

# CAPABILITY STATEMENT

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**Quality  
Endorsed  
Company**  
ISO 9001:2000  
Standard Australia  
ABN 58 050 543 194

## CAPABILITY STATEMENT

### VISION

To be regarded throughout the Australasian region as a high quality service provider in those fields in which the Company is engaged, i.e. specialised chemical, geochemical and petrophysical testing and consulting.

### MISSION

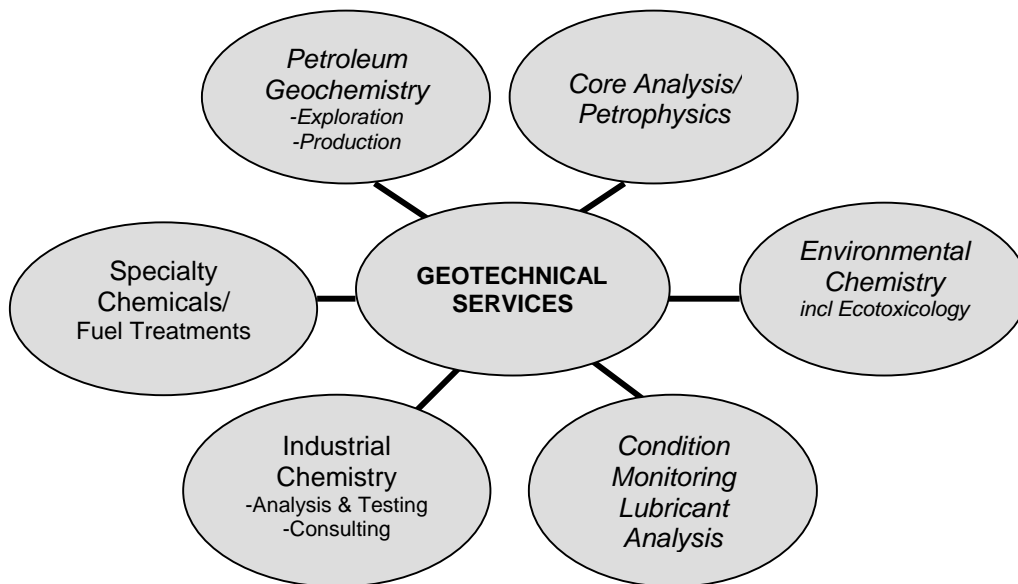
To develop the Company's capabilities through research and development, acquisition and improvement in management strategies, so that an integrated range of services can be offered to clients.

### BACKGROUND

Geotechnical Services Pty Ltd began as a specialised petroleum exploration/production service company, set up by a management buy-out in March 1991 of the Oil and Gas Division of Analabs (then a subsidiary of the international Inchcape Group). The company dominates petroleum (geo)chemistry service work in Australia, with increasing amounts of work being performed for overseas clients. The Spectrotech Laboratories subsidiary business was bought in January 1992 and, as Geotech's Condition Monitoring and Industrial Chemistry Divisions, has been developed into a major provider in the areas of fuel, lubricant and crude oil analysis, as well as chemical consulting and problem-solving.

In July 2007, Intertek OCA Caleb Brett, an international provider of inspection and analytical services, acquired Geotech. Combining Geotech's expertise and capabilities with Intertek's existing network of laboratories has significantly enhanced the company's ability to service local and international upstream and downstream petroleum as well as associated industries.

Today, Geotech occupies a large, fully serviced laboratory/warehouse facility in Welshpool, Perth (Western Australia) which houses the company's six divisions: Petroleum Geochemistry, Core Analysis / Petrophysics, Environmental Chemistry, Condition Monitoring / Lubricant Analysis, Industrial Chemistry and Specialty Chemicals / Fuel Treatments. The company's Ecotoxicology Laboratory is situated in purpose-built premises in Fremantle, Western Australia. Geotech is NATA accredited to ISO/IEC 17025:2005 for a range of tests and is a quality-assured company, with its management system accredited to ISO9001-2000.



Geotech has been continuously profitable since it was established and has continued to grow over the past 16 years.

Major initiatives have been undertaken in recent times to increase the technical capabilities of the company, and there has been substantial capital investment in equipment. The laboratory is highly automated and equipped with modern instrumentation. Research and development is on-going, with work being carried out either internally or in conjunction with approved research organisations.

Geotech has a policy of careful selection of recruits, with staff being chosen on the basis of expertise, experience and excellence. This is demonstrated by the depth of qualified personnel within the company, with virtually all technical staff having a formal tertiary qualification and many years of experience in an analytical field.

The quality of the services provided by Geotech is reflected in an extensive client list of Australian and international clients which includes:

- Air Liquide
- Alcoa
- AMEC Engineering
- Apache Energy
- ARC Energy
- Australian Submarine Corporation
- Austral Ships
- Baker Hughes Inteq / Baker Petrolite
- BGC
- BHP Billiton
- Boral
- BP
- Boeing Australia
- Champion Technologies
- Chevron Texaco
- Coffey
- Collex
- Conoco Phillips
- Core Laboratories
- Crown Minerals NZ
- David Gray
- Department of Conservation and Land Management WA (CALM)
- Department of Primary Industry WA
- Department of Environment WA
- Emission Testing Consultant (ETC)
- ENI Australia
- Environmental Consultancy Services
- Epic Energy
- ExxonMobil
- 4 Farmers
- Fuchs Australia
- GHD
- Gull Petroleum
- Intertek Testing Services
- John Holland
- Kalgoorlie Consolidated Gold Mines
- Maritime Museum of Western Australia
- Metlabs
- Mobil
- Nalco Australia
- Nationwide Oil
- NRG Flinders
- Nickel West
- Nippon Oil
- NS Komatsu
- Nufarm
- Oceaneering Australia
- Oceanica
- Oil Search
- Origin Energy
- Phillips Fox
- Pfitzer
- Primary Lubrication
- Public Transport Authority
- Rheochem
- Richgro
- Rio Tinto
- Santos
- SGS
- Shark Bay Salt
- Shell
- Solar Turbines
- Southern Pacific Petroleum (SPP)
- Stack Air
- Total Fina Elf
- Tox Free Solutions
- Tiwest
- WA Water Corporation
- Wesfarmers LPG
- Western Mining Corporation
- Western Power
- Westrail / Australian Western Railroads
- Woodside Energy
- Worsley Alumina

## **OBJECTIVES**

### **Petroleum Geochemistry**

- To remain the major provider in Australia of up-to-date geochemical analyses and interpretation.
- To increasingly develop a presence in other regions of the world, particularly those to the immediate north of Australia.
- To continue to offer new and innovative analytical techniques to assist hydrocarbon exploration and production.

### **Environmental Chemistry**

- To continue to offer high level sampling advice, analyses and interpretation to clients in a wide range of industries.
- To work collaboratively with clients to develop operating procedures and new technology to minimise the environmental impact of their operators.
- To strive to introduce new technology to better address environmental assessment practices in Australia.

### **Condition Monitoring/Lubricant Analysis**

- To continue to offer a quality lubricant analysis and condition monitoring service.

### **Industrial Chemistry**

- To offer a wide range of services as required by clients.
- To provide expert consultancy and problem-solving advice by utilising the diverse industrial experience of senior staff.
- To further develop the Company's capacity for technical consultancy.
- To extend our range of testing and analysis, particularly in relation to fuel quality assurance.

### **Core Analysis/Petrophysics**

- To continue to develop the Company's reputation as a major provider in Australia of petrophysical analyses.
- To expand and consolidate our range of services to clients.

### **Specialty Chemicals/Fuel Treatments**

- To increase the market share of the existing range of products.
- To develop new products to meet market needs indicated by clients.
- To develop the Company's capacity for contract manufacturing activities.

## RECENT INITIATIVES

Major initiatives have been taken within the Company in recent times to increase technical capabilities. All of them required substantial capital investment and most of them were associated with a major element of R & D effort carried out either internally or by contractors.

Improvements in management practices have also been put into place, and the Company obtained certification for ISO 9002 (1994) in 1998, followed by certifications for ISO 9001 (2000) early in 2004.

### **Petroleum Geochemistry**

Analabs Oil and Gas Division originated from the Curtin University Petroleum Geochemistry Group in the early 1980s, and this has traditionally been a major strength of the enterprise. The Company has strongly supported R & D both at Curtin and in-house, and offers R & D outcomes to industries in the form of enhanced services (eg. fluid inclusion analysis, hydrous pyrolysis, reservoir geochemistry, drilling additive analysis) and in non-proprietary studies (eg new biomarker technology, gas characterisation for West Australian basins). The Company continues to offer courses for industry and to carry out non-proprietary and proprietary studies, either as sole agent or jointly with other established practitioners.

### **Environmental Chemistry**

This division has grown as an offshoot from the services Geotech offers in Petroleum Geochemistry. We provide a diverse range of analytical services including air emissions testing, ecotoxicology investigations and analysis of various other species which have an environmental impact.

Geotech developed its capabilities in air emissions testing in 2000/2001 and now offers a comprehensive suite of tests, with particular expertise in the analysis of volatile organic compounds (VOCs), BTEX, aldehydes and ketones. Many of our tests are performed according to USEPA methodology and are NATA certified.

Research and development is an integral part of this division, with the emphasis being on industry-based projects. The careful selection of staff from a variety of backgrounds, together with the purchase of eg. state-of-the-art GC-MS and HPLC systems as well as ecotoxicology equipment, enables us to offer a wide range of analytical services. For example, determinations of ultra trace concentrations of petroleum hydrocarbons, drilling additives, polycyclic aromatic hydrocarbons, pesticide residues, polychlorinated biphenyls and heavy metals in various environmental samples are performed on a routine basis. We also have significant experience in assessing drilling discharges from offshore petroleum facilities by analysis of sediments collected from the adjacent seabed.

Geotech also offers a series of bioassays allowing accurate environmental risk assessments as well as the chemical and biological characterisation of produced formation waters.

Other professional services include the design of sampling strategies, sampling and interpretation of results, which, in conjunction with the above mentioned analytical services, provide a full one-stop consultancy service to the client.

### **Condition Monitoring /Lubricant Analysis**

At an early stage the Board recognised that a major commitment was required to convert the Spectrotech activity bought early in 1992 into a profitable business unit which would reflect favourably on the Company as a whole. This involved recruitment of high caliber professional staff, followed by NATA accreditation for a range of tests. Customer service was enhanced with a new LIMS package and a range of new services. A substantial R & D effort and further investment of approximately \$400K in equipment was made to establish a best-practice capability in particle analysis, ferrography and failure analysis.

Recent additions to the offerings of Geotech's Condition Monitoring/Lubricant Analysis Division are an end user software package, condition monitoring training courses and an on-site sampling service.

### **Industrial Chemistry**

The services provided by the Industrial Chemistry Division utilise the entire range of laboratory facilities and expertise available within the Company. Much of the work performed by this Division is not available from other commercial laboratories in Western Australia.

The policy for development of this area has been to respond to client needs as they arise, and to acquire equipment in anticipation of need for services not currently provided. For example, the Company is constantly refining or expanding its range of testing and analysis capabilities for major commodities such as liquid and gaseous fuels and bulk chemicals.

The different sample types the Industrial Chemistry Division has encountered are too numerous to be listed and continue to grow in parallel with the Company's reputation for flexibility, resourcefulness and customer service.

### **Core Analysis/Petrophysics**

With an investment totalling approximately \$500K in R & D, substantial method development, and fabrication and purchase of equipment, Geotech now has an excellent core analysis facility. With the availability of supplementary tests (such as reservoir fluid characterisation by thermal extraction-GC-MS), the strength of the associated geochemistry activity, the general laboratory infrastructure, and the quality and experience of the staff, the Core Analysis Division has a significant edge over other providers.

## **LIST OF SERVICES**

### **I PETROLEUM GEOCHEMISTRY**

#### **Oil-Source Rock and Oil-Oil Correlations**

Interpretative reports and geological/geochemical syntheses

#### **Source Rock Evaluation**

TOC/Rock-Eval pyrolysis  
Pyrolysis GC and pyrolysis GC-MS  
Thermal extract GC/pyrolysis GC (GHM)  
GC and GC-MS biomarker analyses  
Hydrous pyrolysis  
Carbon isotopes  
Vitrinite reflectance/Organic petrology

#### **Oil Analyses**

Fluid inclusion geochemistry  
Reservoir Geochemistry  
Carbon isotopes (bulk and CSIA)  
Compositional analyses (GC/GC-MS)  
GC-MS biomarker studies  
Physical properties  
Heavy metals in oils

#### **Gas Analyses**

Compositional analysis  
Carbon isotopes (bulk and CSIA)

#### **Water Analyses**

#### **Drilling Mud Additives/Base Oils**

#### **Regional Hydrocarbon Prospectivity Studies**

#### **Recent Non-Exclusive Reports**

- ❖ Drilling Fluids and Mud Additives: Their Impact on the Interpretation of Geochemical Data
- ❖ Characterisation of Gases from West Australian Basins

## **II CORE ANALYSIS/PETROPHYSICS**

Lithological description and sedimentological studies

Grain size analysis

Core gamma logging

Fluid saturations

Core photography

Porosities and permeabilities at ambient and overburden conditions

- core plugs
- whole core
- SWC/MSCT samples

Brinell hardness tests

Capillary pressure measurements

Reservoir petrology (incl. photomicroscopy, XRD, SEM, energy dispersive x-ray)

## **III ENVIRONMENTAL CHEMISTRY / ECOTOXICOLOGY**

Quantitative analysis of ultra trace concentrations of organic pollutants and metals in:

- Waters (marine, ground, potable and produced)
- Soils and sediments
- Marine biota (eg. fish, filtering bivalves and other invertebrates)
- Air

Determination of common organic pollutants including:

- Petroleum hydrocarbons
- Benzene, toluene, ethylbenzene and xylene (BTEX)
- Polycyclic aromatic hydrocarbons (PAHs)
- Drilling additives
- Polychlorinated biphenyls
- Pesticides

Laboratory based bioassays for Environmental Risk Assessment:

- Biodegradation of drilling fluids
- Microtox
- Marine and freshwater bioassays: Bacteria, unicellular and macro algae, molluscs, crustaceans, fish

Oil spill studies including:

- Evaporative loss of hydrocarbons from slicks on waters
- Spreading rates of petroleum spills on waters
- Microbial biodegradation of petroleum absorbed on sediments

Air emissions:

- VOCs (Volatile Organic Compounds)
- Semi-VOCs

Other services

- Design of sampling strategies, especially sediment sampling
- Sample collection and / or supply of sampling containers
- Interpretation of analytical data

#### **IV      CONDITION MONITORING / LUBRICANT ANALYSIS**

- NATA accredited oil analysis for characterisation and condition monitoring (incl. spectrometric analysis by ICP, FT-IR)
- Analytical and direct reading ferrography (incl. photography)
- Analytical filterography
- Particle counting and sizing
- Analysis of greases
- End user software package
- Condition monitoring courses
- On-site sampling service

#### **V      INDUSTRIAL CHEMISTRY**

##### **Fuel Quality Testing**

Analysis and testing of all liquid fuel types including fuel oils, distillates, condensates gasolines and biomass oils:

Specification conformity testing (chemical and physical properties including flammability limits)

Aviation and military fuel analyses

Fuel shipment quality assurance testing

Assessment of fuel performance, stability and compatibility

Compositional analyses of fuel and fuel blends (identification and characterisation by

GC/GC-MS)

Measurement and identification of contaminants in fuel

Australian Standard conformity testing for diesel fuel and petrol

Evaluation of reclaimed/reprocessed oil and fuel

Microbial contamination testing of diesel fuel and remedial treatment

**Miscellaneous**

Identification and characterisation of fuels and crude oils by GC/GC-MS

Analysis of a wide range of inorganic and organic materials

Water analysis

Material failure analysis

Materials testing for insurance investigations, litigation and loss adjustment

Process trouble-shooting

Chemical and physical product testing for marine survey

Raw material and product quality control testing

Pesticide product analysis to APVMA requirements

Corrosion investigation

Metal analysis

Analysis of deposits, sludges and residues

SEM / SEM-EDX for characterisation of particles

XRD analysis

**VI SPECIALTY CHEMICALS/FUEL TREATMENTS**

Supply of Bio-Kill and Cladocide Gold (broad spectrum biocides)

Microbiological testing

Fuel treatment consultancy

## **SUMMARY**

Geotechnical Services provides a wide range of integrated analytical and consulting services to a vast number of clients, ranging from large multinational companies to small private operators.

We pride ourselves in the depth and breadth of knowledge and expertise within the company and believe that this gives us a significant edge over our competitors.

Geotechnical Services aims at providing service of the highest quality to all clients, based on professionalism, flexibility and personal customer service.

It is with this attitude that Geotechnical Services will be able to maintain its competitive position and its reputation for excellence.