2000/01 (PLANNED ACTIVITIES)

ITEM I	Details of ships, aircraft and other vehicles
ITEM II	Details of expeditions
ITEM III	Stations and subsidiary camps
ITEM IV	Details of personnel
ITEM V	Armaments possessed by personnel
ITEM VI	Scientific programmes
ITEM VII	Scientific equipment
ITEM VIII	Transportation facilities and communications equipment
ITEM IX	Facilities for rendering assistance
ITEM X	Notice of expeditions to the Antarctic not organised by the party but organised in, or proceeding from the party's territory
ITEM XI	Description of unoccupied refuges
ITEM XII	Annual return of the numbers of each species killed or captured
ITEM XIII	Notice of the intended use of radio-isotopes in scientific investigations
ITEM XIV	Notice of intended use of scientific research rockets
ITEM XV	Notice of ships carrying out substantial oceanographic research programmes
ITEM XVI	Reports on tourist activities
ITEM XVII	Waste disposal practices
ITEM XVIII	Advice of activities authorised to be conducted in Specially Protected Areas
ITEM XIX	Annual list of Initial Environmental Evaluations
ITEM XX	Notice of steps taken to implement the Protocol on Environmental Protection to the Antarctic Treaty

1999/2000 (MODIFICATIONS)

ITEM IV	***Details of personnel***
ITEM XVIII	***Advice of activities that were authorised to be conducted in Specially Protected Areas***

ANTARCTIC TREATY

EXCHANGE OF INFORMATION UNDER ARTICLE VII (5) FOR 2000/01
NEW ZEALAND ACTIVITIES

Follows the standard format for the Annual Exchanges of Information outlined in the Handbook of the Antarctic Treaty System. Additional Exchange of Information items are cross-referenced to the appropriate recommendation.

ITEM I

The names, types, numbers and descriptions of ships, aircraft and other vehicles, introduced, or to be introduced, into the Antarctic Treaty Area, and information on military equipment, if any, and its location in the area.

Ships

The Hydrographic and Marine Research vessel, RV Tangaroa, will make hydrographic surveys and conduct marine science in the Ross Sea Region Jan-Mar 2001.

Aircraft

a RNZAF C130 Hercules flights are scheduled to operate between Christchurch, New Zealand and McMurdo Sound, Antarctica from mid November to early December 2000 and late January 2001.

b One Helicopters New Zealand 212 helicopter will operate from Scott Base/McMurdo Station between October 2000 to the end of January 2001.

Vehicles

See Item VIII, Surface Transport.

ITEM II

Dates of expeditions leaving for, and arriving in the Antarctic Treaty Area, duration of stay, itinerary to and from the area and routes followed within the area.

From October 2000 to February 2001, winter and summer personnel will be transported between Christchurch and McMurdo Sound by aircraft servicing both the United States and New Zealand Antarctic programmes. Four early season flights were carried out in August 2000.

The relief of the Scott Base winter party took place in October 2000.

Fifteen return flights by Royal New Zealand Air Force C130 Hercules aircraft, between Christchurch and McMurdo, are planned for the period November-December 2000 and late January 2001. Each flight is planned to overnight at McMurdo.

ITEM III

The names, locations, and dates of opening of the party's stations and subsidiary stations established or planned to be established in the Antarctic Treaty Area, listed according to whether they are for summer and/or winter operations.

SCOTT BASE	Latitude 77° 51' 03"S Longitude 166° 45' 45"E Established 1956/57 Year round operations
CAPE ROBERTS PROJECT BASE CAMP	Latitude 77° 00'S Longitude 163° 75'E * Project complete, clean up operation only

ITEM IV

The names of the officers-in-charge of each of stations, subsidiary stations, ships and aircraft; the number, occupations and specialisations of personnel (including any designated by other Governments), who are or will be stationed at each of these stations including the number of personnel who are members of the military services, together with the rank of any offices and the names and professional affiliations of personnel engaged in scientific activities.

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a **Officers in Charge of Bases:**
Scott Base Manager (summer): Peter Brookman (October - November), Emma Waterhouse December), Julian Tangaere (January - February).
Scott Base Winter Manager (2001): David Brice.

b **Officers in Charge of Ships:**
Not applicable.

c **Officers in Charge of Aircraft:**
Each flight will be under the command of a Royal New Zealand Air Force (RNZAF) officer. Operational requirements do not allow the RNZAF to designate aircraft captains in advance.

d **Summer Personnel 2000/01:**

NAME	DESIGNATION	EVENT
ABU SAMAH Azizan	Scientist - Physics	K352 (Malaysia)
ADAMS Rebecca	Antarctic Policy Unit, MFAT	K202
AISLABIE Jackie	Scientist - Microbiology	K123
ALLAN Vivienne	Communications & Marketing Manager	K400
ALTIMIRAS Jordi	University of Gutenborg	K057
AMBLER Phil	RNZAFlok	K500
ANDERSON Phillip	British Antarctic Survey	K352
ANDRES Ingrid	Student	K396
ARTHUR Dean	Field Training Instructor	K015
ARTHUR Dean	Field Training Instructor	K401
ATKINSON Raewyn	Artist Programme – Ceramicist	K394b
AUGUSTINUS Paul	Scientist - Physical Geography	K015
AXELSSON Michael	University of Goteborg, Sweden	K057
AYLING Bridget	Student	K047b
BAKER Glenn	Plant Operator CRP	K401
BALKS Megan	Scientist - Earth Sciences	K123
BANKS Rosemary	Deputy Secretary, MFAT – DV Visit	K392b
BARBARICH Blair	Army	K300
BARRETT Jacqueline	New Zealand Defence Force	K302
BARTHOLOMEW Mathew	Student	K396
BARTON Kerry	Researcher - Ecology	K122
BASS Patsy	Executive Assistant	K400
BASS Patsy	Board Secretary	K400
BASSETT Daniel	University of Auckland	K012
BASSETT Kari	University of Canterbury	K051
BAYARD Darryl	Telecom Communications	K211
BEALS Jason	Army	K300
BEARD Catherine	University of Waikato	K028A
BELL Dudley	Snr Tech - Biology	K027
BELL Doug	Electrician	K402
BERKIN Fiona	Electronics Engineer	K360
BERYMAN Katrina	New Zealand Defence Force	K302

BERTLER Nancy	Victoria University of Wellington	K047b
BINNIE Herm	Science Technician, NIWA	K085
BLACK Gus	RNZAF	K304
BORNHOLDT Carl	Victoria University of Wellington	K042
BOSTOCK Jonathan	Comms Operator	K401
BRADSHAW John	University of Canterbury	K051
BRADSHAW Margaret	University of Canterbury	K396
BRAILSFORD Gordon	Atmospheric Chemist	K087
BRICE Dave	Field Support Officer	K402
BRIDGMAN Samuel	University of Canterbury , Student	K396
BRITTEN Roy	University of Canterbury , Student	K396
BROOKMAN Peter	Base Manager/Facilities Engineer	K400
BROWN Steve	Carpenter	K401
BROWN Rachel	Field Training Instructor	K401
BROWN Helen	Domestic	K401
BURTON Robbie	Craig Potton Publishing	K394
CADENHEAD Natalie	Information Services Specialist	K400
CAVANEY Kathryn	Antarctic Visitor Centre	K391a
CHAPPELL Michael	University of Canterbury	K396
CHAPPELL Kevin	University of Canterbury	K396
CLAYDON John	TAE/IGY Expeditioner	K392
CLAYTON Sarah	Conservancy Consultant	K282
CLEARY Peter	SB Operations Manager	K401
COCHRAN Chris	‘TAE’ Hut	K360
COCHRANE Dave	Technical Officer	K131
COOPER Pat	Drilling Manager	K047a
COOPER Alan	University of Otago, Assoc Professor	K062
COTTLE John	University of Otago, Student	K062
COUGHLAN Glenys	DV Visit - Tourism New Zealand	K392b
COUKELL Allan	Media Programme - Radio NZ	K393
COULTER Catherine	Financial Accountant	K400
COWIE Jim	Cape Roberts Project Manager	K001
COWIE Elizabeth	General Assistant CRP	K001
CREEK Alan	University of Canterbury, Student	K396
CUNNINGHAM Andrew	NIWA	K085
DANSON Michael	Microbiologist	K021
DAVIS Nick	RNZAF	K304
DAVISON Bill	Scientist - Zoology	K057
DE POORTER Maj	Antarctica New Zealand Board	K408
DEANE Rochelle	Kelly Tarlton’s	K397
DEIHL Richard	RNZAF	K304
DEUSS Ebi	Electronics Engineer	K131
DICKINSON Warren	Research Geologist, Dr	K047a
DOBSON John	Plant Operator	K401
DONALDSON Tim	Water Treatment Engineer	K360
DRAVITSKI Brian	Helicopter Mechanic	K550
DRYSDALE Paul	SB Services Manager	K401
DUIGNAN Kevin	Carpenter	K402
DUNN Mike	Worker Visitor	K360
EASDALE Sheridan	Curator AHT	K282
EATON Nicole	Student – Burnside High School	K391
EDGE Brendon	Otago University, Student	K064
EDWARDS Tracey	NIWA	K081
EDWARDS Jeremy	NZDF	K302
ELLIOT Margaret	Artist - University of Canterbury	K396
ELLIOT Tui	University of Canterbury, student	K396
ELLIOTT Christine	University of Canterbury, student	K396
ESLER Lloyd	Southland Museum	K391
FABEL Derek	University of Auckland	K015

FAIRBAIRN Nicki	Domestic	K402
FARQUHAR Shane	New Zealand Defence	K302
FARRELL Roberta	University of Waikato	K021
FENWICK Rob	Antarctic Heritage Trust Board	K282
FIELD Rick	Canterbury Museum	K391a
FIGGITT Mark	Telecom	K211
FINK David	ANSTO, Australia	K015
FINNEMORE Michael	University of Canterbury, Technician	K054
FITZGIBBON Michael	Comms Operatior	K401
FITZSIMONS Sean	Glaciologist	K064
FLINTOFT Dean	Telecommunications Technician	K211
FOSTER Grant	Telecommunications Technician	K211
FOX Colin	University of Auckland	K131
FRASER Grahame	Physicist (Atmospheric)	K055
FRASER Rhonda	Landcare Research	K123
GEE Rebecca	Environmental & Policy Officer	K407
GEMMILL Chrissen	University of Waikatio	K028a
GIBBS Jenny	DV Visit - Art Patron	K392b
GIBSON Simon	Technician – Physics	K131
GOFF Phil	Assoc. Minister of Foreign Affairs	K392
GRAHAM Katy	Comms Operator	K401
GREEN Allan	Scientist - Biology	K024
HALES Benjamin	Army	K300
HAMBREY Mike	University of Brussels, Belgium	K064
HAMPSON Ellen	University of Canterbury	K396
HARFOOT Rhodri	University of Waikato	K028a
HARPER Andrew	NIWA	K089
HARRIS Paul	University of Auckland	K131
HASKELL Tim	Industrial Research	K131
HASTIE Lana	Domestic	K401
HAWES Ian	Biologist (Aquatic)	K081
HAY Simon	Treasury	K360
HAY Anthony	University of Canterbury	K396
HAY John	University of Canterbury	K396
HEATH Ron	Antarctica New Zealand Board	K408
HEBERT Paul	University of Waikato	K028b
HENDERSON Euan	New Zealand Defence Force	K302
HENDRIKX Jordy	Victoria Unversity of Wellington	K047b
HERBERT Neill	University of Auckland	K012
HERRICK Mark	Mechanic	K402
HICOCK Stephen	Professor – Geology	K042
HILL Jonathan	University of Birmingham, UK	K057
HINDELL Mark	University of Tasmania	K027
HITZFELD Bettina	Microbiologist/biochemist, Germany	K081
HOBBS Marion	Ministerial Visit	K392
HODGSON Pete	Minister of Science	K392
HOGG Ian	Scientist - Ecology	K028b
HOLME Phil	Student - Geology	K042
HOLMES David	University of Waikato	K123
HOSIE Chris	Driller	K047a
HOWARD-WILLIAMS Clive	Biologist, NIWA	K081
HOWAT Brian	Engineer/Plant Operator	K001
HOWELL Ian	Distinguish Visitor	K282
HUFFMAN Don	USDA NRCS, USA	K123
HUNT Simon	University of Waikatio	K123
HUSTON Sally	University of Canterbury	K396
IREMONGER Scott	Mechanic/Plant Operator	K001
JINA Arvin	AFCC	K360
JOHNSON Allan	Fire Services	K360

JOHNSON Kem	Field Training Instructor	K401
JUDGE Bronwyn	Artist Programme	K394
KARL Brian	Technician - Ecology	K122
KEEN Damon	Auckland Museum	K391
KETTIES Ava	DV Visit – Swedish Polar Ambassador	K392
KIRKWOOD Glen	New Zealand Defence Force	K302
KNAPP Bernie	Media Programme – Journalist	K393
KREHER Karin	NIWA	K085
LAMBERT Dave	Massey University	K030
LANGHORNE Pat	Scientist – Physics	K131
LAWSON Wendy	Antarctica New Zealand Board	K408
LEITCH Jonathan	Engineering Manager	K402
LITTLEWOOD Chandra	University of Canterbury	K396
LITTNAN Charles	University of Waikato	K027
LOCK Aaron	Chef	K402
LOCKYER Sarah	New Zealand Defence Force	K302
LORRAIN Regi	Scientist – Earth Scientist	K064
LUSCOMBE Nick	Helicopter Mechanic	K550
MACDONALD John	Scientist - Zoology	K012
MACE Chris	Antarctica New Zealand Board	K408
MAGER Sarah	University of Otago	K064
MAGNUSSEN Adam	Comms Operator	K401
MAHON Mike	IT Specialist	K400
MANSFIELD Bill	Antarctica New Zealand Board Member	K408
MARKS Emma	University of Auckland	K397
MARSHALL Craig	University of Otago	K066
MATHEWS Andrew	NIWA	K085
MATTHEWS Martin	Distinguish Visitor	K282
McCUBBIN Alice	Burnside High School	K391b
McEVOY Kevin	RNZAF	K304
McGOWAN Hamish	Victoria University of Wellington	K047b
McGREGOR John	Base Engineer	K401
MCINTOSH Alison	Field Assistant	K073
MCKENZIE Scott	RNZAF	K304
McPHAIL Rob	Helicopter New Zealand Pilot	K550
METCALF Peter	Scientist - Biology	K030
MIERS Duncan	University of Waikato	K024
MULLER Christopher	University of Canterbury	K396
MURDOCH Carrie	Student – Human Sciences	K073
NAPP Bernie	The Evening Post	K393
NEIGHBOURS Angela	Consultant, People Dynamics	K370
NICHOL Sylvia	NIWA	K085
NICHOLAS Kevin	Field Training Instructor	K401
NICHOLSON Barry	RNZAF	K304
NOBES David	University of Canterbury	K054
NOBLE Chas	NZDF	K300
NORTON Robert	RNZAF	K304
NOTTAGE Michael	Inventory/Purchasing Controller	K400
O'CONNOR Paul	Burnside High School	K391b
OSBALDISTON Mark	New Zealand Defence Force	K302
OSSENKAMP Gabriel	University of Canterbury	K396
PAETZOLD Ron	Research Soil Scientist	K123
PANNEWITZ Stefan	Biologist	K024
PATON Louise	Comms Operator	K401
PEARCE-HAINES Megan	University of Canterbury	K396
PELLOW Luke	RNZAF	K304
PETERSON Dean	Science Strategy Manager	K400
PETTERSSON Jared	University of Canterbury	K054
PILKINGTON Stephen	University of Canterbury	K396

PLANK Graeme	Technician – Physics	K055
PLANT Steve	Base Engineer	K402
PLOWMAN Jamie	Science Technician	K402
POLLARD Wayne	Scientist, Canada	K047a
PONOMARENKO Pavlo	Technician – Physics	K069
POTTON Craig	Craig Potton Publishing	K394a
POWELL Anthony	Telecom Technician	K402
PYNE Alex	Science Manager	K047a
REDMAN Craig	Plant Operator	K401
REID Brian	Field Assistant/Electrician	K001
REID Jeff	Chef	K401
RENSHAW Paul	Cargo Handler	K401
REVFIEM Callum	University of Canterbury	K396
RIGARLSFORD Kevin	Maintenance and Field Engineer	K400
RITCHIE Duncan	Field Leader	K051
ROBERTS Mike	RNZAF	K304
ROBINS Kelly	Office Assistant	K400
ROBINSON Daniel	Army	K300
ROBSON Matt	Ministerial Visit	K392
ROEHL Katrin	Otago University, Student	K064
ROSS Aaron	RNZAF	K304
ROSSITER Diane	Visitors Centre	K360
ROXBURGH Gus	Media Programme - journalist	K393
SANCHO Leo	Complutense University, Spain	K024
SCHLENSOG Mark	University of Kiel, Germany	K024
SEALE Joyce	University of Canterbury	K396
SHANKIE Jim	Plant Operator	K001
SHANKS Brett	RNZAF	K304
SHEARER David	Ministerial Visit	K392
SHEPPARD Doug	Geochemical Solutions	K123
SIMPSON Alanna	University Otago, Student	K062
SIROTA Paul	Student – Geography	K064
SLEEWAEGEN Suzanne	University of Brussels, Belgium Student	K064
SMITH Inga	Student – Physics	K131
SMITH Brent	RNZAF	K304
SMITH Kevin	Armed Forces Canteen Council	K360
SMITH Sam	Burnside High School	K391
SMITH Neville	Ministry of Fisheries	K392
SNELLING Phil	Army Engineer	K402
SPEDEN Graeme	Ministerial Visit – Press Secretary	K392
SPENCE Nigel	Burnside High School	K391
SPENCER Jim	Field Training Instructor	K401
STANISH Jenna	Canteen Manager	K401
STEEL Gary	Psychologist	K073
STEVENS Mark	University of Waikato	K024
STEWART Brian	University of Canterbury	K396
STEWART Rob	Movements Officer - Cargo	K400
STRONGMAN Jeremy	Army	K300
SULLIVAN Prue	Office Administrator	K400
TALER Michael	University of Auckland	K012
TAMMIK Sarah	University of Canterbury	K396
TANGAERE Julian	Operations Manager	K400
TAYLOR Lee	RNZAF	K304
THOMPSON Andy	Field Leader	K062
TOMLINSON Lester	IGNS	K102
UHLE Maria	University of Auckland	K011
UNG Hokmeng	Industrial Research	K131
VIDUKA Andrew	Conservancy Consultant	K282
WAAS Joe	Lecturer – Biology	K027

WALKER Basil	Antarctica New Zealand Board	K408
WALSH Penny	University of Canterbury	K396
WARD Greg	Continental Catering	K360
WATERHOUSE Emma	Environmental Manager	K400
WATKINS Jonathon	Comms Operator	K401
WATSON Matthew	Victoria University of Wellington	K047b
WATSON Nigel	Antarctic Heritage Trust	K282
WEAVER Steve	University of Canterbury	K051
WILLIAMS Martin	AHT, British High Commissioner	K282
WILSON Peter	Landcare New Zealand	K122
WILSON Jim	Helicopters New Zealand Pilot	K550
WOOD Steve	Scientist – Atmospheric Physics	K085
WRATT Gillian	Chief Executive	K400
WRIGHT Annie	Media Programme – RNZAF	K393

e **Military Personnel:**

i RNZAF C130 aircraft: crews comprising up to 10 officers and NCOs.

ii Military Cargo Handlers: The New Zealand Defence Forces will provide one officer and three Senior NCOs to the United States Antarctic Program for the complete summer season, along with eight cargo handlers.

iii Nineteen ship-unload personnel will also be provided from the New Zealand Defence Forces to work with the United States Antarctic Program at McMurdo. Two RNZ Navy observers will be on-board the resupply ice breaker.

Scientific Event Details:

Event	Affiliation	Principal Investigator
Biology		
K012	University of Auckland	Dr John Macdonald
K024	University of Waikato	Dr Allan Green
K021	University of Waikato	Dr Roberta Farrell
K027	University of Waikato	Dr Joseph Waas
K028	University of Waikato	Dr Chrissen Gemmill
K030	Massey University	Dr David Lambert
K057	University of Canterbury	Dr Bill Davison
K066	University of Otago	Dr Craig Marshall
K081	National Institute of Water and Atmospheric Research	Dr Ian Hawes
K122	Landcare Research	Dr Peter Wilson
K123	Landcare Research	Dr Jackie Aislabie
Geology		
K015	University of Auckland	Dr Paul Augustinus
K042	Victoria University of Wellington	Professor Peter Barrett
K047	Victoria University of Wellington	Dr Warren Dickinson
K062	University of Otago	Dr James White
Human Biology and Medicine		
K073	Lincoln University	Dr Gary Steel
Glaciology		
K051	University of Canterbury	Prof John Bradshaw
K054	University of Canterbury	Dr David Nobes
K064	University of Canterbury	Dr Sean Fitzsimons
Physics and Chemistry of the Atmosphere		
K011	University of Auckland	Dr David Shooter
K087	National Institute of Water & Atmospheric Research	Dr Gordon Brailsford
K089	National Institute of Water & Atmospheric Research	Andrew Harper

Solid-Earth Geophysics

K102	Institute of Geological & Nuclear Sciences	Dr Fred Davey

Solar-Terrestrial and Astrophysical Research

K069	University of Otago	Assoc Prof Brian Fraser / Prof R Dowden

ITEM V

The number and types of armaments possessed by personnel.

None.

ITEM VI

Science projects for 2000/01, including investigations underway and those planned for each station or on board ships and aircraft.

(Note: All projects are serviced through Scott Base)

Biological Science

K012 - Antarctic Fish Biology: Investigating the abilities of fish to utilise water currents in feeding.

K014 - Antarctic Ecotoxicology: Using biochemical and molecular genetic techniques to assess the impact of exposure of a single species of fish to toxic by-products of human activities. Scott Base and McMurdo Sound.

K021 - Microbial Diversity; Bacteria and Fungi from Soil and Historic Huts: Studying microbial diversity in Antarctica.

K024 - Antarctic Terrestrial Biodiversity: Acquire information on the genetic composition of Antarctic plants and animals.

K027 - Mating systems of Weddell seals: Examining mating system of Weddell seals using acoustic trackers on males to determine between competing hypotheses, Ross Island.

K030 - Molecular Ecology of Antarctic Fauna: Using DNA techniques on bones to study the genetic evolution of Adelie penguins in Antarctica over the last 8000 years. Ross Island.

K057 - Cardiovascular Physiology of Antarctic Fish: Examining the physiological adaptation to the heart of Antarctic fish.

K067 - Ecology of Terrestrial Antarctic fauna: To study the cold tolerance of nematodes and micro-anthropods and effects of increased temperatures on community study and population dynamics, Ross Island.

K081 - Antarctic Aquatic Ecosystems: Research on the biology of inland ice-capped freshwater lakes and ponds.

K122 - Adelie Penguin Population Dynamics: Continuing study of three Adelie penguin colonies on Ross Island to discover factors effecting the growth and health of populations.

K123 - Impacts of Fuel Spills on Antarctic Soils: A study of how Antarctic soils respond to hydrocarbon contamination.

K136 - UV-B Effects on Bottom Ice Algae: Study the impact of UV radiation on bottom ice algae group in-situ.

Geology

K001 - Antarctic Drilling Cape Roberts Project: Second year of drilling for the six-nation Cape Roberts Project. Sediments deposited between ~17 and 80 million years ago will be cored from a sea ice mounted platform in the spring of 1998 and 1999. Cape Roberts.

K015 - Late Glacial-Holocene Evolution of the Victoria Land Coast: Study of raised beach ridges for paleoenvironmental information.

K042 - Neogene Glacial History: Study the history and style of erosion of expanded East Antarctic ice sheet: Allen Hills, Victoria Land.

K061 - Ross Orogeny: Magmatic Evolution: To examine, map and geochemically analyse granitoids intruded during this orogeny 500 million years ago, especially an anomalous suite of syenites and carbonatites. Southern Victoria Land.

K062 - Magmatism in the Transantarctic Mountains: To better understand the processes and tectonics associated with break-up of Gondwana and subsequent plate tectonic movement.

K112 - Cosmogenic nuclides: *In situ* measurements of production rates of cosmogenic isotopes to calibrate cosmogenic surface dating. Ross Island.

Human Biology and Medicine

K072 - Heritage Aspects of Antarctica: A study to investigate the nature and range of the Antarctic-linked cultural heritage resource that is of concern to New Zealand.

K073 - Antarctic Psychology: An investigation of the relationship between personality variables and fluctuations in mood, morale and group cohesiveness at Scott Base over the course of an Antarctic year.

Glaciology

K053 - Basal Ice Processes: A study to investigate processes in the basal zone of the Taylor Glacier.

K064 - Preservation of Glaciotectonic Structures: Aims to establish field criteria for recognition and interpretation of glacial landscapes in the Taylor, Wright and Victoria Valleys.

Physics and Chemistry of the Atmosphere

K055 - Antarctic Mesosphere Ionisation and Dynamics: Continuing programme to gain insight into and understanding of the mechanisms and processes which influence the ionisation, scattering characteristics and dynamics of the polar middle atmosphere. Scott Base, Arrival Heights.

K056 - Atmospheric Corrosion of Architectural Aluminium: A long term study of the atmospheric corrosion of aluminium plates. Scott Base.

K069 - ULF Geomagnetic Pulsations in the Polar Cap: Aims to investigate the mechanisms by which ultra low frequency waves are generated and propagated within and across the polar cap region. Arrival Heights.

K085 - Antarctic Atmospheric Research: Continuing observation of stratospheric gases, measurement of seasonal changes in ozone and trace gases to identify transport and chemical processes in the atmosphere. Scott Base and Arrival Heights.

K087 - Atmospheric Sampling: Continuing measurement of selected trace gases from aircraft flights between New Zealand and McMurdo Sound, to document large scale fluctuations in atmosphere composition and assessing interactions between the Southern Ocean and the atmosphere.

K089 - Climate Monitoring: Continuation of long term climate recordings at Scott Base.

K131 - A Multi scale, Multiprocess Study of Sea Ice, its Breakup, and its Effect on the Climate of the Southern Ocean: Ongoing work on the material properties, patterns of wave motion and break-up of sea ice. McMurdo Sound.

Solid-Earth Geophysics

K102 - Seismic and Geomagnetic Observatory: Continuing measurement of changes in the earth's magnetic field and monitoring of earthquakes. Scott Base and Wright Valley.

ITEM VII

Principal scientific equipment listed according to the station at which it is customarily used.

Scott Base - includes equipment in scientific facility at Arrival Heights, 6 km north-west of Scott Base.

a Seismology

Scott Base and Dry Valley Seismological system - joint programme with United States Geological Survey.

Data telemetered from Bull Pass to Scott Base laboratory.

b Geomagnetism

The following recording systems are operated.

i Three component digital magnetometers.
ii Weekly absolute observations using DIM (declination inclination magnetometer).
iii Proton magnetometer.

Geomagnetic pulsations project operated in conjunction with the University Of Newcastle in Australia. Located at Arrival Heights, this group will also be operating an All Sky Camera.

c Meteorology

Standard surface synoptic, climatological and solar radiation observations and atmospheric turbidity measurements.

An automated weather station is located at Scott Base and manual daily (9 am) weather observations carried out.

d Ionospheric Physics

Operation of IPS 42 Ionosonde with digital recording.

Recordings of the normal and disturbed D-region ionosphere utilising a 60 kw pulse transmitter at a frequency of 2.9 Mhz with receiver system, microprocessor and data recording equipment.

e Trace Gases in Atmosphere

Measurements are made of relative abundance of trace gases in stratosphere by:

i Direct sampling
ii Monochromatic spectrography
iii Scattered light methods
iv Microwave reception

A JY spectrophotometer is in operation at Arrival Heights and Scott Base looking at relative abundance of O_3 and NO_2 in the atmosphere.

A Dobson spectrophotometer is in operation at Arrival Heights looking at the total column abundance of O_3.

Microwave receiver based in the Hatherton Lab measuring the total column amount and profile of ClO in the atmosphere

Bruker FTIR instrument measuring the relative abundance of several molecules in the atmosphere including O_3, HCI, HNO_3 and NO_2. A joint project with Denver University, located at Arrival Heights.

Diode Array Spectrograph measuring OClO and BrO in the atmosphere. Located at Arrival Heights.

Continuous O_3 sampling using a Dasibi instrument located at Arrival Heights.

Dual channel diode Array instrument measuring O_3 and NO_2. A project run jointly with Germany.

ITEM VIII

Transportation facilities and communication equipment for use within the Antarctic Treaty Area.

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a Surface, marine and air transport at each base

Surface Transport

Scott Base:

1 Caterpillar D3B LGP Tractor
1 Caterpillar D6H LGP Tractor
1 Caterpillar D8H Tractor
1 Caterpillar 926E Loader (IT28G on hire from Gough until Feb 2002)
3 Hagglunds BV206 All Terrain Carriers
1 Toyota Landcruiser Personnel Transport
5 Toyota Hi Lux 4 x 4 Personnel and Cargo Transport
1 Isuzu 4 x 4 Tip Truck
2 ASV Tracked Vehicles
9 Bombardier Alpine II Snow Mobiles
2 Bombardier Elan Snow Mobiles
4 4 x 4 Yamaha ATV
1 Kassbohrer PB170D (In NewZealand until October 2001 for rebuild)
1 Kubota B1550 Wheeled Tractor
1 Argo Conquest ATV

Marine and Air Transport

See under Item I.

b Description of communications facilities using the standard form in accordance with Recommendation VI-2

See over.

c Description of airfields in accordance with Recommendation III-I including particulars of location, operating conditions and limitations, radio aids to navigation, facilities for radio communications and instrument landing.

Scott Base Helicopter Pads:
77 ^{o} 51' S, 166^{o}46' E.
Two adjacent pads approximately 100 metres east of Scott Base buildings.
No ground support facilities.

ITEM IX

Facilities for rendering assistance (medical and transport services and shelter available in emergencies).

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a **Aircraft:**
RNZAF C130 Hercules and Iroquois helicopter available to provide assistance during periods working in Antarctica.

b **Runways:**
Not applicable.

c **Fuel Available:**
Limited MOGAS and JP5 supplies.

d **Navigation Aids:**
Not applicable.

e **Medical Facilities:**
Scott Base:
First aid post is fully equipped but no resident doctor.

f **Accommodation:**
Scott Base:
Accommodation for summer emergency : up to 80, including existing staff
Accommodation for winter emergency : up to 60, including existing staff

(Also see Item XI)

ITEM X

Notice of any expedition to Antarctica not organised by the party but organised in, calling at, or proceeding form the party's territory (including tourism in accordance with Recommendations IV-27 and VI-7).

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a Governmental:

- The United States Antarctic Program will depart from Christchurch, New Zealand for McMurdo Station from August 1999 to February 2000 using C5, C141, C17 and LC130 aircraft. Various ships including the *Nathaniel B. Palmer* and the *Greenwave* will depart Lyttelton on research and resupply tasks.

- The official Italian Government Antarctic Research Expedition is expected to depart from Christchurch, New Zealand for Terra Nova Bay in October, using an Italian military C130 aircraft. The Italian research and cargo vessel *Italica* is expected to depart the port of Lyttelton in January 2000.

b Non-government organisations:

Planned tourist cruises to the Ross Sea region:

Kapitan Khlebnikov (Quark)
Two voyages are planned to the Ross Sea aboard this vessel with 108 passenger capacity.

Lyttelton to Hobart, 15 December 1999 to 9 January 2000
Hobart to Hobart, 9 January to 1 February 2000

Akademik Shokalski (Heritage Expeditions)
Two voyages are planned to the Ross Sea aboard this vessel with 46 passenger capacity.

Dunedin to Bluff, 5 January to 4 February 2000
Bluff to Bluff, 4 to 26 February 2000

Marco Polo (Orient Line)
One voyage is planned to the Ross Sea with up to 450 passengers.

Ushuaia to Lyttelton, 29 January to 21 February 2000

Lybov Orlova (Marine Expeditions)
One voyage to the Ross Sea is planned aboard this vessel with 120 passenger capacity.

Ushuaia to Lyttelton, 4 to 28 March 2000

Fishing:

Up to five New Zealand flagged and controlled vessels are expected to undertake exploratory fishing for toothfish in the Ross Sea Region under the conditions set by CCAMLR. Vessels from other CCAMLR states may also participate in the fishery (yet to be determined).

ITEM XI

Description of unoccupied refuges in accordance with Recommendation III-II, including name, position, description of location, date established, date last examined and estimate of available accommodation, facilities, food, fuel, and supplies of other kinds.

Cape Royds Hut: (Occupied periodically during summer)

- At Cape Royds, Ross Island.
- Latitude 77°38'S, Longitude 166°10'E.
- One hut established 1993.
- Last examined January 2001.
- Accommodation for two persons.

Cape Evans Huts: (Occupied periodically during summer)

- At Cape Evans on the West Coast of Ross Island at northern entrance to Erebus Bay.
- Latitude 77°38'S, Longitude 166°24'E.
- Two huts established 1989.
- Last examined January 2001.
- Accommodation for two persons, plus a mess hut.

Lower Wright Refuge Hut:

- Lower Wright Refuge Hut situated on the south side of the Wright Valley, approximately 1 mile west of the Wright Lower Glacier.
- Latitude 77°26'7"S, Longitude 162°37'E.
- One hut established November 1971.
- Last examined November 1998.
- Accommodation for two persons. Survival box.

Cape Roberts Huts:

- Cape Roberts Huts are situated on promontory on south east edge of Granite Harbour.
- Latitude 77°02'S, Longitude 163°12'E.
- Two huts established November 1984.
- Last examined 2001.
- Accommodation for four persons, plus a mess hut. Containerised equipment for the Cape Roberts Project.

Bratina Island Huts:

- Situated on Bratina Island near the northern tip of Brown Peninsula.
- Latitude 78°01'S, Longitude 165°32'E.
- Three huts established December 1989.
- Last examined 1998.

Cape Bird Huts: (Occupied periodically during summer)

- Sited adjacent to Adelie penguin rookeries at the northern tip of Macdonalds Beach.
- Latitude 77°14' S, Longitude 166°28'E.
- Accommodation hut plus a storage hut.
- Last examined 1998.
- Accommodation for eight persons. Survival box.

Lake Vanda Huts:

- Three relocatable huts opposite the former site of Vanda station, near the mouth of the Onyx River.
- Established in 1994.
- Last examined 1998.
- Latitude 77°31' 25" S, Longitude 161°40'23"E.
- Shelter only, including stove.

Cape Hallett:

- Sited in Adelie penguin rookery on Seabee Hook.
- Latitude 72°19'S, Longitude 170°16'E.
- Four huts, including one living and sleeping hut, tool shed, food hut and dome (limited food and fuel in dome and food hut).
- Station established in 1957, main buildings decommissioned in 1980's.
- Last examined February 2001.

Cape Adare:

- Ridley Beach.
- Latitude 71°17'S, 170°14'E, Longitude 170°14'E.
- Survival box in historic hut store (limited food store and fuel).
- Emergency accommodation in historic hut.
- Last examined 1999.

ITEM XII

Annual return of details of number and nature of permits issued and the numbers or quantities of each species of native mammal, bird, or plant taken annually in the Treaty area, in accordance with Article 6 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty and Article XII of the Agreed Measures for the Conservation of Antarctic Fauna and Flora.

During the period 1 July 1998 to 30 June 1999, Antarctica New Zealand issued eight authorisations (permits) to allow the taking, and/or capture and release of mammals and birds, and the collection of plant life.

Species taken	Site	Quantity	
Mosses:			
moss (var. spp.)	Horseshoe Bay		
Bryum argentuem	Cape Hallett	150	
Bryum pseudotriquetrum	Cape Hallett	40	
Lichens (var. spp.)	Cape Hallett	60	
Microbes	Cape Evans	200	samples
	Hut Point	100	samples
	Cape Royds	200	samples
Mixed microbial mats	Bratina Island	5	cores
	Lake Hoare	15	cores
	Vanda Huts	30	cores
Nematodes	Keble Valley	116	
	Shell Glacier stream	2	
	Keble Valley	26	
Rotifers	Southern ice free Cape Bird	36	
Tardigrades	Keble Valley	21	
Protozoa	Southern Cape Bird		
Mites (acari)	Southern Cape Bird	15	
	Keble Valley	400	
Collembola	Southern Cape Bird	12	
	Keble Valley	1000	
	Horseshoe Bay		
Trematomus bernachii	Scott Base	33	
	Terra Nova Bay	2	
	Cape Royds	20	
	Winter Quarters Bay	20	
Trematomus centonotus	Scott Base	20	
Trematomus pennelli	Scott Base	21	
Pagothenia borchgrevinki	Scott Base	45	
Chionodraco hamatus	Terra Nova Bay	13	

Species captured and released	Site	Quantity
Pygoscelis adeliae (adelie penguin)	Cape Bird	1020
	Cape Hallett	30
	Cape Royds	20
	Cape Wheatstone	10
	Franklin Island	20
Leptonychotes weddelli (weddel seal)	Turtle Rock	22
	Hutton Cliffs	50

ITEM XIII

Notice of the intended use of radio-isotopes in scientific investigations in the Antarctic Treaty Area.

As part of science event K081, it is intended to use radio-isotopes at Bratina Island and Lake Vanda. This will involve 1mCi of each of ^{14}C- Sodium acetate and ^{14}C-Sodium bicarbonate.

All experiments will be carried out with precautions to prevent radiation entering the Antarctic environment and all wastes will be securely packed and returned to New Zealand.

ITEM XIV

Notice of intended use of scientific research rockets in the Antarctic Treaty Area in accordance with Recommendation VI-12 including inter alia geographical coordinates of the place of launching; the time and date of launching, or, alternatively, the approximate period of time during which it is planned to carry out the launchings; the direction of launching; the planned maximum altitude; the planned impact area; the type and other specifications of the rockets to be launched, including possible residual hazards; the purpose and research programme of the rocket.

Nil.

ITEM XV

Notice of ships which are carrying out substantial oceanographic research programs in the Antarctic Treaty Area, in accordance with Recommendations VI-13 including information required under categories I,II,VI and VII.

None.

ITEM XVI

Reports of tourist and non-governmental expedition groups visiting New Zealand Antarctic stations during 1999/2000 as referred to in paragraph 3 of Recommendation VIII-9.

Heritage Expeditions, PO Box 20-219, Christchurch, New Zealand

Voyage 1

1	Name and nationality of ship	Akademik Shokalski: registered in Russia
2	Name of Captain	
3	Itinerary	5 January 2000 to 4 February 2000 (Otago to Bluff)
4	Passengers	73 (43 passengers, 23 crew, 6 staff)
5	Landings (Ross Sea region)	
	16/1/2000	Cape Adare
	16/1/2000	Possession Islands
	18/1/2000	Inexpressible Island
	18/1/2000	Terra Nova Bay
	19/1/2000	Cape Evans
	21/1/2000	Cape Evans
	22/1/2000	Cape Bird
	22/1/2000	Cape Royds
	23/1/2000	Franklin Island

Voyage 2

1	Name and nationality of ship	Akademik Shokalski: registered in Russia
2	Name of Captain	
3	Itinerary	4 February 2000 to 26 February 2000 (Bluff to Bluff)
4	Passengers	76 (46 passengers, 23 crew, 7 staff)
5	Landings (Ross Dependency)	
	Date	Location
	11/2/2000	Cape Adare
	14/2/2000	Cape Royds
	15/2/2000	Cape Evans
	15/2/2000	Hut Point

15/2/2000	McMurdo Station and Scott Base
16/2/2000	Cape Bird
16/2/2000	Franklin Island
17/2/2000	Terra Nova Bay
18/2/2000	Possession Island

Orient Lines Inc., 1510 S.E 17th Street, Suite 400, Fort Lauderdale, FL 33316, USA

1	Name of Ship	M/V Marco Polo: registered in the Bahamas
2	Name of Captain	Roland Andersson
3	Itinerary	29 January 2000 to 20 February 2000 (Ushaia to Lyttelton)
4	Passengers	854 (484 passengers, 352 crew, 18 staff)

5 Landings (Ross Dependency)

Date	Location
11/2/2000	McMurdo Station
12/2/2000	Cape Evans
12/2/2000	Scott Base
13/2/2000	Cape Bird
14/2/2000	Terra Nova Bay

Quark Expeditions Inc, 980 Post Road, Darien, CT 06820 USA

Voyage 1

1	Name and nationality of ship	Ice Breaker Kapitan Khlebnikov, registered in the Bahamas
2	Name of Captain	
3	Itinerary	14 December 1999 – 9 January 2000 (Lyttleton to Hobart)
4	Passengers	168 (90 passengers, 19 staff, 59 crew)

5 Landings (Ross Sea region)

Date	Location
22/12/1999	Cape Adare
23/12/1999	Coulman Island
24/12/1999	Canada Glacier
24/12/1999	Terra Nova Bay
26/12/1999	Cape Evans

26/12/1999	Cape Royds
29/12/1999	Cape Hallett
1/1/2000	Sturge Island

Voyage 2

1	Name and Nationality of Ship	Ice Breaker Kapitan Khlebnikov, registered in the Bahamas
2	Name of Captain	Victor Vasilyev
3	Itinerary	9 January 2000 to 1 February 2000 (Hobart to Hobart)
4	Passengers	189 (110 passengers, 59 crew, 20 staff)
5	Landings (Ross Dependency)	

Date	Location
16/1/2000	Cape Adare
17/1/2000	Campbell Glacier
18/1/2000	Terra Nova Bay
19/1/2000	Dry Valleys
20/1/2000	Cape Evans
20/1/2000	McMurdo Station
20/1/2000	Cape Royds
20/1/2000	Scott Base
21/1/2000	Drygalski Ice Tongue
22/1/2000	Cape Hallett

ITEM XVII

Current waste disposal practices of Antarctica New Zealand in partial fulfilment of paragraph 4 of Recommendation XV-3.

Antarctica New Zealand Waste Management Policy

All wastes are to be handled and disposed of in accordance with the following Antarctica New Zealand Waste Management Policy. Practical measures for the implementation of the policy are set out in the Antarctica New Zealand Waste Management Handbook.

1 Treaty Obligations

Antarctic Treaty Recommendation XV-3 sets out agreed practices regarding waste management planning and disposal, and procedures for implementing them. Annex III to the Protocol on Environmental Protection to the Antarctic Treaty (the protocol) provides additional measures for waste management in Antarctica. These measures are legally binding under the Antarctica (Environmental Protection) Act 1994.

2 Waste Management Planning

The **Antarctica New Zealand Environmental Manager** is responsible for developing, implementing and monitoring a waste management policy. Antarctica New Zealand staff and all Antarctic personnel are to be given training in environmental and waste management procedures. At Scott Base, the **Scott Base Manager** has overall responsibility for implementation of the Waste Management Policy.

3 Prohibited Materials

The protocol prohibits some products from being sent to the Antarctic because of their possible adverse environmental impact. These are:

- poly chlorinated biphenyls (PCBs);
- non-sterile soil;
- polystyrene beads, chips or similar forms of packaging; and
- pesticides (other than those required for scientific, medical or hygiene purposes).

Antarctica New Zealand will make every effort to ensure that none of these substances are sent to Antarctica. The use of poly-vinyl chloride (PVC)

products is to be discouraged except where no practicable alternative exists. Similarly, the use of vermiculite will be limited to packaging of hazardous liquids.

4 Waste Minimisation

Antarctica New Zealand will aim to minimise the volume of waste produced in Antarctica through practical measures such as strict purchasing procedures, waste reduction and reuse.

5 Wastes Requiring Removal from the Antarctic Treaty Area

The Environmental Protocol specifically lists the following wastes as requiring removal from the Antarctic Treaty area. Antarctica New Zealand will make every effort to ensure that these wastes are returned to New Zealand.

- radioactive materials
- electrical batteries
- fuels, both liquid and solid
- wastes containing harmful levels of heavy metals or acutely toxic or harmful persistent compounds
- poly-vinyl chloride (PVC), polyurethane foam, polystyrene foam, rubber and lubricating oils, treated timbers, and other products incinerated
- all other plastic wastes, except low density polyethylene containers (such as bags for storing wastes), provided such containers shall be incinerated
- fuel drums and
- other solid, non-combustible wastes provided that the removal of drums and solid, non-combustible waste shall not result in greater advise environmental impact than leaving them in their existing locations.

6 Waste Separation

Wastes are to be separated into five categories for handling and disposal.

Waste Types	**Disposal/Reuse Path**
<u>General</u>	
• non-recyclable paper and card • uncontaminated plastic • fabric • timber • miscellaneous non-recyclable, non-hazardous items	Returned to Christchurch for disposal (timber reused where possible)
<u>Recyclables</u>	
• washed glass • metal • washed steel cans • aluminium cans • corrugated cardboard • newsprint paper • office paper	Returned to New Zealand for recycling

Hazardous	
Chemical:	Returned to New Zealand for appropriate disposal (all biohazardous waste incinerated)
• oil products	
• antifreeze	
• batteries	
• asbestos	
• aerosols	
• explosives	
• paint products	
• detergents, disinfectants and glue	
• compressed gas cylinders	
• photo chemicals	
• mercury	
• radioactive wastes	
• chemicals	
Health and Safety:	
• food waste	
• food contaminated material	
• medical waste	
• human field waste	
• sanitary waste	
• sharps	
Domestic liquids	
• human solid & liquid waste	Macerated and piped into the sea at Scott Base
• domestic liquid waste	
• final rinse photographic water	
• hydroponics water	

7 Waste Disposal

General Waste
All general waste is to be compacted and returned to New Zealand.

Recyclables
All recyclables are to be returned to New Zealand.

Hazardous Waste
All hazardous wastes are to be returned to New Zealand in appropriately labelled and sealed containment.

Domestic Liquids:
Sewage, domestic liquid waste and final rinse photographic water generated at Scott Base are to be macerated and piped into the sea.

Disposal of Field Waste
This waste management policy applies to all waste generated in the field. All solid wastes and liquid wastes generated in the field, are to be returned to Scott Base. The following wastes are the only exceptions:

i For field parties working on or adjacent to sea ice, grey water, solid human waste and urine are to be disposed of into the sea; and

ii When operating from campsites in snow or ice covered areas where transport limitations prevent the practical implementation of this policy, grey water, solid human waste and urine may be buried in snow-covered glaciers.

WASTE MANAGEMENT REPORT FOR PERIOD 1 OCTOBER 1999 TO 30 SEPTEMBER 2000

PART 1 GENERAL

Country:	New Zealand
Waste management official:	Emma Waterhouse
Job title:	Environmental Manager
Postal address:	Private Bag 4745 Christchurch New Zealand
Telephone Number:	64 3 358 0200
Facsimile number:	64 3 358 0211
Telex number:	-
Electronic mail number:	e.waterhouse@antarcticanz.govt.nz

PART 2 TRAINING OF EXPEDITION MEMBERS

1	Is training given to expedition members on waste management?	
	- prior to leaving for Antarctic	✓
	- while in Antarctica	✓
	- written material available	✓
2	Are expeditions advised of any PVC products being provided?	✓
3	Are expeditions advised that pesticides, polychlorinated biphenyls (PCBS), non-sterile soil or polystyrene beads, chips or similar forms of packaging shall not be sent to the Antarctic?	✓

PART 3 WASTE MANAGEMENT PLANS FOR EACH FIXED SITE, FIELD CAMPS GENERALLY, AND FOR EACH SHIP

1 Programmes for cleaning up existing waste disposal sites and abandoned work sites:

- Ongoing cleanup and removal of rubbish, Hut Point Peninsula, Ross Island.

- Further joint cleanup with the USAP planned for Cape Hallett (former site of Hallett Station), with a site assessment team planned for 2000/2001.

2 Current and planned waste management arrangements, including final disposal:

- Details of the Antarctica New Zealand Waste Management Policy and Procedures are given.
- All wastes are removed to New Zealand except for domestic liquid waste which is macerated and discharged into the sea off Scott Base.

3 Current and planned arrangements for analysing the environmental effects of wastes and waste management:

- E
  nd of season reports include waste management matters.
- R
  egular inspection of field stations and huts.
- M
  onitoring of waste volumes and types.
- C
  ontinuing action as part of Environmental Management System
- M
  onitoring programmes ongoing, in particular the environmental impact of Scott Base sewage outfall.

4 Other efforts to minimise any environmental effects of wastes and waste management:

- I
  nformation and training on aspects of waste management to all visitors to Scott Base including an Environmental Code of Conduct and an environmental training video.
- W
  aste Management Handbook containing detailed procedures on how to handle and dispose of waste at Scott Base, in the field, and on return to Christchurch.
- T
  rial use of a code of conduct covering activities in the McMurdo Dry Valleys (includes specific waste management provisions).

- Also see Waste Management Policy.

PART 4 INVENTORY OF PAST ACTIVITIES

Name	Position (Lat. Long.)	Extent of area (m^2)	Type of activity	Period of Occupation From	To	Average Level of Activity	Remnants & Date Last Visited	Disposal Plans & Dates
Smith Glacier, Marie Byrd Land	113°24.3'W 75°10.89'S	-	Geological investigations	Nov 1992	Dec 1992	10 persons	7x205 litre drums JP8 left at site	None planned
Polar Plateau, East Antarctica	Traverse line between 77°78.38'S-158°31.2E 77°99'S-142°28.6'E	-	Geological investigation	Dec 1993	Jan 1994	10 persons (total 540 person days)	Flags on traverse lines. 2 sledges Fuel drums	Removal by USAP planned.
Vanda Station	77°31.4'S 161°40.4'E	200m^2	Meteorological measurements and various science activities	Jan 1969	Jan 1995	4 persons	Huts (installed following station removal)	Ongoing monitoring
Hallett Station	72°19'S 170°13'E	500m^2	Meteorological measurements and various science activities	1957	Feb 1973	13 persons (New Zealand contingents only)	GMD dome and wannigans, scrap items	Joint NZ/US site assessment team planned for 00/01

Miers	78°06'S 164°00'E	30m^2	Various science activities	Nov 1983	Nov 1994	3 persons	-	No further plans
Fryxell	77°37'S 163°11'E	95m^2	Various science activities	Dec 1978	Nov 1995	3 persons	-	No further plans
Cape Roberts Project	77°02'S 163°10'E	2000m^2	Scientific drilling	Jan 1995	Jan 2000	7 persons on land 28 persons at sea ice camp	Jan 2000 Accomodation and equipment housed in shipping containers	Clean up and removal in 00/01

PART 5 INDIVIDUAL WASTE MANAGEMENT SUMMARY

Name of Fixed site/~~Field Camps in general/Vessel~~ Scott Base

(For field camps give total number of sites) .....

Position (Lat. Long) 77°51'S 166°4.5'E

Number of days occupied 365
(For vessels, give number of days in Antarctic Treaty area)

Average daily population Summer 52
Winter 10

Location Category - Coastal ice free [x]
Inland ice free [ ]
Coastal ice sheet [ ]
Inla
Ice shelf [ ]
Vessel [ ]

GROUP 1 - SEWAGE & DOMESTIC LIQUIDS

TYPE	DISPOSAL METHODS								Quantity * (Optional)	Comments
	Removed from Treaty area	Removed to station	Sea or sea ice	Ice pit	Maceration	RBC	Incineration (describe type)	Other		
Sewage			x		x					
Grey water			x		x					
Sewage treatment (eg RBC) residue										

GROUP 2 - OTHER LIQUID CHEMICALS & WASTES (INCLUDING FUELS AND LUBRICANTS)

TYPE	DISPOSAL METHODS			Quantity * (Optional)	Comments
	Removed from Treaty area	Removed to ..... Station	Other		
Photographic chemicals	x				
Other liquid chemicals	x				
Fuels	x				Contaminated used oil.
Lubricants	x				
Heavy metals and/or	x				
Harmful persistent compounds	x				
Other liquid wastes (please list)					

GROUP 3 - COMBUSTIBLE WASTES

TYPE	DISPOSAL METHODS								Quantity * (Optional)	Comments
	Removed from Treaty area	Landfill	Removed to ..... station	Sea or sea ice	Open burn	Basic Incinerator	High temp incinerator	Other		
Paper products	x									Monitored[1]
Untreated wood	x									Monitored[1]
Treated wood	x									
Food scraps	x									Monitored[1]
PVC	x									
Polyurethene & polystyrene foams	x									
Other plastics	x									Monitored[1]
Rubber	x									
Cultures of micro-organisms	x									
Other (please list)										
Note - show in "comments" column whether combustion emissions are controlled or monitored and provide details separately.										

1 Emission monitoring was carried out on the Scott Base incinerator emissions during January 1995. Measurements were made of hydrogen chloride, sulfure gases, trace metals and particulate and combustion products such as carbon dioxide, carbon monoxide and oxides of nitrogen.

GROUP 4 - OTHER SOLID WASTES

TYPE	DISPOSAL METHODS							Quantity * (Optional)	Comments
	Removed from Treaty area	Landfill	Removed to ..... station	Sea or sea ice	Ice pit	Remains on site	Other		
Glass	x								
Aluminium	x								
Other metals	x								
Batteries	x								
Non-liquid chemicals	x								
Fuel drums (empty)						x			Returned to New Zealand when no longer usable.
Incinerator residue	x								
Other solid wastes (detail)									

GROUP 5 - RADIOACTIVE WASTES

TYPE (please list isotopes)	DISPOSAL METHODS		Quantity * (Optional)	Comments
	Removed from Treaty area	Other		

PART 5 INDIVIDUAL WASTE MANAGEMENT SUMMARY

Name of Fixed site/~~Field Camps in general/Vessel~~ Cape Bird

(For field camps give total number of sites) .....

Position (Lat. Long 77°14'S 166°28'E

Number of days occupied 125
(For vessels, give number of days in Antarctic Treaty area)

Average daily population Summer 4
Winter -

Location Category -

Coastal ice free [x]
Inland ice free [ ]
Coastal ice sheet [ ]
Inla
Ice shelf [ ]
Vessel [ ]

GROUP 1 - SEWAGE & DOMESTIC LIQUIDS

TYPE	DISPOSAL METHODS								Quantity * (Optional)	Comments
	Removed from Treaty area	Removed to .....station	Sea or sea ice	Ice pit	Maceration	RBC	Incineration (describe type)	Other		
Sewage			x							
Grey water			x					x		Evaporation pit used
Sewage treatment (eg RBC) residue										

GROUP 2 - OTHER LIQUID CHEMICALS & WASTES (INCLUDING FUELS AND LUBRICANTS)

TYPE	DISPOSAL METHODS			Quantity * (Optional)	Comments
	Removed from Treaty area	Removed to Scott Base	Other		
Photographic chemicals					
Other liquid chemicals		x			
Fuels		x			
Lubricants		x			
Heavy metals and/or		x			
Harmful persistent compounds					
Other liquid wastes (please list)					

GROUP 3 - COMBUSTIBLE WASTES

TYPE	DISPOSAL METHODS								Quantity * (Optional)	Comments
	Removed from Treaty area	Landfill	Removed to Scott Base	Sea or sea ice	Open burn	Basic Incinerator	High temp incinerator	Other		
Paper products			x							
Untreated wood			x							
Treated wood			x							
Food scraps			x							
PVC			x							
Polyurethene & polystyrene foams			x							
Other plastics			x							
Rubber			x							
Cultures of micro-organisms			x							
Other (please list)										
Note - show in "comments" column whether combustion emissions are controlled or monitored and provide details separately.										

GROUP 4 - OTHER SOLID WASTES

TYPE	DISPOSAL METHODS							Quantity * (Optional)	Comments
	Removed from Treaty area	Landfill	Removed to Scott Base	Sea or sea ice	Ice pit	Remains on site	Other		
Glass			x						
Aluminium			x						
Other metals			x						
Batteries			x						
Non-liquid chemicals			x						
Fuel drums (empty)			x						
Incinerator residue									
Other solid wastes (detail)									

GROUP 5 - RADIOACTIVE WASTES

TYPE (please list isotopes)	DISPOSAL METHODS		Quantity * (Optional)	Comments
	Removed from Treaty area	Other		
Nil				

Item XVIII

Advice of activities authorised to be conducted in Specially Protected Areas, in fulfilment of Recommendation XV-9.

Environmental Authorisations have been issued for the following entries to protected areas:

Event	Holder	Protected areas	Reason
K001	J Cowie	Botany Bay SSSI 37	Recreation
K012	J MacDonald	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28 Botany Bay SSSI 37	Access for research fishing, recreation
K021	R Farrell	Cape Evans SPA 25 Cape Royds SPA 27 Hut Point SPA 28 Cape Adare SPA 29	Evaluation of deterioration of huts and study of micro-organisms
K024	T Green	Botany Bay SSSI 37 Cape Crozier SSSI 4	Study lichens and mosses
K055	G Fraser	Arrival Heights SSSI 2	Use of scientific equipment
K069	B Fraser	Arrival Heights SSSI 2	Use of scientific equipment
K085	S Wood	Arrival Heights SSSI 2	Use of scientific equipment
K087	G Brailsford	Arrival Heights SSSI 2	Use of scientific equipment
K089	A Harper	Arrival Heights SSSI 2	Use of scientific equipment
K122	P Wilson	Cape Royds SSSI 12	Weighing and blood

		Cape Crozier SSSI 2 Beaufort Island SPA 5 Cape Royds SPA 27	sampling of Adélie penguins, recreation
K211	C Robinson	Arrival Heights SSSI 2	Inspection and maintenance of communications equipment

K282	N Watson	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28	Heritage conservation work and research
K293, K393, K394	V Allan	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28 Arrival Heights SSSI 2	Art and media coverage
K302	J Tangaere	Arrival Heights SSSI 2	Maintenance
K352	A Samah	Arrival Heights SSSI 2	Use of scientific equipment
K391	N Cadenhead	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28	Education
K392	V Allan	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28 Arrival Heights SSSI 2	Official visits
K396	B Storey	Hut Point SPA 28 Arrival Heights SSSI 2	Education
K400, K401, K408, K402, K406	J Tangaere	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28 Arrival Heights SSSI 2	Maintenance, recreation and familiarisation
K407	E Waterhouse	Cape Royds SPA 27 Cape Evans SPA 25 Hut Point SPA 28 Arrival Heights SSSI 2 New College Valley SPA 20 Sabrina Island SPA 4 Cape Hallett SPA 7	Inspection and environmental assessment
K550	J Tangaere	Protected areas as necessary to support events authorised	Helicopter support

to visit those areas.

ITEM XIX

Annual list of any Initial Environmental Evaluations prepared, and procedures put in place in accordance with Articles 2(2) and 5, in fulfilment of Article 6 of Annex I to the Protocol on Environmental Protection to the Antarctic Treaty. Plus changes after the production of a Comprehensive Environmental Evaluation (CEE) (Annex 1, Articles 5 and 6).

Initial Environmental Evaluations:

New Zealand IEEs have been completed for the following activities to be conducted in 2000/2001:

- Ship-borne tourism and landings in the Ross Sea region
- Fishing (three operators)

Comprehensive Environmental Evaluations:

A final CEE for the Cape Roberts Project was completed in January 1994.

The scientific drilling at Cape Roberts is now completed and environmental monitoring and removal of facilities, in accordance with the CEE, will continue in 2000/2001.

ITEM XX

Advice of steps taken to implement the Protocol on Environmental Protection to the Antarctic Treaty, including notifications made in accordance with article 13(3) and contingency plans established in accordance with Article 15, in fulfilment of Article 17 of the protocol.

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1 A State of the Environment Report for the Ross Sea Region is underway, which aims to benchmark the state of knowledge about the region and identify threats and pressures to the region's values as well as appropriate management responses.

2 A national Environmental Strategy for the Ross Sea Region has been produced to provide a framework for New Zealand's environmental management in the region.

3 Environmental impact assessment and review procedures continue to be successfully implemented.

4 Antarctica New Zealand has developed an Environment Monitoring Programme, and a workshop was held in May 2000 to discuss progress.

5 The environmental database set up to record both historical and current information on all permits issued and the activities of New Zealand programme events, particularly those undertaken at field sites, is continuing to be improved and expanded.

6 An Environmental Management System has been developed for New Zealand's Antarctic activities, to provide for systematic identification of environmental impacts and continuous improvement of their management. The system became operational on 1 October 1999 and will undergo audits and review in 2000 and 2001.

7 Waste management continues to be improved. Incineration of waste at Scott Base ceased in December 1999 and all wastes are now removed to New Zealand with the exception of domestic liquid waste. Treatment options for Scott Base sewage are currently being investigated.

8 Fuel storage systems are being upgraded. Bulk fuel tanks have already been replaced with double skinned tanks including high level alarms and safety valves and the 'day tanks' are due to be replaced during the 2000/2001 season. The underground fuel lines are also due to be replaced with a double-skinned version this season.