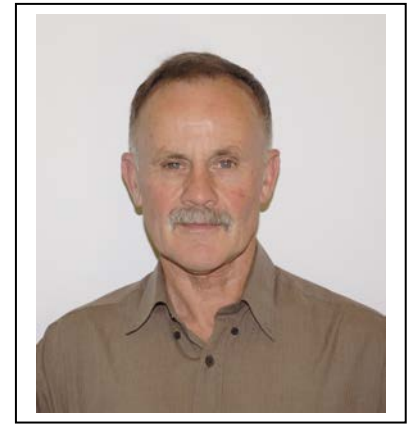




CURRICULUM VITAE



- NAME:** GEOFFREY PAUL EATON
- QUALIFICATIONS:** B.E. (Mech) 1977, Canterbury University, New Zealand, Certified PV Solar System Designer (CEC), Aus
- ASSOCIATIONS:** MIMech.Eng., CEng, PMASC
- LAPSED ASSOCS:** MIPENZ, Reg. Eng.(NZ), Member Pipeline Industries Guild, NZ Registered Pressure Piping Design Verifier, Member Wind Energy Assoc NZ.
- PERSONAL DATA:** DOB: 18th September 1953, married: 3 children, New Zealand citizen, Permanent Resident Australia.
- COMPETENCIES:**
- | | |
|----------------------------|--|
| Project Manager / Engineer | : Multidiscipline projects representing Client or Contractor |
| Lead Mechanical Engineer | : For consultants and operating companies |
| Packaged Plant Engineer | : Offshore & onshore facilities, static & rotating equip. |
| Equipment Specification | : Vessels, pumps and compressors |
| Piping Engineer | : Pipe stressing specialist and pipeline design |
| Wind Energy Skills | : Expertise in wind farm investigations and development. |
| PV Solar | : Design of commercial and residential PV solar systems |
| Technical Editing | : Manuscript and thesis editing and formatting |
| Languages | : Conversational-(but fading)- German and Japanese |
| Software | : MS Word, Excel, Project , plus various programmes |
- INDUSTRIES:** Oil & Gas processing facilities- Onshore and Offshore; FPSOs; Refineries; Transmission Pipelines; Mineral Processing; Mineral processing; Nuclear Power-conventional plant; Electricity Generation; Wind Energy, PV Solar
- WORK LOCATIONS:** New Zealand, Australia, England, Norway, Brunei, Kuwait, Indonesia, Malaysia, Pakistan, Singapore. (Non-engineering work in Japan and Switzerland.)
- SOCIAL DUTY:** Woodleigh Primary School, New Plymouth –Chairman of Board, 1998-1999
Positive Futures Trust, New Plymouth, - Trustee, 2008 - 2011
- EXPERIENCE:** Total of 38 years' work experience from 1977 to 2015

April 04 – Present TENERGY NZ LTD—WIND ENERGY DEVELOPMENTS and OIL & GAS PROJECTS

Tenergy was formed to develop wind farms in Taranaki province and provide services to the NZ wind energy market. The following wind energy related activities were carried out during the period of 2004 to 2014, interspersed with Oil & Gas projects. The wind energy projects were:

- TARANAKI Mesoscale Wind Modelling
TENERGY has carried out the largest wind energy resource survey of New Zealand using mesoscale / microscale modeling. This used two years of satellite 6 hourly data to produce high resolution wind speed maps at 50m AGL over Taranaki and parts of Waikato and Wanganui.
- Wind Farm Site Investigations
Preliminary site assessments were completed for various companies, NZ and overseas, including assistance with resource consent issues and communicating with local bodies.

- Trust Tower Masts
A range of met masts from 30m to 80m in height were developed. These masts are climbable, can come in coastal and mountain terrain configurations and with Kevlar or galvanized steel guys. The masts are suitable for the most severe locations in New Zealand.
- Patented Mast Erection Device
To install the masts a prototype mast erection device was developed and a NZ patent taken out on the mechanism. Awaiting funding for future development.
- Met Mast Installations
A number of met masts were installed for clients in New Zealand, ranging in height from 51m to 69m.

NOTE: During the period from Apr 2004 to Feb 2014 a number of Oil and Gas assignments were also undertaken by Tenergy NZ Ltd and these are listed below.

Feb 13 – Feb 14

TRANSFIELDWORLEY NZ LTD / METHANEX NZ LTD

Project Manager—METH02- Turnaround Projects

Project Manager of engineering and procurement phase for repeat project of Deaerator vessel replacement for METH02 and other projects as listed below. Engaged by transfield Worley and seconded to MX.

Deaerator Replacement –C0201 .

This project was a repeat of the METH01 DA replacement (see below) but used a different construction methodology. It was decided to skid mount all the off vessel control valve sets and most piping in order to reduce onsite construction time. This method along with pre-insulating some sections of large bore piping ensured the construction window was met. This solution required very accurate surveying and fabrication and allowances / methods for site fit up.

Trim Heater Coil Replacement- B0205

This was a repeat project as per METH01, done by others, but using P11 chrome moly material to replace the radiant tubes and two layers of convective tubing. The scope involved partial disassembly of the heater and a comprehensive maintenance audit and scope definition thereafter. The radiant tubes were replaced in quadrant sections and welded together insitu. Scope included the following;

- Preparation of disassembly and re-assembly method.
- Co-ordination of mechanical contractor / fabricator
- Liaison with inspection department and preparation of maintenance workscope
- Handover, commissioning and start-up

Boiler Instrumentation Upgrade Projects-D-0205A, D0205B, D-0206, D-0217

The re-instrumentation of the METH02 boilers was a repeat of the METH01 project but with significant differences. A complete re-engineering exercise was completed to remedy pipe stress issues.. In addition, a revised construction methodology was implemented. For the 3 bridles and 2 level condensation pots per boiler the revised strategy involved accurate surveying after plant shutdown, fit-up and tack-up welds done with bridles bolted to the boilers and key connections determined by survey during fit-up. Scope included the following;

- Selection of mechanical fabrication and installation contractor.
- Co-ordination of mechanical contractor / fabricator on site
- Co-ordination of pipe stressing and design of piping and structural components
- Liaison with E&I contractor for field installation and control room works
- Handover, commissioning and start-up

Lube Oil Vent System and Seal Accumulator Tubing Modifications.

The vent system for the compressor Lube and Seal Oil tanks F-0203 and F-0205 was designed from SS piping and configured to vent oil and water vapour to an open area.

Five seal oil accumulators were reconfigured with tubing modifications to enable better control during re-energising and thereby preventing nuisance turbine trips.. Scope included the following;

- Co-ordination of site based mechanical contractor.
- Co-ordination of off-site fabrication for vent system.
- Handover, commissioning and start-up

Oct 10 – July 12 METHANEX NZ LTD

Project Manager—METH01 Restart-Replacement Deaerator and Condensate StripperDeaerator Replacement –C0101

The project involved firstly identifying a suitable technology to replace the 1980's Deaerator, as it was beyond its service life and then preparing a PEP to implement the change. The single sprayer Stork Thermeq technology was chosen as it represented the best solution in terms of implementation, process, long term cost savings and lower noise.

Scope of work included the following;

- Preparation of PEP and budget estimate. Overall budget control of \$4M
- Preparation and management of supply agreement with Stork Thermeq, Holland
- FEED and DD enquiry and selection of contractor Transfield Worley
- Selection of fabricator and site installation contractor, chosen as Energy Works
- Liaison with restart E&I contractors for instrumentation, power and lighting modifications
- Liaison with MX operations for commissioning and restart.

The project was implemented as a fast track project and the scope included extensive piping and structural modifications with due consideration of current seismic conditions and pressure equipment regulations. Project completed on time and marginally over budget.

Condensate Stripper Replacement- C0103

The existing CS Condensate stripper was replaced with a new tank made from SS materials. To reduce cost and construction time the decision was made to leave most of the CS skirt and baseplate in place, remove the tank and then insitu weld the new SS tank to the remnant CS tank skirt..

Oct 10 – Dec 10 TRANSFIELD WORLEY NZ LTD

Package Engineer—Ahuroa Project

Tender evaluation and technical clarification exercise for the TEG package and Reciprocating Compressor packages for the 50MMscfd injection / production facility owned by Origin Energy NZ.

Dec 09 – Oct 10 AWE (Australian Worldwide Exploration) Ltd, Australia

Project Company Rep: Yolla A Platform-Bass Strait : Mid Life Enhancement Project

Scope included liaison with Origin Energy (Aus) the field Operator and the Origin manager of the MLE project and the engineering consultant Worley Parsons. The works involved a due diligence exercise of the construction strategy, platform redesign and integrity review and compressor configuration to be used for the MLE project.

The AWE team worked alongside Alpha Petroleum Services, Houston to test and interrogate the BOD in order to identify project risk and validate base assumptions.

Mar 08 – Feb 09 TODD ENERGY LTD, NEW PLYMOUTH, NZ**Project Manager: Mangahewa Generation Station – 9MW**

Project involved the installation of three 3MW GE Jenbacher high efficiency gas engines to generate electricity at 11KV and then export onto the local distribution grid at 33KV. The station was installed in a brown field area in McKee Oil & Gas Production Station and it involved plant tie-ins and interfacing with the existing shutdown systems. Scope of work included the following;

- Budget control against an AFE of \$13m.
- Managing resource consents for noise and discharges,
- Liaison with Powerco for grid connection design, installation and commissioning
- Liaison with plant operations
- Managing the mechanical and electrical design team from Plant and Platform.
- Managing contract with TENIX and JLE for HV and LV installation works
- Managing the civil and structural design by Tse Taranaki
- Managing the contract awarded to Energy Works to carry out piping fabrication and overall co-ordination of site works.
- Managing the commissioning and start-up of plant.

Jan 07 – Aug 07 AML CONSULTANTS, MELBOURNE AUS**Lead Mechanical Engineer- Montara FPSO Project, Client: TPOT Singapore.**

Tanker conversion to FPSO for Montara field - Coogee Resources. Responsible for bid preparation for interface scope mechanical works and managed detailed design works until PID AFD status.

Oct 05 – Jan 07 PROCESS GROUP LTD, MELBOURNE, AUS**Project Manager for Zamzama Gas Field - Amine Plant (Client : BHP Pakistan)**

The Amine plant had a budget of US\$11M. The plant used the BASF process to remove 3% CO₂ from a 154MMscfd gas stream which was then feed into a cryogenic nitrogen removal plant. Scope included managing a Process Group design and procurement team based in Melbourne, interfacing with the Melbourne based BHP Billiton project team and their consultant Aker Kvaerner and managing a fabrication and installation contract with DESCON Engineering, based in Lahore, Pakistan.

The facilities were installed in the Zamzama Gas plant in central Pakistan and frequent visits were made to the fabrication yards in Lahore Pakistan and the construction site.

Nov 04 – June 05 TRANSFIELDWORLEY NZ LTD, NEW PLYMOUTH NZ**Mechanical Plant Engineer- Pohokura Gas Plant Project, 200 MMSCFD**

Responsible for preparing specifications and technical bid evaluation of Glycol Regeneration Plant, IP Booster Gas Compressor, API 650 Tanks, Flare Package and Foam Package., and miscellaneous mechanical items.

Sept 02 – Aug 04 NGC HOLDINGS, KAPUNI GAS TREATMENT PLANT, NEW ZEALAND**Project Manager for Train 1 Recommissioning, LPG Storage and Demin Plant**

Along with Gas Train No.1 Recommissioning a number of other projects were carried out during this period. The responsibilities included; project scope definitions, resource consent approvals for additional plant, budget preparation and approval, tender and contract preparation and selection of EPC contractors where required along with a number of contracts for specialized services and plant procurement. The projects included;

-Recommissioning of Gas Train No. 1, which had been decommissioned approx 20 years earlier. This involved the installation of anew absorber column, extensive piping modifications and renewal, refurbishment of all static and rotating equipment items and extensive instrumentation and electrical switchgear upgrades. A complete brownfield refurbishment carried out within an operating plant environment. Total Budget NZ \$ 14M. Completed on time and on budget.

-Installation of 100 Tonne LPG Storage bullet and Demin Water Plant Replacement. Required obtaining crucial resource consents and management of EPC contract.

-Feasibility Study for Capacity Expansion of Kapuni Gas Treatment Plant.

-Mechanical audit report of Kapuni Gas Treatment Plant.

-Study of flare disenainment drum suitability for EDP system.

May 02 – Sept 02 PREMIER OIL NATUNA SEA LTD (Jakarta, Indonesia)

Lead Mechanical Engineer - Gajah Baru Platform and AGX Mods

Technical bid evaluation for selection of EPIC contractor for 110MMSCFD gas platform to be installed in Natuna Sea. Specification of GT driven centrifugal compressor for AGX.

Oct 00 – Apr 02 PLANT & PLATFORM CONSULTING ENGINEERS, NEW PLYMOUTH, NZ.

Lead Mech./Commissioning Eng. - Rimu Production Station (Swift Energy NZ LTD)

Green field oil & gas production station sized at 20MMSCFD and 7500 BOPD. Facilities included; wellhead manifolds and heaters, stabilization plant, LPG train, gas compression, oil & LPG storage and load-out facilities.

Equipment included : glycol skid, refrigeration system, 10MW hot oil package, inert gas generation skid, firewater pumps, tulip style gas flare and oil free instrument air system. Meeting resource consents for noise and emissions were key drivers for the works.

Aug 00 – Oct 00 Natural Gas Corporation, Kapuni Gas Treatment Plant, New Zealand

Senior Mechanical Engineer / Project Engineer

Preparation of Plant Change procedures, and Project Execution procedures. Assisting with closeout of existing projects and general mechanical engineering issues.

Mar 00 – Jun 00 PREMIER OIL NATUNA SEA LTD (Jakarta, Indonesia)

Senior Mechanical Engineer - AGX Offshore Platform

Client representative overseeing preparation, issuing for tender and technical evaluation of DEG Package, RO Watermaker, Flare System and miscellaneous process and utility equipment, for new AGX gas platform. Mechanical engineer for Early Gas Module, and utility equipment modifications to existing Anoa gas platform.

**Apr 98 – Feb 00 EATON COMMODITIES AND SERVICES (New Plymouth, New Zealand)-----(ECS)
IMPACT CONSULTANTS (New Plymouth, New Zealand)-----(IMPACT)**

Geoff Eaton

Project Engineer / Lead Mechanical EngineerNatural Gas Corporation, Kapuni Gas Treatment Plant New Zealand---(ECS)

Project and Mechanical Engineer for the plant. Responsibilities included managing projects from conceptual design to construction phase, preparation of tenders and contracts and selection of contractor, site engineer for construction phase, liaison between departments for shutdown and construction activities. Projects included;

- Gas Train 3 Capacity Upgrade,
- LTS Gas Train Overheads Gas Recovery,
- Preparation and administration of major non-recurring maintenance contracts,
- Product Gas Compressor Exchangers refurbishment,
- Miscellaneous gas plant piping modifications,
- Boiler Piping Modifications,
- Ground Flare Ignition System Upgrade
- ESD Upgrades
- Electrical lighting and power modifications, switchgear modifications
- Demin Water Plant Upgrade
- CO2 Loadout System Renewal.

Kiwi Dairies, Hawera, New Zealand---(IMPACT)

Study of cooling water system. Review of options to improve cooling water capacity for Dairy Plant and Cogen facility.

Cakerawala Gas Field Development - Ranhill Worley / CTOC, KL, Malaysia---(ECS)

Preparation of mechanical and project documentation for Caragali Triton Operating Company for Cakerawala Field development, offshore Malaysia. Specifications included pumps, vessels, compressors, HVAC / Chilled water systems, safety equipment and miscellaneous process and utility equipment. Mechanical input into BOD.

Produced Water System Modifications Shell Todd, Kapuni, New Zealand--(ECS / BECA)

Conversion of tank T604 to dual use, condensate and produced water. Piping modifications for conversion and tank modifications to allow installation of radar level instruments.

Oct 97 – Mar 98

BECA CARTER HOLLINGS and FERNER (New Plymouth, New Zealand)**Lead Mechanical Engineer / Project Engineer**Asgard B, Glycol Purification Module – Kvaerner Process Systems, Oslo, Norway

Equipment layout and specification followed by bid evaluation and vendor data review of process pumps and vessels. Pipe stressing of process and hot oil piping, specification of piping specials. Duplex stainless steel used extensively.

Water Bath Heater Study – Natural Gas Corporation

Survey of the 106 installed Sales Gate gas heaters, with objective of establishing efficiencies and annual gas usage/running cost of each heater. Review of alternative heating options and determination of min. bath temperatures for optimum operation.

Re-rating Evaluation of Process Air Heater D7-1003D – Petrochem Ltd.

Re-rating to ASME Section I, Power Boiler code, of Process Air Heater mounted in a reformer flue gas duct. Finite Element Analysis was used to confirm stresses met ASME Section VIII, Div 2, App 4.

Increased Flow Study for Lyttelton to Woolston Pipeline – Mobil Oil NZ Ltd.

Integrity of petroleum pipeline reviewed with objective of identifying increased flow options. Pipeline installed in mid 1950's has thick wall and potential for increased MAWP. Study outlined options for increased flow and strategy for establishing integrity.

Exchanger for Chemical Reactor – Coogee Chemical / NDA, WA, Australia

Design of forced draft, annulus/sandwich style shell and tube exchanger for resin production. Design included optimisation of cooling circuit and FEA to minimise tubesheets thickness.

Jan 95 – Oct 97

NEW ZEALAND WORLEY LTD (New Plymouth, New Zealand)

Lead Mechanical Engineer / Project Engineer

RESAK Gas Platform - Petronas Carigali, Kuala Lumpur, Malaysia

Preparation / coordination of all mechanical equipment specifications for Resak Gas Platform, installed offshore Terangganu, Malaysia. Equipment included; Glycol Contactor & Regeneration Skid, Turbine Generators (3.5MW), Production Coolers (9MW fin fan units), separators and other vessels, fire water pumps, caisson pumps, centrifugal and positive displacement condensate pumps.

NGC Transmission - Field Operations Team Leader (secondment)

Co-ordination of Mechanical Field Technicians responsible for operation and maintenance of NGC's gas transmission facilities. Project management of Line Heaters Study, Critical Valve Survey and Rotating Equipment Maintenance Procedures.

NGC Kapuni Co-generation Plant - Senior Engineering, Sydney Australia

Pipe stressing coordinator for 20MW (2 x 10MW) co-generation plant to be installed in existing gas processing plant.

Kapuni Gas Treatment Plant Refurbishment - Natural Gas Corporation

Extensive upgrade and refurbishment to incorporate instrumentation for DCS and ESD systems along with throughput enhancement with addition of new gas separator and LPG reflux pumps. Installation of new stainless steel cold flare header and flare upgrade. Piping design of Propane Refrigeration system and methanol dehydration system. Drainage and effluent treatment upgrade. Installation of HVAC systems suitable for hazardous area operation. Associated instrument and electrical system upgrades.

Omata 2 Tank Conversion / Pipeline Pumping Stations - Methanex (NZ) Ltd.

Management of mechanical design, procurement and mechanical construction packages for two new Methanol pipeline pump stations and conversion of Gasoline storage tank and inlet/outlet facilities for dual service, (Methanol and Gasoline) at Omata 2 Tank Farm.

Kiwi Dairy Pipeline / Gas Treatment Facilities - Shell Todd Oil Services

Supervision of mechanical design of wet gas pipeline facilities, including launcher and receiver, knock out drum, shell and tube gas heater, meter runs, corrosion inhibitor and methanol injection skids.

TAWN Project (oil gathering network) - Petrocorp

Preparation of EPC bid for gas and oil gathering lines and LPG production facilities. Including mechanical equipment specifications, bid evaluation and documentation preparation.

Jan 94 - Jan 95

KUWAIT OIL COMPANY (KOC, Kuwait)

Project Engineer / Lead Mechanical - Central Seawater Injection Facilities

The project was a 1,000,000 BWPD seawater de-aeration and treatment plant with associated 47km long 900NB seawater transfer pipeline and high pressure injection plant and pipeline/flowline system to service both Raudhatain and Sabriyah oilfields in North Kuwait.

Responsibilities included;

- Liaising with design consultant & internal depts. on mechanical and piping issues.
- Assisting in ROW submissions to municipality for pipelines and treatment plant.
- Liaising with MEW (power station owner) on seawater and fresh water supply and effluent return line to power station outfall.

- Review of relevant KOC specifications and consultant proposed changes.
- Review of consultant's preliminary design for plant and pipelines.
- Preparation of BOD and bid documentation for selecting LSTK contractor.

Particular features of the project were;

- FRP piping for aerated seawater and high pressure de-aerated seawater injection
- Carbon steel pipelines for low-pressure de-aerated seawater service.
- Duplex stainless steel pump metallurgy.
- Transfer pipeline designed to ANSI B31.4, with minimum wall thickness.

Oct 91 - Nov 93

BRUNEI SHELL PETROLEUM SDN BHD (Seria, Brunei)

Project Engineer -- Rasau Field Development

The project was a major upgrade of a 25,000 BPD onshore oil field. Responsibilities included;- Budget control (B\$32M / US\$20M), co-ordination of pipeline ROW consents, plant design, procurement, construction and commissioning. In detail it comprised the following;

- Installation of 13 new wellhead facilities with manifolds and bulk flowlines.
- A new higher capacity separation train, including HP and LP separators.
- Conversion of production station to electronic instrumentation, DCS and telemetry to a central control room.
- New electrical switchgear room and redesigned control room with radio tower.
- Two 190Kw oil transfer pumps and new pumphouse.
- Construction of smokeless ground flare, designed for full station gas capacity.
- Two 17km long pipelines, 400NB gas line and 200NB oil line, along a mainly swampy jungle route, involving one major river crossing using bottom tow method and three major road crossings using thrust boring technique.

Along with budget control overall project scheduling and reporting to management the responsibilities included;

- Coordination of detailed design of station upgrade and pipelines.
- Monitoring of material procurement, working directly with expeditors.
- Assisting with scheduling of construction activities.
- Coordination of commissioning and start up.

A prime objective of the project was to minimise shutdown time. This necessitated constructing most of the new facilities while the station was onstream and shutting down to complete tie-ins. Project was completed on time and also within the planned shutdown and commissioning duration.

Sept 87 - Oct 91

DAVY McKEE PACIFIC PTY.LTD. (Melbourne, Australia)

Piping / Mechanical Engineer

SHELL'S RCCU Plant (Geelong), Piping Engineer

Piping Engineer for initial design phase, preparation of bulk piping and S.P. item requisitions and member of pipe stressing team. Stress analysis to B31.3 using CAESAR for high temperature steam, catalyst and oil lines.

Electrolytic Zinc's, Zinc Purification Plant, Risdon, Tasmania (Lead Piping Engineer)

Design of entire Zinc Purification Plant using mainly GRP pipe (approx. 7km), size range 50NB to 500NB. Site supervision of material issue and pipe installation.

A.N.M.'s Paper Machine No. 2, - Mechanical Engineer.

Review of Construction Contract to prepare variations list. Preparation of Ducting Specification, S.P. item list and review of mechanical vendor data.

WESTERN MINING CORP'S Ammonia Reformer Conversion Project, - Piping Engineer

Re-rating of superheated steam lines, pipe stress analysis (CAESAR) and design of new fuel burner feed system.

A.P.C.'s Butadiene & Propylene plant front end study, - Lead Mech. Engineer
Plant layout studies, specification of Butane storage tank and cost estimates.

AMPOL EX's feasibility study of the JUHA gas field development, - Mechanical Engineer
Conceptual plant layout, selection of gas reinjection compressors and transfer line study (ANSI B31.4) for CO₂ and H₂S conditions.

Mar 85 - Aug 87

Lived and worked in Japan

Edited technical manuscripts and thesis written by Japanese students and companies, to be published in English journals and magazines. My work was combined with extended travel throughout Asia with my wife.

Jan 82 - Feb 85

P.L.E. PACIFIC LTD. (Sale, Australia)

Piping / Mechanical Engineer- ESSO's Offshore and Onshore Facilities

As Piping Engineer and Project Engineer I co-ordinated the mechanical design of projects for ESSO's onshore and offshore installations. Liaising with ESSO engineers and familiarity with ESSO procedures were essential aspects of my position. The projects included:

Water Handling Facilities

Design of Vortoil type of water handling facility with associated pumps and overboard line for Barracouta Platform. Various piping modifications to existing Corrugated Plate type water handling facilities on other platforms.

Skimmer Pile Installation

Design of Skimmer Pile and associated submersible pumps and piping for Fortescue Platform. Design included installation procedure.

Turbine Meter Installations

Selection of turbine meters and design of meter runs for oil production for Tuna Mackerel and Halibut Platforms, and condensate production on Tuna Platform.

Reverse Osmosis Water Makers

Study of existing Evaporative Water Makers on offshore platforms, followed by design of Reverse Osmosis Water Makers for Flounder and Tuna Platforms. Included technical evaluation of available membranes and liaison with selected vendor for supply of partly packaged unit.

Pipeline Linalog Study

A complete survey was undertaken off all offshore pipelines and onshore pipelines leading to Longford Gas Plant. The survey intent was to identify every bend and its radius and the minimum internal diameters of every fitting and any other pipe internal diameter reductions that could impede the progress of the specialised corrosion detection Linalog tool. Survey also included an evaluation of all launchers and receivers.

Launcher and Receiver Modifications

As a result of Linalog survey launchers on Barracouta and Snapper Platforms were redesigned along with replacement of some fittings past last valve off on Snapper Platform.

Platform and Plant Drainage Systems

Design of Oily Water Drain for tank farm at Long Island Point using PVC piping. Design of replacement atmospheric pressure oily drain system for Longford Gas Plant. Design of replacement and new drains for various platforms.

Drag Reduction Facility

Selection of gear pump and design of piping and installation facilities for drag reduction facility for Halibut Platform.

Miscellaneous Projects

Halon extinguishing system for a main platform flare.

Flowline piping redesign.

Gas lift piping modifications.

Design of F.R.P. vent stack.

Booster pump installations for condensate and oil.

Study of replacing ballast lines at Long Island Point load out pier.

Design of boat mounted oil dispersant spray boom.

Design of Hot Tap connection for critical process line at Longford Gas Plant.

Jan 81 - Dec 81

Various short term contracts in Melbourne, Australia as follows:

Minenco - Bougainville Copper Plant-

Plant layout for extension of concentrator. Design of flotation cell Launderers and suction and discharge piping for froth pumps.

Tieman Industries - Road Tanker Design

Design to AS1210 and AS2016 of specialised four compartment double conical tanker with ripple plate heaters for handling various chemicals.

Kato Industries

Layout of refinery process piping and design of specialised vessel flanges to AS1210.

Apr 80 - Sept 80

WALTER KIDDE CO. LTD. (London, UK)

Piping Designer

Specification and design of "Halon" fire protection systems for Offshore and Onshore installations. Modification of 2-phase flow programme to N.F.P.A.-12.

Oct 79 - Mar 80

ATOMIC POWER CONSTRUCTION LTD. (London, UK)

Piping DesignerDungeness "B" Nuclear Power Station, Kent, UK

Co-ordination of conventional plant installation in reactor building. Extensive site investigations, as building of installed piping & pipe routing for additional safety systems.

Sept 78 - Sept 79

HARRIS & PARTNERS CONSULTING ENGINEERS (London, UK)

Mechanical EngineerUpper Zakum Wellhead Platforms

Calculation of pressure drops for 2-phase flow to test separator. Piping and equipment layouts including risers, manifolds and test separator. Specification of fire water system, cranes and chemical injection package.

Abu Dhabi Gas Project

Finite element analysis of liquefied butane and propane load out lines, using Sesam-69 programme.

Saudi Arabian Royal Commission

Assisted in developing cost models for oil and water pumping stations and gas compression stations and oil and gas transmission lines.

Nov 77 - Apr 78

WOOL RESEARCH ORGANISATION (Christchurch, New Zealand)

Mechanical Engineer

Design of rotating textile machinery, force transducers and gearboxes for "random pattern" yarn snubbing machines. Extensive drafting of designed machinery, for manufacture and patent applications.