED studies for North Sisi Nubi Project	To review corrosion study and material selection report developed by Synergy.	2019	1	East Kalimantan, Indonesia	Synergy Indonesia	Pertamina	Specialist Corrosion Study
121	EPCI of WHP PM304 – East Cendor Phase 1 Development Project	To develop DDE CDBM for new process and utilities systems at East Cendor platform.	2019	2	Malaysia	Petrofac Malaysia	Petrofac	Engineering - DDE/EPCC
122	Provision of Engineering for PC MTBE Flare Improvement Project	To develop corrosion assessment and material selection for new facilities under the Flare Improvement Project at PC MTBE.	2019	1	Malaysia	RNZ Integrated	Petronas	Engineering - PREFEED/FEED
123	Provision of Feasibility Study and Front End Engineering Design (FEED) Services for Kasawari E11R-A Host Tie-In Project	To develop corrosion assessment and material selection for new E11R-AA pipe to E11R-A gas production header on Kasawari Field.	2019	2	Malaysia	MMC Oil & Gas	Petronas	Engineering - PREFEED/FEED
124	Provision of Basic & Detailed Engineering, Procurement, Construction and Commissioning (BEPCC) for ABF Third Boiler Project	To perform corrosion assessment, material selection studies, development of CMP and RBI for the new tie-in and modification works for ABF third boiler project.	2019	8	Malaysia	Petrofac RNZ	ABF	Engineering - DDE/EPCC
125	Provision of SK Conceptual & Basic Engineering Package 1	To develop CDBM and asset integrity impact studies for the M1 Attic Redevelopment project involving the modification on M1DR-A during SIPROD.	2020	2	Malaysia	DAR Energy	Petronas	Engineering - PREFEED/FEED
126	ADES GPC HH83-2 & SEH Platform Detailed Design	To develop material selection technical note for HH83-2 and SEH platform.	2020	2	Egypt	2H Offshore	ADES	Engineering - DDE/EPCC
127	Provision of Engineering Service for KAKG-A UB600 Project Corrosion Design Basis Memorandum	To develop corrosion assessment and material selection for the new tie-in facilities and asset integrity studies for existing facilities.	2020	4	Bintulu, Malaysia	MMC	Petronas	Engineering - PREFEED/FEED

	(CDBM), Asset Integrity Study							
128	Provision of EPCM for 2011 Baram Delta EOR Development Project	To develop corrosion assessment and material selection for the new tie-in facilities.	2020	2	Miri, Malaysia	MMC	Petronas	Engineering - PREFEED/FEED
129	Crude Oil Tank Corrosion Assessment	To develop corrosion assessment for the Crude Oil Tank 3 on FPSO Kikeh.	2020	2	Sabah, Malaysia	MDPC	MDPC	Specialist Corrosion Study
130	Gasket material study	To recommend and advise on the gasket material for the subsea pipeline.	2020	1	Sarawak, Malaysia	Peritus	MDC	Specialist Corrosion Study
131	Provision of EPCC of Wellhead Platform for BKD-A and Host Tie-In Modification Project	To develop corrosion assessment and material selection for the new WHP and tie-in on BNCPP-B.	2020	2	Miri, Malaysia	2H Offshore	Petronas	Engineering - PREFEED/FEED
132	Provision of EPCIC for Bekok Oil Project	To establish risk-based inspection study for the 2 new wellhead platform and to recommend condition monitoring locations for the new facilities.	2020	3	Kerteh, Malaysia	Synergy	Petronas	Engineering - DDE/EPCC
133	Pre-FEED Design Competition for SPDC & JV-HA Development Project Nigeria	To recommend the initial material selection and corrosion management strategy, cathodic protection philosophy, chemical injection requirements and external coating and field joint coating selection philosophy.	2020	1	Nigeria	DAR Energy	Shell	Engineering - PREFEED/FEED
134	Provision of FEED for Mercury Removal Permanent Skid on MDPP and FSO	To provide recommendation of construction materials for the newly installed mercury removal skids and connecting piping.	2020	1	Gulf of Thai	Petrofac RNZ	CPOC	Engineering - PREFEED/FEED
135	Deep Well Infill Flowline Tie-in BRG-D6 Facilities Material Selection and Feasibility Study	To develop corrosion assessment and material selection for the new deep well production flowlines. Feasibility study is performed on the existing topside facilities and intra-field pipeline to ensure the integrity	2020	1	Gulf of Thai	Petrofac RNZ	Hess EP Malaysia	Engineering - PREFEED/FEED

		due to fluids commingling from the new deep well.						
136	Provision of Engineering Services for Petronas Carigali Turkmenistan Project Feasibility Study at Area 36 & 38	To perform material adequacy study at GTOGT Areas 36 & 38 constructed with non-sour service materials with presence of H ₂ S, and to develop the corrosion management plan for the facilities.	2020	2	Turkmenistan	DAR Energy	Petronas (Turkmenistan)	Engineering - PREFEED/FEED
137	Provision of FEED Services for Design One Build Many (D1BM) Project	To provide corrosion assessment and material selection recommendation for topside piping and equipment of process and utility systems for base case design and several sensitivity studies.	2020	2	Malaysia	Aker Solutions	Petronas	Engineering - PREFEED/FEED
138	Etinde FEED WHP and GPP	To develop corrosion assessment, recommendation of material selection and corrosion monitoring philosophy for new IM WHP and onshore GPP facilities.	2020	3	Limbe, Cameroon	Technip FMC	New Age Cameroon Offshore Petroleum S.A.	Engineering - PREFEED/FEED
139	Provision of Engineering Works For GOP-B Booster Compressor	To provide corrosion assessment and material selection for the new facilities on GOP-B, including sand handling and booster compressor systems.	2020	3	Malaysia	MMC Oil & Gas	PTTEP	Engineering - PREFEED/FEED
140	Provision of Pre-FEED Services for SK410B Lang Lebah Development	To provide corrosion assessment and recommendation of material selection for Lang Lebah offshore facilities and export pipelines.	2020	2	Bintulu, Malaysia	Technip FMC	PTTEP	Engineering - PREFEED/FEED
141	Provision of Engineering, Procurement, Construction, Installation & Commissioning (EPCIC) of PM309 Gas Ledang Redev	To present the corrosion assessment and material integrity for the existing topside facilities and export pipelines affected by the commingled production flows of the new subsea production system at Ledang Anoe (LDP-A).	2020	5	Malaysia	Dar Energy	Petronas	Engineering - DDE/EPCC

	Segment 2 Development Project							
142	EPCIC for Salman Project	To develop Material & Corrosion Design Basis Report, Corrosion Management Manual (CMM) and Corrosion Management Framework (CMF) for the wellhead platform, water injection pipeline, umbilical and HP oil pipeline.	2020	3	Brunei	Petrokon	Brunei Shell	Engineering - DDE/EPCC
143	Conceptual Design (FEED) for SK318 TIMI Development	To develop FEED material selection and CMF for the host tie-in facilities of the new Brownfield Integrated Module (BIM) and export pipeline.	2020	2	Malaysia	Petrokon	SSB	Engineering - PREFEED/FEED
144	Provision of Leasing, Operating & Maintenance of Mobile Offshore Production Unit (MOPU) for Bayan Redevelopment Project Gas Phase 2	To develop corrosion assessment and material selection for BYG-AA facilities.	2020	1	Bintulu, Malaysia	Tanjung Offshore Services	Petronas	Engineering - DDE/EPCC
145	Provision of Engineering Services for Gansar PM6/12 Project	To develop asset integrity impact studies for the existing topside facilities affected by new Gansar tie-in on the Duyong CPP.	2020	2	Malaysia	Aker Solutions	Petronas	Audit & Inspection
146	SK310 B14 Field Development Project	To provide preliminary corrosion assessment, material selection and corrosion management plan for topside facilities on the B14 CPP and export pipeline	2020	3	Malaysia	Technip FMC	SapuraOMV	Engineering - PREFEED/FEED
147	Provision of Basic Engineering Study Services for Dulang Redev 3.0	To develop CDBM and asset integrity impact studies for the Dulang Redev 3.0 project involving Dulang-D platform and PMO PL16 crude oil pipeline.	2020	2	Malaysia	DAR Energy	Petronas	Engineering - PREFEED/FEED
148	AKM Production Facilities Project	To advice corrosion and material selection studies for Asap, Kido and Merah production facilities.	2020	1.5	Malaysia	PT Synergy Engineering	Genting Oil	Specialist Corrosion Study

149	Pipe Integrity and Strength Assessment	To present the corrosion assessment and pipe integrity assessment involving the aboveground and below culvert fuel gas piping and the recommended pipe repair methods.	2020	0.5	Brunei	Mach3 Engineering	Brunei Shell	Specialist Corrosion Study
150	Material selection for SEAQuestor Pilot Plant - DDE	To provide corrosion assessment and material selection for SEAQuestor Pilot Plant project, utilising high temperature (250 DegC) seawater	2020	0.5	Malaysia	AIE Engineering	Petronas Research	Specialist Corrosion Study
151	FEED of Southern Transmission Improvement and Readiness (STAR) Project	To provide CDBM covers the corrosion assessment, material selection and technical basis for corrosion mitigation activities involving the new STAR compressor facilities and underground sales gas pipeline.	2021	2	Malaysia	Petrofac RNZ	Petronas Gas Berhad	Engineering - PREFEED/FEED
152	North Malay Basin Phase 4A Facilities	FEED verification, bidding and procurement supports and development of material selection report and internal corrosion study for the 18" x 51.1 km rigid pipeline, 2 unit of 10" flexible flowlines and subsea facilities including in-line tees and SSIV system.	2021	5	Malaysia	Peritus International	Hess EP Malaysia	Engineering - DDE/EPCC
153	Provision if Detail Engineering Design PM9 Simplification and Procurement of Materials for Bekok-B First Hydrocarbon	To develop CDBM, CMP and asset integrity impact studies, including in-situ UT inspection for the PM9 simplification project involving Bekok-A, B, C and Tiong A platforms and the interfiled pipelines.	2021	10	Malaysia	DAR Energy	Petronas	Engineering - DDE
154	Gallaf Al Shaheen Field Development Project FEED Verification	To review material selection and FEED verification for Gallaf Phase 2 facilities project	2021	0.5	Qatar	Aker Solutions	North Oil Company	Engineering
155	Pilot Project of Mangosteen - Biomass Conversion	To provide material selection and corrosion assessment for the Pretreatment reaction	2021	1	Malaysia	EXEN International	Petronas Research	Specialist Corrosion Study

	to Bio-Monoethylene Glycol (BIO-MEG)	operating at temperature >200 degC, with sodium hydroxide and palm husk						
156	EPCC of FPSO Marechal Duque De Caxias, MERO 3 FPSO ultra deepwater project	Secondment to Aker Solutions, KL to lead the Material and Corrosion discipline for Topside and Hull&Marine engineering	2021	14	Brazil	Aker Solutions	MISC	Engineering - DDE/EPCC
157	EPCIC of Brownfield Modification Package for Bayan Redevelopment Project Gas Phase 2	To provide the corrosion design basis memorandum covers the corrosion assessment, material selection and technical asis for corrosion mitigation activities involving the modification and tie-ins on BYDP-C, BYG-A, BYR-A and BYP-A.	2021	4	Malaysia	MIE	Petronas	Engineering - DDE/EPCC
158	Dai Hung Field Development Project, Block 05.1(A) Phase 3, Offshore Vietnam	To perform corrosion assesment, recommendation of material selection and corrosion control measures for WHP-DH01, FPU topside facilities, flexible pipelines, 12 inch Gas and Condensate Rigid Riser and pipeline from WHP-DH01 to exisitng Wye Tie-In at KP0.9.	2021	3	Vietnam	Petrofac RNZ / PV Engineering	PetroVietnam	Engineering - PREFEED/FEED
159	SK408W Jerun Field Development Project - DDE	FEED verification, bidding and procurement supports and development of DDE material selection and corrosion management plans for JRN-A, JRN-K topside facilities and subsea pipeline	2021	5	Malaysia	MMC	SapuraOMV	Engineering - DDE/EPCC
160	Provision of Engineering Services for OSC Sand Management Solution Feasibility Study	To investigate the corrosion and erosion impact to the existing onshore slug catcher facilities with solid particles carried over from upstream processes offshore.	2021	2	Malaysia	Synergy Engineering	Petronas Peninsula	Engineering - PREFEED/FEED
161	Detailed Engineering Design and EPCC for Effluent Management at	To perform corrosion assessment and material selection studies and EPCC supports for EMAS project.	2021	5	Malaysia	MIE	MRCBSB	Engineering - DDE/EPCC

	Source (EMAS) Project							
162	FEED for Merpati SURF Installation	To develop corrosion management framework (CMF) and FMEA for the Merpati export pipeline, flowline jumper and PLET.	2021	3	Brunei	Berachah Group	Brunei Shell	Engineering - PREFEED/FEED
163	DED and EPCC for Gallaf Al Shaheen Field Development Project	To perform corrosion assessment and material selection studies and EPCC supports	2021	8	Qatar	Aker Solutions	North Oil Company	Engineering - DDE/EPCC
164	PROVISION OF PIPELINE DESIGN VERIFICATION SERVICES FOR BAYAN REDEVELOPMENT PROJECT GAS PHASE 2	To support DDE and to developed Corrosion Design Basis Memorandum for the New 12.7km x 20in Full Well Stream Pipeline	2021	1	Malaysia	Petrofac RNZ	Petronas	Engineering - DDE
165	Bokor UF Skid - CIP Piping Material Changes	Performed 1. Material Selection and 2. Root Cause Analysis Failure Analysis (RCFA) for the recent CIP Piping Leak	2021	2	Malaysia	MMHE	Petronas	Specialist Corrosion Study
166	Baram South Redevelopment Project - bypass line	To developed Corrosion Design Basis Memorandum for Baram South Redevelopment Project - bypass line	2021	1	Malaysia	DAR Energy	Petronas	Engineering - DDE
167	CORROSION AND MATERIAL SELECTION STUDY FOR ADES GPC GG PLATFORM	Corrosion assessment and material selection exercises for the topside scopes of GG topside process and utility facilities	2021	2	Egypt	2HO / ADES Holding	General Petroleum Company (GPC)	Engineering - PREFEED/FEED
168	PM9S Simplification and Procurement of Materials for Bekok B First Hydrocarbon	To develop CDBM, Corrosion Management Plan, Asset Integrity Assessment, Risk based inspection (by GTS) and baseline UT TML markup for Be-A, BeB, Be-C, M9 and Ti-A platforms	2022	12	Malaysia	DAR Energy	Petronas	Engineering - DDE/EPCC

169	PCFK waste water treatment plant improvement	To develop CDBM for the new offspec-tank, SBR tank, final pH adjustment basin, transfer pumps, air blowers and chemical injection systems to comply with IER 2009 and CAR 2014 requirements	2022	3	Malaysia	MIE	Petronas Chemicals Fertiliser Kedah	Engineering - DDE/EPCC
170	EPCC of EMAS - CDBM and CMP	To develop CDBM and CMP (Corrosion Management Plan) aimed for corrosion assessment, material selection and to establish the related corrosion inspection and monitoring activities to manage the risks of corrosion associated with the Effluent Management at source (EMAS) project.	2022	5	Malaysia	MIE	Malaysian Refining Company Sdn. Bhd. (MRCSB	Engineering - DDE/EPCC
171	NOC Gallaf EPCC - Corrosion Studies	To provide the material selection study for the topside of GE Process Platform as part of the Al Shaheen Field Development Project	2022	3	Qatar	Aker Solutions / DSME	North Oil Company (NOC)	Engineering - DDE/EPCC
172	CORROSION AND MATERIAL SELECTION STUDY FOR GPC HH, SEH Platforms	Corrosion assessment and material selection exercises for the topside scopes of SOUTH EL HAMD (SEH) and HH PLATFORMs	2022	3	Egypt	2HO / ADES Holding	General Petroleum Company (GPC)	Engineering - PREFEED/FEED
173	Baram South bypass line CDBM	To develop CDBM for Integrated Hook-Up and Commissioning (iHUC) Services For PCSB (Package D: SKO) (Baram South Redevelopment – BADP-B	2022	2	Malaysia	DAR Energy	Petronas	Engineering - EPCC
174	Cilipadi LP Mode conversion Project	To provide the corrosion assessment, recommendation of material selection and the technical basis of corrosion mitigation methods for the new facilities of Cili Padi LP Mode Conversion Project	2022	3	Malaysia	Petrokon	Petronas	Engineering - PREFEED/FEED
175	Bintulu Additional Gas Sales Facilities-2 (BAGSF-2) Plant EPCC CDBM	To provide corrosion risk assessment and material selection for the new BAGSF-2 facilities	2022	3	Malaysia	Petrofac RNZ	Petronas	Engineering - EPCC

176	BAYAN REDEVELOPMENT PROJECT PHASE 2 - CDBM and CMP	To develop CDBM and CMP for brownfield Bayan Redevelopment Project Phase 2	2022	4	Malaysia	MIE	Petronas	Engineering - EPCC
177	Jansz FEED verification - materials/corrosion	To perform feasibility and applicability of the material selection proposed in FEED, this work aims to revisit the corrosion assessment and material selection exercise inline with the detail engineering design philosophy for Jansz-lo Field Control Station (FCS) facilities of utility systems, structural and hull systems, a normally unattended installation (NUI) Field Control Station with 50 years' of design life.	2022	2	Australia	Aker Solutions	Chevron Australia Pty Ltd	Engineering - PREFEED/FEED
178	Saffron PBA - Infill Drilling Detailed Engineering Design - Pipeline integrity study	To perform pipeline material integrity assessment, including reviewing and examining the existing corrosion management activities and intelligent pigging (IP) results, and to model future corrosion rate by using MultiCorp/TopCorp and ECE for the existing 24" gas pipeline from BP-A to BO-D affected by the tie-in from PBA only and, PBA and Pakma Nose (Optional)	2022	5	Malaysia	MIE	Hibiscus Petroleum	Engineering - DDE
179	BAGSF Plant brownfield and pipeline development CDBM and CMP	To support DED and EPCC and to provide corrosion risk assessment and material selection for the new Bintulu Additional Gas Sales Facilities – 2 (BAGSF-2) brownfield facilities and Pipeline	2022	7	Malaysia	Petrofac RNZ	Petronas	Engineering - EPCC
180	F6 VLAP Compression Project	Corrosion assessment and material selection exercises for the topside scopes of F6K-B platform	2022	3	Malaysia	Petrofac RNZ	Sarawak Shell Berhad (SSB)	Engineering - FEED

181	MLNGx FAS Project Greenfield and Brownfield FEED Project	To provide corrosion assessment and material selection recommendation for the three new wellhead platforms (WHP), 3 export pipelines and brownfield modifications of the FaS development project	2022	10	Malaysia	Petrokon	Sarawak Shell Berhad (SSB)	Engineering - FEED
182	D18 Gaslift Compressor Upgrade Project – Exhaust Line Temperature Change	To investigate feasibility of the existing material of exhaust piping Gas Lift Compressor (GLC) and Crane Diesel Engine (CDE) in D18 platform, due to temperature change	2022	3	Malaysia	DAR Energy	Petronas	Specialist Corrosion Study
183	Besar-A Redev CDBM RBI CMP	To develop CDBM, Corrosion Management Plan, Risk based inspection and baseline UT TML markup for the new topside scopes of BsDP-A platform	2022	6	Malaysia	DAR Energy	Petronas	Engineering - DDE
184	Material selection for New LPG Bottling Plant at PMB	Corrosion assessment and material selection exercises to support the LPG bottling operations, storage and delivery activities	2022	3	Brunei	Petrokon	Brunei Energy Services & Trading (BEST)	Engineering - Concept Study
185	Salman PL CA Optimisation	To optimise the CA of new HP oil pipeline from Salman to Selangkir platform	2022	1	Brunei	Peritus International	BSP	Engineering - EPCC
186	Salman CMF Data Entry	Data Entry for Salman Corrosion Loop, Barriers and Threats	2022	1	Brunei	Petrokon	BSP	Engineering - EPCC
187	P82 FPSO Early Engineering	To review all corrosion-related doc from FEED, to support TBE	2022	4	Brazil	PRW	PETROBRAS	Engineering - FEED
188	Detailed Engineering for CDDP-A Infill Drilling	Corrosion assessment and material selection exercises for the topside scopes at CDDP-A platform	2022	4	Turkmenistan	DAR Energy	Petronas Turkmenistan	Engineering - DDE
189	CIP Piping Material Compatibility	To provide specialist corrosion studies and failure analysis for existing materials of construction of the Clean-in-Place piping system	2022	3	Malaysia	MMHE	Petronas	Specialist Corrosion Study

190	Kasawari Diesel System	To develop Asset Integrity Study for the existing diesel fuel storage and distribution system at M1PQ-A and M1DR-A platforms, which are affected by Kasawari CCS project	2022	3	Malaysia	PRW	Petronas	Engineering - FEED
191	Farzad-B Field Development Concept Optimisation	Corrosion assessment and material selection exercises for the topside facilities on WHP and CHF of Farzad B, infield pipeline from WHP to CHF, and 2 liquid and gas export pipelines	2022	9	Iran	Synergy Engineering	POGC	Concept Optimisation
192	DDE for P82 FPSO Topside Engineering	To develop MSR, support TBE, review all corrosion, material and painting related deliverables	2023	17 (ongoing)	Brazil	PRW	PETROBRAS	Engineering - FEED
193	JXN TPS Outlet Piping	Corrosion assessment and asset integrity study for the produced water line of tilted plate separator (TPS) at Helang Integrated Platform (HIP), due to premature corrosion and erosion attacks	2023	3	Malaysia	MMC Oil & Gas	JX NIPPON OIL & GAS EXPLORATION	Engineering - DDE/EPCC
194	Duyong Shallow redevelopment project	To develop CDBM and CMP for Duyong new flowlines and tie-ins, for Integrated Hook-Up and Commissioning (iHUC) Services For Petronas Carigali Sdn Bhd (Package A: PMA)	2023	4	Malaysia	DAR Energy	Petronas	Engineering - DDE/EPCC
195	CPSF Debottlenecking and Capacity Upgrade Project Phase 1	To develop CDBM for new CPSF facilities and prelim CP calculation for Underground Piping	2023	5	Turkmenistan	DAR Energy	Dragon Oil (Turkmenistan) Ltd.	Engineering - DDE/EPCC
196	FDP SK Balingian Oil Temana Redevelopment CDBM	Corrosion assessment and material selection exercises for the TEJT-T and TEJT-C infill project	2023	5	Malaysia	MMC Oil & Gas	Petronas	Engineering - DDE/EPCC
197	Basic Engineering Design for D28 Phase 2	To develop CDBM, CMP and asset integrity impact studies for D28 brownfield development project	2023	5	Malaysia	DAR Energy	Petronas	Engineering - BED
198	BED For D18 Flare Gas Recovery Project	To develop CDBM, CMP and asset integrity impact studies for D18	2023	8	Malaysia	MMC Oil & Gas	Petronas	Engineering - BED

		brownfield and greendfield development						
199	ERB West Gas BD project	Corrosion assessment and asset integrity study for topsides affected by in-place Coiled Tube Drilling under ERB West Gas Cap Blowdown project	2023	4	Malaysia	DAR Energy	Petronas	Engineering - BED/EPCC
200	Avalon FPSO Topside	Material selection and corrosion management measures for new facilities on the refurbished Excalibur FPSO for use at the Avalon field	2023	2	UK	Aker Solutions	PING Petroleum	Engineering - PRE-FEED
201	DDE Services for Jansz-lo Compression FCS Project	To perform material selection and corrosion management philosophy for Jansz-lo Field Control Station (FCS) facilities of utility systems, structural and hull systems, a normally unattended installation (NUI) Field Control Station with 50 years' of design life.	2023	8	Australia	Aker Solutions	Chevron Australia Pty Ltd	Engineering - DDE/EPCC
202	MATERIAL SELECTION STUDY FOR KNNAG HPHT LINE	Material selection for permanent casing blowdown line on one HPHT wellhead on KNNAG	2023	1	Malaysia	MIE	Petronas	Engineering - Minor works
203	SF30 Waterflood Phase 2	Corrosion assessment and material selection for the topside facilities on SFJT-D platform	2023	4	Malaysia	DAR Energy	SEAH	Engineering - DDE
204	Corrosion and material selection study for WEB and Papyrus WHPs	Corrosion assessment and material selection for new wellhead platforms WEB and Papyrus in WEB field	2023	3	Egypt	2H Offshore	Petroweb	Engineering - FEED/DDE
205	KNNAG H2S Scavenger Facilities Materials Study	MCI study for addendum to CDBM, to revisit and confirm materials for H2S Scavenger facilities after confirmation of H2S Scavenger chemical	2023	1	Malaysia	DAR Energy	Petrofac Malaysia	Engineering - DDE revisit
206	DDE KNNAG Phase 3	Material selection, corrosion assessment and asset integrity study for infill well drilling at KNNAG field	2023	4	Malaysia	DAR Energy	Petronas	Engineering - DDE

207	BED for Utilities WWT Blower at Lot N Replacement	Material selection, corrosion assessment and asset integrity study for the new blowers and associated piping in the Waste Water Treatment Blowers of the Lot N Replacement Project	2023	2	Malaysia	MECIP	Petronas Chemicals Derivatives SB	Engineering - EPCC
208	Gansar LWS and Duyong BF HTI	To develop CDBM and CMP for new topside facilities and pipeline	2023	6	Malaysia	DAR Energy	Petronas	Engineering - EPCC
209	JDA BLOCK B-17-01 field development project Phase 6	To develop CDBM and CMP for multiple WHPs topside facilities and pipelines, including brownfield development	2023	10	Malaysia / Thailand	MMC Oil & Gas	CPOC	Engineering - EPCC
210	Deethaniser column replacement project	Corrosion assessment, material selection, and asset integrity study to replace a corroded de-ethanizer column, focusing on Corrosion Under Insulation and improving insulation type. Additionally provided advice on corrosion monitoring locations using online wall thickness sensors	2023	6	Malaysia	MECIP	PETRONAS CHEMICALS ETHYLENE SB	Engineering - BED/EPCC
211	Lion Lateral Extension And Metering Station For ND Paper (Bougainvillea Project)	To develop CDBM, CMP, RBI, TML markup for Bougainvillea Project NPS 16 Lateral Pipeline and SG52 Banting Metering Station	2023	8	Malaysia	iDrill	Petronas Gas Berhad	Engineering - DDE/EPCC
212	D18 Redevelopment Phase 3 CDBM & AIS	To develop CDBM, Asset Integrity Assessment and Site Visit Report for D18JT-C and D18JT-D platforms as a part of D18 Redevelopment Phase 3 Project	2023	6	Malaysia	MMC Oil & Gas	PTSSB	Engineering - DDE
213	PL431, PL436 & PL314 Pipeline Replacement And Topside Modification Project	To develop CDBM and CMP for pipeline and topside modification of the PL431, PL436 and PL314 Replacement project	2023	7	Malaysia	DAR Energy	Petronas	Engineering - DDE/EPCC

214	CML mark up for Bekok AA and Bekok BB	To develop CML markup for BeAA and BeBB piping	2023	1	Malaysia	HHA	Petronas	Engineering - DDE/EPCC
215	Helang Phase 3 Redevelopment project	To provide corrosion assessment, material selection and corrosion control and monitoring methods for the new infill well flowlines and utility modifications on Helang Integrated Platform (HIP)	2023	3	Malaysia	MMC Oil & Gas	JX NIPPON OIL & GAS EXPLORATION	Engineering - DDE/EPCC
216	Material Selection Review for Pre-Treatment Unit	To conduct corrosion assessment study and material selection review of the process stream that has high composition of free fatty acid (FFA), concentrated citric acid and other water chemistries.	2023	2	Malaysia	DSM	Desmet Ballestra	Engineering - PREFEED/FEED
217	In-Situ FLNG CCS Project by PETRONAS LNG Asset (LNGA)	Material selection of topside facilities on new FLNG with in-situ Carbon Capture and Storage facilities	2023	3	Malaysia	Technip FMC	Petronas	Engineering - Detailed Feasibility Study
218	Magtymguly Block 1 Gas Redevelopment Project	Material selection, corrosion assessment and asset integrity study for infill well drilling at Magtymguly field in the Caspian Sea, with focus on sand and erosion	2024	3	Turkmenistan	DAR Energy	Petronas	Engineering - FEED
219	High Sulphur Fuel Oil (HSFO) Elimination Project	Corrosion assessment and material selection for refinery facilities rerouting gas oil for further processing to eliminate HSFO production. Asset integrity study also conducted	2024	3	Malaysia	IFP Engineering Consultancy	MRCSB	Engineering - BED
220	Provision of EPCC of Bindu A (Jacket & Topsides)	To provide corrosion assessment and material selection exercises for new Bindu topside process and utility systems.	2024	5	Malaysia	DAR Energy	Exxon mobil	Engineering - EPCC
221	PEM Stack and BOP Modification for Hydrogen Plant	To perform corrosion assessment and material selection exercise for new WHP and export pipeline.	2024	4	Malaysia	Turcomp	Petronas Research Sdn Bhd	Engineering - PREFEED/FEED

222	WELLHEAD PLATFORMS AT 'THIEN NGA-HAI AU' GAS CONDENSATE FIELD	To perform corrosion assessment and material selection exercise for new WHP, tie-ins at CPP and export pipelines.	2024	3	Vietnam	DAR Energy	Zarubezhneft EP Vietnam	Engineering - FEED
223	Corrosion Review of MedcoEnergi Corridor Block Sambar Pipeline	To interpret and compare the corrosion result between two methods (e.g. Laboratory testing and Software Modelling) from the latest fluid properties / operating conditions. To review the existing material selection of pipeline and recommended fit for service (FFS) study.	2024	2	Indonesia	Corrtrol	Conoco Phillips	Specialist Corrosion Study
224	EPIC of New Flare System at CPSF	To develop CDBM for facilities of New Flare System at CPSF. Scope includes two new flare knockout drums, fuel gas knockout drum, main flare stack, flare tip, tie-ins of utility system and replacement of existing flare tip.	2024	5	Turkmenistan	DAR Energy	Dragon Oil (Turkmenistan) Ltd.	Engineering - EPIC
225	M1 Wells Plug and Abandonment (P&A) Tender Assist Drilling (TAD) Entry Preparation Work	To develop Addendum as supplement the existing Corrosion Management Plan (CMP) for M1 Topsides Facilities	2024	1	Malaysia	DAR Energy	Petronas	Engineering - DDE
226	Samarang Phase 4 Infill Drilling Project	To develop MSR combined with CDBM and AIS for topside facilities at SMDP-B, SMJT-E and SMJT-F platforms	2024	4	Malaysia	DAR Energy	Petronas	Engineering - DDE
227	Provision of Umbrella Contracts for Engineering and Technical Support Services (ETSS) (CCS PreFEED)	To develop MSR combined with CDBM and AIS for topside facilities of CCS Phase 1 system. Scope includes tie-ins from CO2 streams at an existing platform to new CCS Compression System at Booster Compression Train No. 5 and three injection wellheads at two different existing platforms.	2024	6	Malaysia/ Thailand	Petrofac RNZ	Carigali HESS Operating Company (CHOC)	Engineering - PRE-FEED

228	Root Cause Analysis Report: Failure Of Nozzles And Circumferential Seam On The Condensate Coolers	This Root Cause Analysis (RCA) report focuses on identifying root causes of an incident involving condensate cooler nozzle cracks and to propose recommendation for correction actions, including material selection	2024	2	Malaysia	Sapura	anonymous	Specialist Corrosion Study
229	Front End Engineering Design (FEED) for SHWE Project Phase 4 Development	To develop CDBM for topside facilities of Shwe Phase 4 brownfield modification. Scope includes two new flowlines from two of the three new subsea production manifolds and a realigned existing flowline connected to existing streams, with tie-ins of utility system at two existing platforms.	2024	4	Myanmar	Sapura	POSCO International Corporation	Engineering - FEED
230	Congo LNG Project - Nenè MD Topside	To develop materials and corrosion-related specification such as RBI system, corrosion monitoring, IOW, PMI, Special Material requirement etc	2024	3	Congo	Synergy Engineering	Eni	Engineering - DDE
231	Conceptual Engineering Design Services For Kerteh CO2 Capture & Gathering Hub	Material selection study for carbon dioxide compression, processing, and transport facilities and pipelines, focusing on damage mechanisms of Supercritical CO2	2024	3	Malaysia	Aker Solutions	Petronas	Engineering - PRE-FEED
232	Lawit Carbon Capture, Transportation, and Storage ("CCT&S") Project	Material selection study and existing facility repurposing fitness review for carbon dioxide transport, focusing on damage mechanisms and risks of Supercritical CO2 to metals and polymers, and reviewing the CO2 specification limits on contaminant concentration	2024	3	Malaysia	Aker Solutions	Petronas / Exxon Mobile	Engineering - PRE-FEED
233	F6 VLAP Compression Project	Corrosion assessment and material selection exercises for the topside scopes of F6K-B platform	2024	8	Malaysia	Petrofac RNZ	Sarawak Shell Berhad (SSB)	Engineering - DDE/EPCC

234	Provision of Cengkih Concept Select Study and Satellites Feasibility Study	Corrosion assessment and material selection exercises for new WHP, subsea facilities and production pipeline for Cengkih and other satellites (in Technical Notes). To develop CDBM (WHP, pipeline and HTI) for Cengkih concept select study.	2024	3	Malaysia	DAR Energy	Mubadala Energy	Engineering - Concept Study
235	EPCC of Chiller replacement for PETRONAS CHEMICALS LDPE SDN BHD	To develop CDBM, material selection diagram and to perform thickness measurement location (TML) mark up	2024	3	Malaysia	DiPETRO SYNERGY ENG	PCLDPE	Engineering - DDE/EPCC
236	AGR (Acid Gas Removal) Regeneration Gas Cooler With Associated AGR Piping System Design Improvement	To review failure analysis, perform corrosion assessment and material selection for replacement of AGR regeneration gas cooler and associated piping	2024	4	Malaysia	TUAH Consult (formerly MIE)	CPOC	Engineering - FEED
237	HI OTB Development Project	To perform corrosion assessment and material selection exercise for new WHP and export pipeline.	2024	3	Nigeria	Petrofac RNZ / , Sunlink Energies	Shell Nigeria	Engineering - PREFEED/FEED
238	Vent to Flare piping conversion at Helang integrated platform (HIP)	To provide the corrosion assessment results and recommendation of corrosion mitigation as part of the Detailed Design & Engineering for provision of converting vent system to flare system at Helang Integrated Platform (HIP)	2024	3	Malaysia	MMC Oil & Gas	JX NIPPON OIL & GAS EXPLORATION	Engineering - DDE/EPCC

Materials and Corrosion Experience List (Pre 2012)

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
1	Corrosion Study and Material Selection for Acid Gas Removal System (AGRS) For JDA Gas Evacuation Project, Cameron International	To perform corrosion risk assessment, corrosion rate estimation and material selection for the Acid Gas Removal System (AGRS), which handled 600 MMscfd of feed gas. The AGRS package consists of Pre-treatment section and Membrane section, is designed to treat the inlet gas of 25 mole% CO ₂ (maximum) to meet sales gas (non-permeate gas) of less than 8 mole% CO ₂ .	2012	1	Malaysia	Cameron International	Petronas	Engineering - PREFEED/FEE D
2	Material Selection and Corrosion Assessment Study for Belud Development, Mustang Engineering	to perform the corrosion analysis, life cycle cost (LCC) analysis and material selection for the Topsides facilities of the wellhead platform, and Floating Production Storage and Offloading (FPSO) vessel, flowlines, export pipeline at the Belud field.	2012	3	Malaysia	Mustang Engineering	Aramada Hess	Engineering - DDE/EPCC
3	Review of Zora Pipeline & Offshore Platform Corrosion Philosophy and Material selection Basis, PT. Tripatra	To review the Corrosion Studies and Materials Selection report produced by Tripatra for the 12" wet gas / condensate pipeline from Zora Platform to onshore, comment on it and endorse the material selection. The key challenges are the evident corrosion risks, the planned exposure of the full production casing as well as tubing to the reservoir fluids and the identified material supply limitations.	2011	2	UAE	PT. Tripatra	Dana Gas	Engineering - PREFEED/FEE D
4	Metallurgy Selection and Corrosion Study For HPHT Well, Cairn Energy	Cairn Energy identified that there could be limited supply capability on the market for certain grades of specific metallurgies. It was also decided that for a limited period, the well would produce as a monobore	2011	2	India	--	Cairn Energy	Engineering - PREFEED/FEE D

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		completion through the production casing, the tubing being installed at a later date. In view of the evident corrosion risks, the planned exposure of the full production casing as well as tubing to the reservoir fluids and the identified material supply limitations, the aim of the work was to undertake a corrosion and materials selection study for the wellhead, casing and tubing.						
5	Corrosion Study for Design Change of Ujung Pangkah Flowlines	This report presents the results of the corrosion assessment, confirmation of material selection and the corrosion monitoring studies for the 16 inch multiphase line and the 12 inch infield flowline. The scope of work focuses on the Corrosion Study and Material Selection, Internal corrosion monitoring requirement (corrosion probe, corrosion coupon etc.) and corrosion mitigation measures (injection of chemicals etc.) for these flowlines.	2011	2	Indonesia	PT Synergy	Hess	Engineering - PREFEED/FEE D
6	Corrosion Study for Gas Lift Wells VBA-04 And VBA-05 for Maersk Oil Denmark	Well VBA-03 is to supply two wells namely VBA-04 and VBA-05 with gas lift on a adhoc basis to ensure these can flow. The aim of the study was to investigate the corrosion rate is affected by the intermittent static/dynamic condition of the VBA-03 gas in the annuli of both wells VBA-04 and VBA-05.	2011	2	Denmark	--	Maersk Oil Denmark	Engineering - PREFEED/FEE D
7	Material Selection and Corrosion Study for Talisman Bunga Kekwa D Platform, Talisman, Technip	TECHNIP executed a conceptual design for Talisman Bunga Kekwa D (BKD) Platform. The scope of work related to corrosion study, comprising of corrosion risks assessment, corrosion rate calculations and corrosion control measures; whilst the material selection study is aimed at	2010	2	Malaysia	Technip	Talisman	Engineering - PREFEED/FEE D

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		providing optimum material of construction.						
8	Materials & Corrosion Audit: GASCO Ruwais 4th NGL Train, GS Engineering	This work focuses on the findings of the Materials and Corrosion Audit (MCA) on GASCO Ruwais 4th NGL Train Units for GS Engineering and Construction, Korea. Material Selection Guides and Materials of construction of vessels and equipment have been reviewed and checked against GASCO's requirements.	2010	2	UAE	GS Engineering	GASCO	Engineering - DDE/EPCC
9	Material Selection and Corrosion Audit for Integrated Gas Development - Das Island Project (Detailed Design), HHI, GASCO, Abu Dhabi	The Integrated Gas Development (IGD) Project is being developed to transfer up to 1000 MMscfd of high pressure gas from Umm Shaif to Habshan via ADGAS gas processing facilities at Das Island. Hyundai Heavy Industries (HHI) is the Contractor for construction of plants within the new gas handling facilities at Das Island. The objective of this work was to perform a Materials and Corrosion Audit (MCA) and to provide confirmation of the plant design as regards materials and corrosion, or to identify necessary modifications to design documents	2010	3	UAE	Hyundai Heavy Industries (HHI)	GASCO	Engineering - DDE/EPCC
10	Corrosion and Selection of Materials for Carbon Capture And Storage (CCS)	The IEA Greenhouse Gas R&D Programme (IEAGHG) has studied many aspects of Carbon Dioxide Capture and Storage (CCS). As part of this programme, the study investigates the potential corrosion risks in the CCS processes and proposes suitable materials of construction to mitigate those risks. The scope of this study covers all aspects of the CCS systems, including the carbon capture	2009	6	UK	International Energy Agency, IEA	--	Specialist Corrosion Study

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		plants, transport of CO2 and injection wells.						
11	Material Selection and Leak Risk-Reduction for Carbon Capture And Storage (CCS) Project	RWE DEA AG aims to commence a carbon capture and storage (CCS) project in the year 2014. The proposal is to inject 0.8 million standard m ³ CO2 per day (equivalent to 1500 t CO2/day) into a suitable reservoir. It is RWE's goal to ensure long term integrity of the well, i.e. 40 years of operation and up to 10,000 years of reliable storage. Hence, this job calls for high level of well integrity, including appropriate material selection, corrosion protection and excellent cement bonding. The scope of this work focused on the well barrier corrosion risk review and material selection of the following well components.	2009	3	Germany	--	RWE DEA AG	Specialist Corrosion Study
12	Review of HHI Material Selection and Corrosion Risk Study for 20" Pipeline from MYA to SHP	The scope of this work focused on reviewing the corrosion risk assessment and material selection for 20" flowline from MYA to SHWE platform that have been prepared by HHI.	2009	1	Myanmar	Hyundai Heavy Industries (HHI)	POSCO Daewoo	Engineering - DDE/EPCC
13	Materials Study For Compression Stations, Kharg Island Gas Gathering and NGL Recovery Project Dorood I, II & III	The job aimed to carry out an independent material selection activity and to explain the basis for the choice of materials in quantitative terms. The scope of the work includes the DOROOD I, II and III gas compression stations from the tie-in lines to the output lines and closed drains.	2008	3	Persian Gulf, Iran	IRITEC	IOOC	Specialist Corrosion Study
14	Materials Selection Study & Corrosion Risk Assessment For Platong Gas II Project	The work provided the material selection and corrosion risk assessment for the Platong Gas II Project. The study covers the both production and utilities systems	2008	3	Thailand	JRM Mc Dermott	Chevron	Engineering - PREFEED/FEE D

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		in the Platong Central Processing Platform 2 as well as the living quarter module and the utilities system in the Platong Living Quarters 2.						
15	Material Selection Review and Corrosion Risk Assessment For River Field Terminal	The River Terminal receives gas from the Calder, Crossans and Darwen sour gas fields located in the Irish Sea via a 24" subsea pipeline. The inlet gas will be compressed and treated to remove the hydrogen sulphide and mercaptans present in the field gas, before being fed to the subsequent terminal. The hydrogen sulphide rich gas that will be removed from the field gas stream will be converted to 96% concentrated sulphuric acid that will be distributed to users by road tanker. This work covered material selection review and corrosion risk assessment of the streams and vessels of the River Terminal main gas plant and sulphuric acid plant.	2007	1	United Kingdom	--	Chevron	Engineering - PREFEED/FEE D
16	Integrated Gas Development Project – Ummshaif Wellhead Towers Corrosion Risk Assessment Study, NPCC and ADMA OPCO	This objective of this work was to conduct an independent corrosion risk assessment of both Wellhead towers facilities, and to propose a suitable material of construction that is technically and economically sound. The proposed material of construction was justified based on the corrosivity of the stream, corrosion allowance required, corrosion inhibition availability, and the life cycle cost (LCC) analysis. Further work was carried out to review the LCC of potential material choices.	2007	2	UAE	NPCC	ADMA OPCO	Engineering - PREFEED/FEE D
17	Materials Selection for Rabab Wells Production Tubing	Petroleum Development Oman LCC (PDO) is undertaking the development of its new Sour gas/condensate field "Rabab". Rabab	2007	2	UAE	--	Petroleum Developme	Engineering - PREFEED/FEE D

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		gas wells are classed as wet sour gas and operated below the dew point. It contains 16 mol% CO ₂ and 3 mol% H ₂ S. A preliminary material selection study has been recently completed in-house which recommended CRA materials for the well completion. A number of fields around the world including Oman are known to be utilizing carbon steel as base material for the tubing. The purpose of this study was to re-examine the basis for material selection in terms of corrosion resistance and life cycle cost.					nt Oman LCC (PDO)	
18	Overall Corrosion Assessment and Material Selection Review for Das Islang, Ruwais, Habshan plant, Ruwais and Shah gas development projects	The study was part of the ADMA-OPCO's Integrated Gas Development (IGD) Project. The objectives of this work were to conduct a thorough corrosion study and to independently review the selected material of construction (by Fluor) that is technically and economically sound of the facilities, covers the process plants and the utilities system. The proposed material of construction was re-evaluated based on the service of the stream, corrosion allowance required and minimum design temperature. Consideration was given in every unit to the potential for cost reduction by selecting other materials. Further assessment has been performed for the impact of the changing of feed conditions/flowrates on the existing facilities.	2007 - 2008	4	UAE	--	GASCO/ADMA OPCO	Engineering - DDE/EPCC
19	Metallurgy Selection for Ichthys Brewster Well Completions Ichthys Field	This work is concerned with the selection of the tubing material for the producing and injecting wells for the Ichthys Field. Various options of material ranging from carbon steel to alloy materials have been considered. The final selection is	2006	2	Australia	--	INPEX	Engineering - PREFEED/FEE D

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		considered to be robust for the given design conditions, to provide a life in excess of 40 years without failure from corrosion due to the producing conditions.						
20	Corrosion Management Program For Ujung Pangkah Development Export Gas Pipeline	This CMP document provides a framework for corrosion management practices and incorporates successful techniques for management of the risks posed by operation of the 40-km 18" export pipeline transports production fluids from the WHP-A platform to OPF Gresik	2007	1	Indonesia	PT Synergy	Hess	Engineering - DDE/EPCC
21	Corrosion Management Plan For Petronas Carigali PMO Pipelines, PMO	The aim of this works was to provide a prescriptive framework for corrosion management practices and incorporate successful techniques for management of the risks posed by corrosion to the subsea pipelines. The CMP has been prepared to encompass the comprehensive approach to corrosion control: Modeling to estimate the corrosion rate; Mitigation by material selection or inhibition; Monitoring of corrosion rate and inspection; Maintenance activities.	2007	2	Malaysia	--	Petronas	Engineering - PREFEED/FEE D
22	Corrosion Study of 316L Stainless Steel Spiral Wound Gasket, MDPP	To perform corrosion rate modelling against process parameter (e.g. pressure, water content, temperature, CO2/H2S content); To perform corrosion assessment for the topside piping system using spiral wound gasket (316L SS); General overview of corrosion under insulation (CUI) threat to CPOC facilities.	2010	1	Malaysia / Thailand	--	CPOC	Specialist Corrosion Study
23	Evaluation of Water Injection Tubing Lifetimes in Milne Point	To estimate the lifetime of water injection tubing using the corrosion rate based upon historical caliper survey data and to demonstrate the future failure rate to be expected.	2009	1.5	Alaska, US	--	BP Alaska	Specialist Corrosion Study

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
24	Evaluation of Water Injection Tubing Corrosion in Kuparuk Field	To evaluate the type and the severity of corrosion damage in injection tubing based on the operational parameters such as injection medium and period, operating temperature, tubing deviation profile and fluid velocity.	2009	1	Alaska, US	--	Conoco Phillips	Specialist Corrosion Study
25	Mercury Removal System and NRU Risk Analysis	To provide specialist interpretation of the mercury levels in Hannibal Gas Plant; to review the impact of the current Mercury content levels on the Nitrogen Rejection Unit (NRU) and provide mitigations to ensure safe warm up and intervention on the NRU equipment during plant shutdown; to review of adequacy of the current Mercury removal system based on analysis data.	2008	2	Tunisia	--	BG Tunisia	Specialist Corrosion Study
26	BPXA ANSR CO2 Impact Study on FS1, FS2 and GC2 Facilities	The Prudhoe reservoir fluid from production wells are routed to oil/water/gas separation facilities. This report quantifies the increase in corrosivity of the produced fluids from the Prudhoe Bay field considering various future CO2-level scenarios. It considers the anticipated impact of the changing produced fluid composition in the future and identifies the possible problem areas in representative facilities.	2008	3	Alaska, US	--	BP Alaska	Specialist Corrosion Study
27	Prudhoe Bay Well Corrosion Failure Model and Well Life Estimation	The purpose of this study was to develop a model for well failures of different metallurgies, as the key inputs for the BP Alaska Wells Corrosion Control Strategy (CCS). The approach involved gathering historical well design and production data to generate estimates of corrosion rates and wall thickness losses over time, and then calibrating the model against measured wall thickness losses from	2008	3	Alaska, US	--	BP Alaska	Specialist Corrosion Study

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		caliper survey data and subsequently generating failure models in order to predict future wells failure rate.						
28	Alternative material selection study for gas mercury absorber vessels, CKP	To study the possibility of cost/time saving for Carigali Hess by downgrading material selection of 4 process gas mercury absorber vessels from CS + 3mm 316L SS clad to CS + 6mm.	2008	1	Thailand	--	CHOC	Specialist Corrosion Study
29	Dimethyl Sulfide (DMS) – Carbon Steel Corrosion and Rubber Seal Damage Potential	BG operator has detected dimethyl sulphide (DMS) in their produced fluid. Dimethyl sulphide is a sulphur - containing organic compound with chemical formula of (CH ₃) ₂ S. Two types of threat have been of concern, i.e. corrosion to carbon steel and deterioration to nitrile rubber seal, but this concern has not been substantiated. This work investigates this concern and provides a response to identify the threat.	2007	1	UK	--	BG Group	Specialist Corrosion Study
30	Life Cycle Cost Analysis of Water Injection Wells Duoline Internal Lining System	The experience of water injection has often been poor, with premature failures of tubing being a typical problem. This work considers the field performance and cost of various water injection tubing materials options over the life of the well. Detailed life cycle cost analysis highlights the impact of different operating scenarios (onshore, offshore shallow and offshore deep) and different tubing diameters on the cost of a water injection well.	2006	2	UK	Duoline	--	Specialist Corrosion Study
31	Review Audit and Gap Analysis of Pipeline Internal Corrosion Management	The purpose of the Review Audit and Gap Analysis is to identify aspects for improvement, recommend the improvements needed and to provide areas of focus which need to be further	2011	2	UAE	--	Dubai Petroleum	Audit & Inspection

No	Contract Title	Description	Year	Approx. duration	Location	Contractor	Asset Owner	Nature of Work
		developed to implement a comprehensive integrated Corrosion Management Plan for both immediate as well as long term use.						
32	Corrosion Audit for BG Trinidad & Tobago Facilities	To perform high level corrosion audit of the offshore platforms and 2 onshore facilities operated by BG in Trinidad.	2007	1	Trinidad & Tobago	--	BG Group	Audit & Inspection
33	Failure Analysis of 2" WN Flange from CKA equalisation line	2" WN perforated flange was provided for metallurgical examination to confirm the cause of failure. Metallurgical work was performed by CAPCIS (UK)	2010	0.5	Malaysia	--	CHOC	Specialist Corrosion Study
34	Failure Analysis of Durlon 8500 Insulation Gasket	To supervise and to advise laboratory analysis on the Durlon insulation gaskets; To investigate the failure of the Durlon 8500 gasket and to identify its root cause; To identify any potential corrosion risk related with the continuing the use of Durlon 8500 gasket	2010	0.5	Thailand	--	CPOC	Specialist Corrosion Study
35	Failure Analysis of Regeneration Gas Coolers Tube bundles	After approximate 1 month since commissioning multiple failures of the U-tube bundled have been reported by CPOC in two shell-tube heat exchangers; the failures demonstrated by communication of the tubes between the gas and cooling medium. The works covered onsite inspection and sampling; assessment of corrosion risk and service history – including assessment of suitability of CS bundle as interim replacement solution; assessment of materials of construction, procedures for water treatment, transport, storage, commissioning, operating history etc. relevant to failed items and laboratory metallurgical investigations	2010	2	Thailand	NATCO SEA	CPOC	Specialist Corrosion Study

