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THE INTERNATIONAL COUNCIL FOR SCIENCE
SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

SCAR BULLETIN
No 155, October 2004

Twenty-seventh Antarctic Treaty Consultative Meeting
Cape Town, South Africa, 24 May–4 June 2004

Decisions, Resolutions and Measures

The texts of the Decisions and Resolutions adopted at XXVIII ATCM are reproduced here but the texts of appendices and annexes have been omitted. The text of Measure 1 (2004) is reproduced together with a summary of the Management Plan for Antarctic Specially Managed Area No. 2, McMurdo Dry Valleys, Southern Victoria Land. A summary of the Management Plan for Antarctic Specially Managed Area No. 3, Cape Denison, Commonwealth Bay, George V Land, together with Measures 2–4 (2004) will be reproduced in a later issue of the *SCAR Bulletin*. The full versions of all the Decisions, Measure and Resolutions are on the Antarctic Treaty Secretariat website at http://www.ats.org.ar/

Decision 1 (2004)

Revised Rules of Procedure

The Representatives,
Desiring to amend the Rules of Procedure for Antarctic Treaty Consultative Meetings;
Decide:
That the "Revised Rules of Procedure (2004)" attached to this decision shall replace the existing Rules of Procedure for Antarctic Treaty Consultative Meetings with immediate effect.

Revised Rules of Procedure (2004)

Representation
Officers
Secretariat
Sessions
Committees and Working Groups
Conduct of Business
Languages
Measures, Decisions, and Resolutions and Final Report
Non-Consultative Parties
Antarctic Treaty System Observers
Agenda for Consultative Meetings
Experts from International Organisations
Amendments

Decision 2 (2004)

Financial Considerations for the Secretariat of the Antarctic Treaty

The Representatives,
Recalling Measure 1 (2003) of the XXVI ATCM on the establishment of the Secretariat of the Antarctic Treaty (the Secretariat);
Recalling also Decision 2 (2003) on the provisional application of Measure 1 (2003);
Bearing in mind the Financial Regulations for the Secretariat of the Antarctic Treaty adopted by Decision 4 (2003); and
Noting Decision 3 (2004) on the appointment of the first Executive Secretary, effective on 1 September 2004;
Decide:

1. To approve the budget and work program of the Secretariat for 2004/05 annexed to this Decision;
2. To approve the expenditure of up to one quarter of the forecast budget for 2005/06, annexed to this Decision, in the 2005/06 financial year subject to the availability of sufficient funds;
3. That the Executive Secretary shall perform the role previously conferred on the Depositary Government with regard to the procedure for the payment of voluntary contributions adopted in Decision 2 (2003), paragraphs 6, 7 and 8, except that the Secretariat has established an account for its funds, and the Depositary Government shall then request the CCAMLR Secretariat to transfer all such voluntary contributions, with interest accrued thereon, to the Secretariat.

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Annex to Decision 2 (2004)

Draft Work Programme 2004/05

Introduction

Management

a. Executive staff
b. Administrative/technical staff

Specific Tasks

a. Preparation for the XXVIII ATCM and CEP VIII
b. Support intersessional work of the ATCM and the CEP
c. Facilitate exchange of information required under the Antarctic Treaty and the Protocol
d. Co-ordination and contact with other elements of, and international organizations, on matters relevant to the Antarctic Treaty system
e. Development and maintenance of databases
f. Circulation amongst the Parties relevant information and disseminate information on activities in Antarctica;
g. Collection, maintenance and publication of ATCM/CEP records
h. Facilitate the availability of information about the Antarctic Treaty system
i. Preparation of reports on the Secretariat's activities
j. Assisting the review of past Recommendations and Measures
k. Maintenance and updating of the Antarctic Treaty System "Handbook"

Attachment 1: Draft budget 2004/05 (Appropriations)
Attachment 2: Draft budget 2004/05 (Outputs)
Attachment 3: Forecast budget 2005/06
Attachment 4: Scale of contributions 2005

Decision 3 (2004)

Appointment of the Executive Secretary

The Representatives,
Recalling Article 3 of Measure 1 (2003) regarding the appointment of an Executive Secretary to head the Secretariat of the Antarctic Treaty; and
Recalling also Articles 4 and 5 of Decision 2 (2003) regarding the procedure for the selection of the Executive Secretary;
Decide:

1. To appoint Mr Johannes Huber as Executive Secretary of the Secretariat of the Antarctic Treaty for a term of four years, pursuant to the terms and conditions set forth in the letter of the Chair of the XXVII Antarctic Treaty Consultative Meeting attached to this Decision; and
2. That this appointment shall commence on 1 September 2004.

Decision 4

Guidelines for Ships Operating in Arctic and Antarctic Ice-Covered Waters

The Representatives:
Noting the provisions of Article 10 of Annex IV to the Environmental Protocol relating to the design, construction, manning and equipment of ships engaged in or supporting Antarctic operations;
Conscious of the increasing levels of shipping, including tourist vessels, operating in the waters of the Antarctic Treaty Area;
Desiring to ensure the safety of life at sea and the protection of the environment in the Antarctic Treaty Area;
Noting the intersessional efforts of COMNAP to produce these Guidelines;
Noting the Guidelines should be interpreted as providing recommendations, rather than mandatory directions;
Noting the IMO Guidelines for ships operating in Arctic ice-covered waters and desiring that the IMO amend those Guidelines to apply them specifically to ships in ice-covered waters in the Antarctic Treaty Area.
Decide to:

- endorse the Guidelines annexed to this Decision;
- transmit the Guidelines through the Chair of ATCM XXVII to the Secretary General of the IMO with a request for them to be considered by the IMO at the earliest opportunity;
- urge their national representatives to take action at the IMO to secure the consideration of the Guidelines at the earliest opportunity.

Guidelines for Ships operating in Arctic and Antarctic Ice-covered Waters

Preamble

Guide

Chapter 1 General

Part A - Construction Provisions

Chapter 2 Structures
Chapter 3 Subdivision and stability
Chapter 4 Accommodation and escape measures
Chapter 5 Directional control systems
Chapter 6 Anchoring and towing arrangements

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Chapter 7 Main machinery
Chapter 8 Auxiliary machinery systems
Chapter 9 Electrical installations

Part B - Equipment

Chapter 10 Fire safety
Chapter 11 Life-saving appliances and survival arrangements
Chapter 12 Navigational equipment

Part C - Operational

Chapter 13 Operational guidelines
Chapter 14 Crewing
Chapter 15 Emergency equipment

Part D - Environmental Protection and Damage Control

Chapter 16 Environmental protection and damage control

Resolution 1 (2004)

Enhancing Prevention of Marine Pollution by Fishing Activities

The Representatives,

Aware of the need to enhance the conservations and preservation of the Antarctic environment as stated in the Protocol for Environmental Protection to the Antarctic Treaty;

Taking into account the existing marine activities within the Antarctic Treaty area, including fishing activities

Aware the Annex IV of the Madrid Protocol includes provisions to be applied to the activities of vessels, including fishing vessels, in relation to the prevention of marine pollutions;

Noting the actions undertaken by other organizations such as CCAMLR in line with Article 10 of Annex IV of the Madrid Protocol, on Prevention of Marine Pollution;

Supporting the prevention of marine pollution by fishing activities;

Highly support:

The progress achieved by CCAMLR/XXII urging its Members, which are harvesting in high Antarctic latitudes, to license only those fishing vessels with at least an ice classification standard of ICE-1C.

Resolution 2 (2004)

Guidelines for the Operation of Aircraft near Concentrations of Birds in Antarctica

The Representatives,

Recalling Article 3 of the Environmental Protocol which requires that activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment;

Recalling also the requirements of Annex II of the Environmental Protocol on the Conservation of Antarctic Fauna and Flora;

Aware of the potential for harmful disturbance to concentrations of birds in Antarctica by the operation of aircraft;

Noting that specific standards for aircraft operations may be contained in Antarctic Specially Protected Area (ASPA) and Antarctic Specially Managed Area (ASMA) management plans;

Recognizing that some Parties may already have in place more stringent guidelines for the operation of aircraft near wildlife;

Aware that the scientific data on the impact of aircraft operations on wildlife will continue to improve and that guidance on minimum standards should remain under review;

Conscious of the need for minimum guidance on the operation of aircraft near concentrations of birds in order to minimize the impacts of such activities;

Recommend that:

The Guidelines for the Operation of Aircraft Near Concentrations of Birds in Antarctica appended to this Resolution be used by those engaged in the operation of aircraft in the Antarctic.

Parties should be encouraged to adopt higher standards for the operation of aircraft near concentrations of birds to suit their particular needs and circumstances.

Guidelines for the Operation of Aircraft near Concentrations of Birds in Antarctica

1. Introduction

Fixed-wing aircraft and helicopter operations are now integral to most national Antarctic research programmes, as well as being used by a small number of commercial tourist and air transport companies. The potential for harmful disturbance to concentrations of birds makes it important to provide pilots with guidelines that would prevent or minimize damaging impacts during overflights. Unfortunately, there is a lack of definitive scientific data on which to base firm guidelines for pilots. Moreover, most of the available research relates to penguins and different species of birds are likely to react in different ways or to different degrees to over-flights.

2. Background

The United Kingdom introduced Working Paper ATCM XXV / WP-26 at ATCM XXV in Warsaw (2002) to bring

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the issue to the attention of Treaty Parties and to propose a particular set of guidelines. The CEP invited COMNAP, in consultation with SCAR, to review the guidelines, and to report back to the CEP. The present paper presents our conclusions and a recommended set of guidelines. Pending further scientific evidence, these guidelines are considered to constitute a reasonable basis for voluntary implementation. They are based on the practical experience of researchers, including input from SCAR, and on experience derived from the national operators' provision of logistics support to researchers. These guidelines are designed to help aircraft operations in Antarctica to be undertaken safely with the minimal environmental impact.

COMNAP recommends that aircraft operations in Antarctica should be planned and carried out in accordance with these guidelines to the maximum extent practicable.

3. Guidelines

Minimum Distances for Aircraft Operations Close to Concentrations of Birds

There are many variables in noise levels received on the ground during aircraft operations. Determining factors on noise levels include flight height, the type of aircraft and engine, the flight profile, the weather and the location. Pilots will need to make their own judgements based on the aircraft type, task and operational safety considerations.

Unless otherwise specified, for example by an ASPA management plan or ASMA guidelines, recommended distances are set out below. It is recognized however that whilst these represent preferred distances, which should be adhered to the extent possible, operators may already have developed guidelines to suit their own particular needs and circumstances.

- Penguin, albatross and other bird colonies are not to be overflown below 2000 ft (~610 m) Above Ground Level, except when operationally necessary.
- Landings within_nautical mile (~930 m) of penguin, albatross or other bird colonies should be avoided wherever possible.
- Never hover or make repeated passes over wildlife concentrations or fly lower than necessary.
- Maintain a vertical separation distance of 2000 ft (~610 m) AGL and a horizontal separation of 1/4 nautical mile (~460 m) from the coastline where possible.
- Cross coasts at right angles and above 2000 ft (~610 m) AGL where possible.

Location of aircraft operations (other considerations)

- Be aware that concentrations of birds are most often found in coastal areas.
- Be aware that when operating aircraft in inland areas, snow and Antarctic petrel colonies are frequently found on nunataks. Minimum over-flight distance should be maintained in such areas.
- Where practical, landings near to concentrations of birds should be downwind and/or behind a prominent physical barrier (e.g. hill) to minimize disturbance.
- Avoid Antarctic Specially Protected Areas, unless authorized to over-fly and/or land by a permit issued by an appropriate national authority. For many ASPAs there are specific controls on aircraft operations, which are set out in the relevant Management Plans.
- Follow aircraft flight heights, preferred flight paths and approach paths contained in the Antarctic Flight Information Manual (AFIM), in station aircraft operation manuals and on relevant charts and maps. Once the guidelines have been adopted, COMNAP envisages the preparation of Wild Life and Low Flying Avoidance Maps for the major airstrips in the Antarctic (e.g. Marsh, Marambio, Rothera, McMurdo).
- Particularly avoid flying toward concentrations of birds immediately after take-off and avoid steep banking turns in flight as these significantly increase the amount of noise generated.

Timing of aircraft operations

- Most native bird species breed at coastal locations in Antarctica between October and April each season. During the planning of aircraft operations near to concentrations of birds, consideration should be given to undertaking flying activities outside of the main breeding and/or moulting periods.
- Where aircraft operations are necessary close to concentrations of birds, then the duration of flights should be the minimum necessary.
- To minimize bird strikes, especially in coastal areas, avoid flying after dark between October and April. At this time of year, prions and petrels are active. These birds are nocturnal when breeding and are attracted by lights.

Aircraft operations should be delayed or cancelled if weather conditions (e.g. cloud base, winds) are such that the suggested minimum vertical and horizontal separation distances given in these guidelines cannot be maintained.

Resolution 3 (2004)

Tourism and Non-Governmental Activities: Enhanced Co-operation amongst Parties

The Representatives,

Concerned about the increasing trend in Antarctic tourism and the need to ensure more rigorous monitoring and control of such activities;

Desiring to ensure that all such activities undertaken in Antarctica are strictly in accordance with the Antarctic

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Treaty and its Environmental Protocol;

Aware that some individuals may circumvent national legislation by seeking approval for their activities from more than one national authority;

Noting that the consultations described below would be without prejudice to any Party's implementation of its own national legislation.

Recommend that:

1. All Parties nominate to the Secretariat a single contact point for information about tourism and non-Governmental activities in Antarctica;
2. Parties exchange information about such activities as and when they are notified, particularly where there are potential implications for other Parties;
3. Where Parties are notified, or become aware, of an activity involving a vessel or aircraft flagged or registered with another Treaty Party; or where the organizers are nationals of another Treaty Party, that they consult those relevant Parties as appropriate during the process of evaluating such activities and, where applicable, prior to any decision to authorize the activity or permit to proceed.

Resolution 4 (2004)

Guidelines on Contingency Planning, Insurance and Other Matters for Tourist and Other Non-Governmental Activities in the Antarctic Treaty Area

The Representatives,

Concerned at the potential impacts, including the imposition of additional costs, that tourist or other non-governmental activities may have on national programmes, and the risks to the safety of those involved in search and rescue operations;

Desiring to ensure that tourist or other non-governmental activities undertaken in Antarctica are carried out in a safe and self-sufficient manner;

Desiring further to ensure that the risks associated with tourist or other non-governmental activities are fully identified in advance, and minimized;

Recalling the "Procedures to be Followed by Organizers and Operators", as set out in the Attachment to Recommendation XVIII-1;

Noting Measure 4 (2004) on "Insurance and Contingency Planning for Tourism and Non-governmental Activities in the Antarctic Treaty Area", and desiring to take certain steps before it enters into effect to promote its objectives in addition to recommending further guidelines to be followed by those organizing or conducting activities without the supervision or support in the field of another operator or a national programme;

Recommend:

That Parties should require those under their jurisdiction organizing or conducting tourist or other non-governmental activities in the Antarctic Treaty Area, for which advance notification is required in accordance with Article VII (5) of the Antarctic Treaty, to follow the Guidelines annexed to this Resolution.

Guidelines on Contingency Planning, Insurance and Other Matters for Tourist and Other Non-Governmental Activities in the Antarctic Treaty Area

Those organising or conducting tourist or other non-governmental activities in the Antarctic Treaty area should ensure:

1. that appropriate contingency plans and sufficient arrangements for health and safety, search and rescue (SAR), and medical care and evacuation have been drawn-up and are in place prior to the start of the activity. Such plans and arrangements should not be reliant on support from other operators or national programmes without their express written agreement; and
2. that adequate insurance or other arrangements are in place to cover any costs associated with search and rescue and medical care and evacuation.

And the following guidelines should also be observed in particular by those organising conducting activities without the supervision or support in the field of another operator or a national programme:

3. that participants have sufficient and demonstrable experience appropriate for the proposed activity operating in polar, or equivalent, environments. Such experience may include survival training in cold or remote areas, flying, sailing or operating other vehicles in conditions and over distances similar to those being proposed in the activity;
4. that all equipment, including clothing, communication, navigational, emergency and logistic equipment is in sound working order, with sufficient backup spares and suitable for effective operation under Antarctic conditions;
5. that all participants are proficient in the use of such equipment;
6. that all participants are medically, physically and psychologically fit to undertake the activity in Antarctica;
7. that adequate first-aid equipment is available during the activity and that at least one participant is proficient in advanced first-aid.

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Resolution 5 (2004)

Establishment of an Intersessional Contact Group to Improve Exchange of Information

The Representatives,

Recalling Article III (1) and Article VII (5) of the Antarctic Treaty and the obligation for the Parties to exchange information;

Conscious of the various obligations under the Protocol on Environmental Protection to the Antarctic Treaty and its Annexes to submit information and annual reports;

Conscious also of Resolution 6 (2001) and other commitments that the parties have made with respect to keeping each other informed by the regular or occasional exchanges;

Desiring to ensure that the exchange of information between the Parties is conducted in the most efficient way and that the best use is made of this information in furthering the principles of the Antarctic Treaty;

Recommend that:

1. an intersessional contact group be established, consisting of interested Parties with the assistance of the Antarctic Treaty Secretariat, with the following terms of reference:
   a) to examine how the process for the exchange of information may be improved to make this process more efficient, in particular to identify better ways to collate, analyze and circulate the information; and
   b) to prepare a report on its findings, together with recommendations, for a decision on the matter by ATCM XXVIII.

Measure 1 (2004)

Antarctic Protected Area System: Management Plans for Antarctic Specially Managed Areas

The Representatives,

Recalling Article 4 of Annex V of the Protocol on Environmental Protection to the Antarctic Treaty, providing for the designation of Antarctic Specially Managed Areas;

Noting that the draft Management Plans appended to this Measure have been endorsed by the Committee for Environmental Protection;

Recognizing that these Areas support significant scientific, wilderness, ecological, heritage and aesthetic values and would benefit from improved coordination between Parties active there;

Recommend to their Governments the following Measure for approval in accordance with paragraph 1 of Article 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty:

That the Management Plans for:

- Antarctic Specially Managed Area No. 2, McMurdo Dry Valleys, Southern Victoria Land; and
- Antarctic Specially Managed Area No. 3, Cape Denison, Commonwealth Bay, George V Land,

which are annexed to this Measure, be adopted.

Management Plan for Antarctic Specially Managed Area No. 2: McMurdo Dry Valleys, Southern Victoria Land McMurdo Dry Valleys

1. Description of values to be protected and activities to be managed

The McMurdo Dry Valleys are characterized as the largest relatively ice-free region in Antarctica with approximately 30% of the ground surface largely free of snow and ice. The region encompasses a cold desert ecosystem, whose climate is not only cold and extremely arid (in the Wright Valley the mean annual temperature is $-19.8^{\circ}C$ and annual precipitation is less than 100 mm water equivalent), but also windy. The landscape contains glaciers, mountain ranges, ice-covered lakes, melt-water streams, arid patterned soils and permafrost, sand dunes, and interconnected watershed systems that influence the McMurdo Sound marine ecosystem. The Area contains records of past climate and is important to the study of climate change. The extreme climate of the region serves as an important analogue for the conditions of ancient Earth and contemporary Mars.

The Area is characterized by unique ecosystems of low biodiversity and reduced food web complexity but, as the largest ice-free region in Antarctica, the Area also contains relatively diverse habitats compared with other ice-free areas. The Area contains unusual microhabitats and biological communities (such as endolithic and Cryoconite systems) as well as special geological features and minerals (for example, salt deposits and desert pavements). Some of these special geological features contain an extremely long record of natural events. The long-term data sets for environmental observations that have been collected in this region are some of the longest in Antarctica.

These scientific values are of global importance because they form a valuable resource for understanding landscape processes and ice sheet stability. The Area contains unique deposits that record planetary change. The soil, rock, water, and ice environments and their associated biota are of scientific value as model ecosystems. Finally, the species that reside in the Area provide a biological resource for understanding adaptation to extreme environments, and are true end members of ecological continua.

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The Area is also valued for its wilderness quality, representing a nearly pristine environment. The dramatic landscape creates unique vistas of high aesthetic value.

Activities conducted in the area include a variety of scientific research, science support operations, media, arts, education, and tourism. A Long Term Ecological Research site has been established in Taylor Valley.

2. Aims and objectives

The Area requires special management to ensure that its scientific, wilderness, ecological, and aesthetic values are protected from increasing human activity and potentially conflicting interests.

The specific objectives of management are to:

- Facilitate scientific research while maintaining stewardship of the environment;
- Assist the planning and coordination of human activities to manage conflicts among different values, activities and operators.
- Ensure long-term protection of ecosystem integrity and special features through minimization of cumulative environmental impacts of human activities;
- Minimize possible introductions of alien plants, animals and microbes;
- Promote transportation modes with the least environmental impact;
- Minimize the use of fossil fuels;
- Minimize the footprint of facilities and scientific experiments, including proliferation of field camps.

3. Management activities

- National Programmes should establish a McMurdo Dry Valleys Management Group to oversee coordination of activities in the ASMA.
- National Programmes shall promote the dissemination of information.
- Ensure personnel have been briefed, particularly on the Environmental Code of Conduct.
- Copies of the management plan shall be kept in stations and huts and be available to all persons.
- Tourism and any other non-governmental activities should be coordinated with National Programmes.
- Visits to evaluate the Management Plan.

Note that guidelines for the conduct of specific activities and for specific zones within the Area are found in Appendices B, C, D, and E (also see section 7 of this Management Plan).

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

The following maps are included in the plan:

Map A: Map of the McMurdo Dry Valleys Area

Maps B–N: (not reproduced here).

6. Description of the Area

The McMurdo Dry Valleys are located in southern Victoria Land along the western coast of McMurdo Sound, southern Ross Sea, at approximately 77°S, 162°E. An area of approximately 15,000 km^2 is designated as an Antarctic Specially Managed Area (hereafter referred to as the "Area") to manage human activities in the valleys, for the protection of scientific, wilderness, ecological, and aesthetic values.

6(i) Geographical coordinates, boundary markers, and natural features

The boundaries are defined on the basis of the hydrological catchments in the McMurdo Dry Valleys, including all of the ice-free ground and adjacent areas within these catchments, all of the Convoy Range, and the catchment of the Alph River. Boundary markers are not installed.

All geographic coordinates in this Management Plan are given in decimal degrees format.

6(ii) Restricted and managed zones within the Area

There are three types of managed zones within the Area: Facilities Zones, a Tourism Zone, and Special Features.

6(ii)(a) Facilities Zones

Facilities Zones have been established to contain temporary and semi-permanent facilities within pre-defined areas.

The following management activities should be undertaken for Facilities Zones:

- Alternative energy sources and energy efficiency should be considered in the planning and maintenance of activities within the Facilities Zones;
- Waste management should be considered in the planning and maintenance of activities within the Facilities Zone;
- Facilities Zones should be periodically assessed for usefulness, improvement or removal;
- As appropriate, contingency plans for emergencies should be developed to take into account the special needs of specific Facilities Zones;
- Facilities Zones should not be located on or in close proximity to Special Features.

6(ii)(b) Tourism Zone

The Tourism Zone is located in an area of high aesthetic value in the Taylor Valley, where safe and easy access and movement within the area can be reasonably assured with minimal impact to science activities or the environment.

6(ii)(c) Special Features

Special Features are designated areas which are of particularly high scientific value and which are particularly sensitive to human disturbance.

6(iii) Structures within and near the Area

The main structures in the Area are located within the Wright and Taylor valleys, at Marble Point, at Cape Roberts, and at Odell Glacier.

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6(iv) Location of other protected areas within the Area

There are four existing ASPAs within the Area. A permit is required for entry into these protected areas. They are:

ASPA 123, Barwick and BalhamValleys
ASPA 131, Canada Glacier
ASPA 138, Linnaeus Terrace
ASPA 154, Botany Bay

7. Code of Conduct

The Code of Conduct in this section is the main instrument for the management of activities.

7(i) Access to and movement within the Area

Access is normally by helicopter from Ross Island, or over sea ice via New Harbour or Marble Point. Designated helicopter pads should be used for helicopter landings. Overflight restrictions are in place over ASPA 123, ASPA 131 and ASPA 154.

All pedestrian access and movement should minimize disturbance to the soil and vegetated surfaces. The use of vehicles should be restricted to lake ice, or at Marble Point, New Harbor, and Cape Roberts.

7(ii) Activities that may be conducted in the Area

These include scientific research; operations in support of science; media, arts, education; management activities; and tourism visits within the Tourism Zone.

All activities should be conducted to minimize environmental impacts. Alternative energy sources should be used to minimize fossil fuel usage.

Tour operators should provide visit schedules to National Programmes. Tourism movements should avoid stream crossings and should be confined to the Tourism Zone.

7(iii) Installation, modification, or removal of structures

Care should be exercised when locating and establishing installations to minimise their environmental impact.

7(iv) Field camps

Field camps are small temporary camps for research and are generally remote from Facilities Zones. Care should be exercised to minimise the impact of campsites.

7(v) Taking or harmful interference with native flora or fauna

This is prohibited, except in accordance with a permit issued under Article 3 of Annex II of the Protocol on Environmental Protection.

7(vi) Collection or removal of material found in the Area

Material not covered by 7(v) above should only be collected or removed for scientific and associated educational purposes or essential management purposes and should be limited to the minimum necessary for those needs. Any meteorites taken are to be collected and curated according to accepted scientific standards and to be made available for scientific purposes. Material of human origin likely to compromise the values of the Area may be removed unless the impact of removal is likely to be greater than leaving the material in place. In this case the appropriate authority should be notified.

7(vii) Waste management

All materials taken into the Area should be collected and removed to the maximum extent practicable. In accordance with Article 4, Annex III of the Protocol on Environmental Protection, wastes shall not be disposed of onto ice-free areas, into fresh water systems or onto snow or ice which terminate in such areas or have high ablation.

7(viii) Requirements for reports

Reports of activities in the Area should be maintained by the Management Group and made available to all parties.

Tour operators should record their visits, including the number of visitors, dates, and incidents, and submit these data to the Management Coordination Group.

8. Provisions for the exchange of information in advance of proposed activities

In addition to the normal exchange of information, Parties operating in the Area should exchange information through the Management Coordination Group.

9. Supporting documentation

Publications and Management Plans

Management Plans for ASPAs 123, 131, 138, and 154.

Appendix A:

Environmental Code of Conduct for the McMurdo Dry Valleys

The McMurdo Dry Valleys ecosystem contains geological and biological features that date back thousands to millions of years. Many of these ancient features could be easily and irreversibly damaged by human actions. Unusual communities of microscopic life forms, low biodiversity, simple food webs with limited trophic competition, severe temperature stress, aridity and nutrient limitations are other characteristics that make the McMurdo Dry Valleys unique. This ancient desert landscape and its biological communities have very little natural ability to recover from disturbance. Research in such systems must aim to minimize impacts on land, water and ice to protect them for future generations.

Materials:

- Everything taken into the Area should be removed.
- Activities that could result in the dispersal of foreign materials should be avoided.

Waste and spill incidents:

- Water used for ANY human purpose should be

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removed and/or treated in a greywater evaporator (and residuals removed).
- All human waste should be collected and removed.
- Individuals or groups should always carry proper containers for human waste and gray water.
- Spill incidents should be reported to the appropriate National Program.
- The location of any spill should be recorded in the field report.

Energy:

- Solar and wind power should be used as much as possible.

Travel operations:

- Ground vehicle usage should be restricted to ice surfaces, or at Marble Point, Cape Roberts, and New Harbour.
- Designated helicopter pads should be used for helicopter landings.
- Markers that are clearly visible from the air should be used to mark helicopter pads.
- Helicopter operations should not use smoke bombs, except for essential safety purposes.
- Care should be taken to ensure that helicopter sling loads are properly secured.
- Fuel release is to be avoided.
- When travelling on foot, stay on established trails.
- Avoid walking on vegetated areas.
- Cairns should not be built in the Area.
- Be aware of Special Features and their guidelines.

Safety

- Individuals or groups should bring sufficient equipment into the Area to ensure safety.

Field camps: location and set up

- Campsites should be located as far away as practical from lakeshores, streambeds, Special Features, and long-term experiments
- If rocks are moved, they should be replaced in their footprint, with the salt-encrusted side face-down.
- Campsites should be re-used wherever possible.
- Field camp locations should be recorded in the field report.
- Ensure that equipment and supplies are properly secured.

Fuel and chemicals

- Steps should be taken to prevent the accidental release of chemicals including laboratory reagents and isotopes (stable or radioactive).
- When using chemicals or fuels, ensure that appropriate spill kits are available.
- Chemical and fuel containers should be securely positioned and capped.
- All fuel drums should be provided with some form of secondary containment.
- Fuel cans with spouts should be used when refueling generators. Generators and vehicles should be refuelled over drip trays with absorbent spill pads.
- Vehicle oil should be changed only over a drip tray.
- Any accidental releases of fuel should be cleaned up to the greatest extent possible and documented in activity reports.

Lakes:

- Explosives should not be used on a lake.
- Vehicles should be used on lake ice only when essential.
- Ensure that nothing is left frozen into the lake ice that may ablate out and cause later contamination.
- Avoid swimming or diving in the lakes, except when approved for scientific purposes.

Streams:

- Stream crossings should be avoided; when necessary, designated crossing points should be used.
- Avoid walking in the stream bed to avoid disturbing the stream biota.
- Avoid walking near stream sides to prevent erosion.

Valley floor and sides:

- Avoid disturbing mummified seals or penguins.
- Avoid disturbing long-term soil experiments.
- Avoid disturbing the raised delta surfaces which mark ancient shorelines.

High Desert:

- Beware not to damage delicate rock formations.

Appendix B:

Additional Guidelines for Conduct of Scientific Research

Research activities in the McMurdo Dry Valleys include research on climate, glaciers, streams, lakes, soils, local geology and geomorphology. The following prevention and mitigation guidelines for scientific conduct seek to reduce the impact of research activities specific to key environments. These guidelines are from: *McMurdo Dry Valley Lakes: Impacts of Research Activities* (Wharton, R A & Doran, P T, 1998), the report of an international workshop of scientists conducting research in the Area.

Sampling and experimental sites

- All sampling equipment should be clean before being brought into the Area.
- The location of sampling sites should be recorded in the group's field report.
- Do not displace or collect specimens except for scientific and educational purposes.
- Once a sampling hole has been drilled in lake ice or a soil pit has been dug, it should be kept clean and all sampling equipment should be securely tethered.
- Avoid leaving markers and other equipment for more than one season.

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Scientific installations

For scientific installations, including meteorological stations, geographic monuments, communication repeaters, lake monitoring systems, and level recorders:

- Installations should be sited carefully, should be easily retrievable, and properly secured.
- All installations in the Area should be clearly identified by country, name of the principal investigator and year of installation.
- Installations should be as energy-efficient as possible and use renewable energy sources.
- Installations should pose minimal risk of harmful emissions to the environment.
- Locations of installations should be recorded.
- Materials liable to shatter at low temperatures should be avoided. Wooden and fabric components in semi-permanent structures should be avoided.

Streams

- Use flumes rather than weirs.
- Use local sand or soil in sandbags when constructing flumes or control structures.
- Document the location of all stream control structures, biological transects, and instrumentation.
- Periodically evaluate in-stream structures for deterioration, usefulness, and potential removal.
- Limit the number of tracer and manipulative experiments.
- Use only natural tracers and document tracer use.
- Design tracer experiments to limit the movement of tracers in lakes.
- Establish specific sites for biomass sampling and document locations, sampling extent, and frequency.
- Limit biomass sample size to that required for the planned analyses and archiving.
- Develop and apply methods (e.g., spectral analysis) that do not rely on removal of samples for quantifying changes in biomass in streams.

Lakes

- Minimize the duration and extent to which structures are placed on the ice.
- Minimize the use of fossil-fuel-powered equipment; use barriers between equipment and ice; always have appropriate spill kits available.
- Document the area and the extent to which lake ice has been excavated. Areas that have been used for sampling or accessing the lake should be reused to the greatest extent possible.
- Minimize the use of motorized vehicles.
- Use extreme caution when driving vehicles.
- Remove materials from beneath the ice. Do not deposit water and sediment samples on the lake ice.
- Reduce helicopter over-flights after ice surfaces begin to melt and keep landings on lakes to a minimum.
- Avoid storage of materials on the lake ice surface.
- Use separate samplers and instruments for each lake to avoid cross contamination. Samplers or instruments should be thoroughly cleaned (sterilized if possible) prior to re-use in a different lake.
- Carefully manage chemical waste, glycol, and all liquid wastes to avoid spills.
- Consider laboratory-based alternatives to in situ experiments involving any radioisotope, stable isotope, or other tracer. Complete preliminary calculations to ascertain the potential impact of isotope experiments. Document and record any introductions.
- Incorporate metal-free haul lines and sampling containers such as "go-flow" bottles into sampling protocols to minimize metal contamination of the lakes.
- Promote use of an environmentally friendly substitute for glycol for use in melting access holes.
- Minimize the amount of gray water waste by collecting the least volume of water and sediment needed for research purposes.
- Train individuals working on the lake ice to take steps to reduce the loss of equipment through ice holes.
- Provide adequate training for divers and support teams so impacts to the lake environment are minimized.
- Prior to conducting diving or ROV operations, consider previous diving history at the proposed research site, proximity of other areas of interest, vulnerability of the water column and benthos to disturbance.
- Assemble and maintain records of diving and ROV activities.
- Use technological developments that mitigate the environmental impacts of diving.

Soils

- Restore disturbed surfaces as close as possible to their natural state upon completion of the work. For excavations $>1\ m^2$, take photographs prior to breaking ground as a basis for restoration. Place excavated soil on mats or groundsheets during soil sampling.
- Backfill all excavations to approximate original contour and replace desert pavement where possible. The desert pavement can be skimmed from the surface prior to digging and kept aside for replacement.
- Document the location of all soil sampling sites.
- Conduct thorough environmental assessment of proposed exogenous amendment experiments.
- Limit use of mechanical equipment.

Glaciers

- Minimize the use of liquid water.
- Avoid the use of chemicals on the ice.
- If stakes or other markers are placed on a glacier, use the minimum number necessary and label them.
- Provide spill kits on-site where power tools are being used; refuel using drip pans.
- Properly tune generators to minimize emissions and use only when necessary. Always place generators and fuel cans in drip pans.
- Use electric chainsaws powered by a four-stroke

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generator for large-scale sawing operations. Avoid using chainsaw blade lubricants when cutting cold ice.
- Upon completion of a research project, remove all materials – wood, metal, and sensors – embedded in the ice to minimize contamination.
- Use gel cell or other non-spill batteries.

High Desert:

- Only the minimum sample of endolithic community required should be collected.

Appendix C:

Guidelines for Facilities Zones

Facilities Zones include a designated area around the following facilities operated by national programs in the Area: Lake Vanda Huts, Lower Wright Camp, Bull Pass Hut, Cape Roberts Camp, New Harbour Camp, F-6 Camp, Lake Fryxell Camp, Lake Hoare Camp, Lake Bonney Camp, Marble Point Refuelling Station, Odell Glacier Camp and Odell Landing Site, and the radio repeater stations at Mt. Newall.

Guidelines for activities in the Facilities Zones include:

- Facilities, camping, helicopter pads, and storage of materials should be located within the boundaries of the Facilities Zones;
- Existing camping and storage sites within the Facilities Zones should be re-used;
- Provisions for fuel storage and handling within the sites should take account of the requirements set out in the McMurdo Dry Valleys ASMA Management Plan; and
- All wastes should be securely stored until removal.

Appendix D:

Guidelines for the Tourism Zone

Special guidelines for activities within the Tourism Zone in Taylor Valley by Canada Glacier include:

- Tourist movements should be conducted in small, guided groups;
- Tour operators should ensure that footpaths are clearly marked and that visitors stay on those routes. Markers should be removed at the end of each visit;
- Tour expedition landings should be made at a landing site at 77.6358°S, 163.0656°E;
- Tents should only be established at the designated site except for safety reasons;
- Stream and pond beds should be avoided; and
- Activities planned and conducted in the Zone should accord with ATCM Recommendation XVIII-1.

Appendix E:

Guidelines for Special Features

The following guidelines apply to the Special Features listed in this Appendix.

- Minimize sampling and research activities at or around Special Features.
- All sampling, including type and quantity, should be recorded in group field reports and provided to the appropriate national programme.
- Helicopters should land at least 50 m away from each Special Feature.

Special Features, including a geographic location, description, and special guidelines:

1. Prospect Mesa (77.5237°S, 161.8896°E)

Prospect Mesa contains unique marine deposits.

- Avoid walking on top of the mesa unless conducting research activities.

2. Argo Gully (77.5197°S, 161.6901°E)

This stream section across from Vanda Station is a unique middle-Miocene marine deposit.

- Avoid walking along the surface edge above the Gully.

3. Boulder Pavement (77.5227°S, 161.7466°E)

Boulder Pavement is on the Onyx River and contains the most extensive area of microbial mat in the Wright Valley and serves as a biofilter for Lake Vanda.

- Avoid crossing the Boulder Pavement unless necessary for sampling purposes.
- While sampling, walk only on the rocks and avoid trampling the microbial mats.

4. Battleship Promontory (76.8996°S, 161.0055°E)

A sandstone promontory containing rich cryptoendolithic communities.

- Avoid damage to these ancient communities and rocks.

5. Don Juan Pond (77.5630°S, 161.1896°E)

A hypersaline ecosystem containing unique salt deposits.

- Avoid walking through the lake and adjacent salt deposits.
- Do not disturb salt deposits to avoid further deterioration.

6. Trough Lake Catchment (78.2736°S, 163.4652°E)

A pristine example of a complete hydrological unit (streams, ponds, lakes).

- Minimize visits to this catchment that has not been highly visited and is therefore useful as a reference site with its relatively pristine landscape.

7. Sand Dune Field (77.3715°S, 162.2205°E), (in Lower Victoria Valley)

The largest sand dune feature in the Area.

- Avoid walking on the dunes.

8. Explorers Cove (77.5770°S, 163.5169°E)

A tidally inundated sand flat characterized by tide pools containing unique benthic mats of diatoms and cynobacteria.

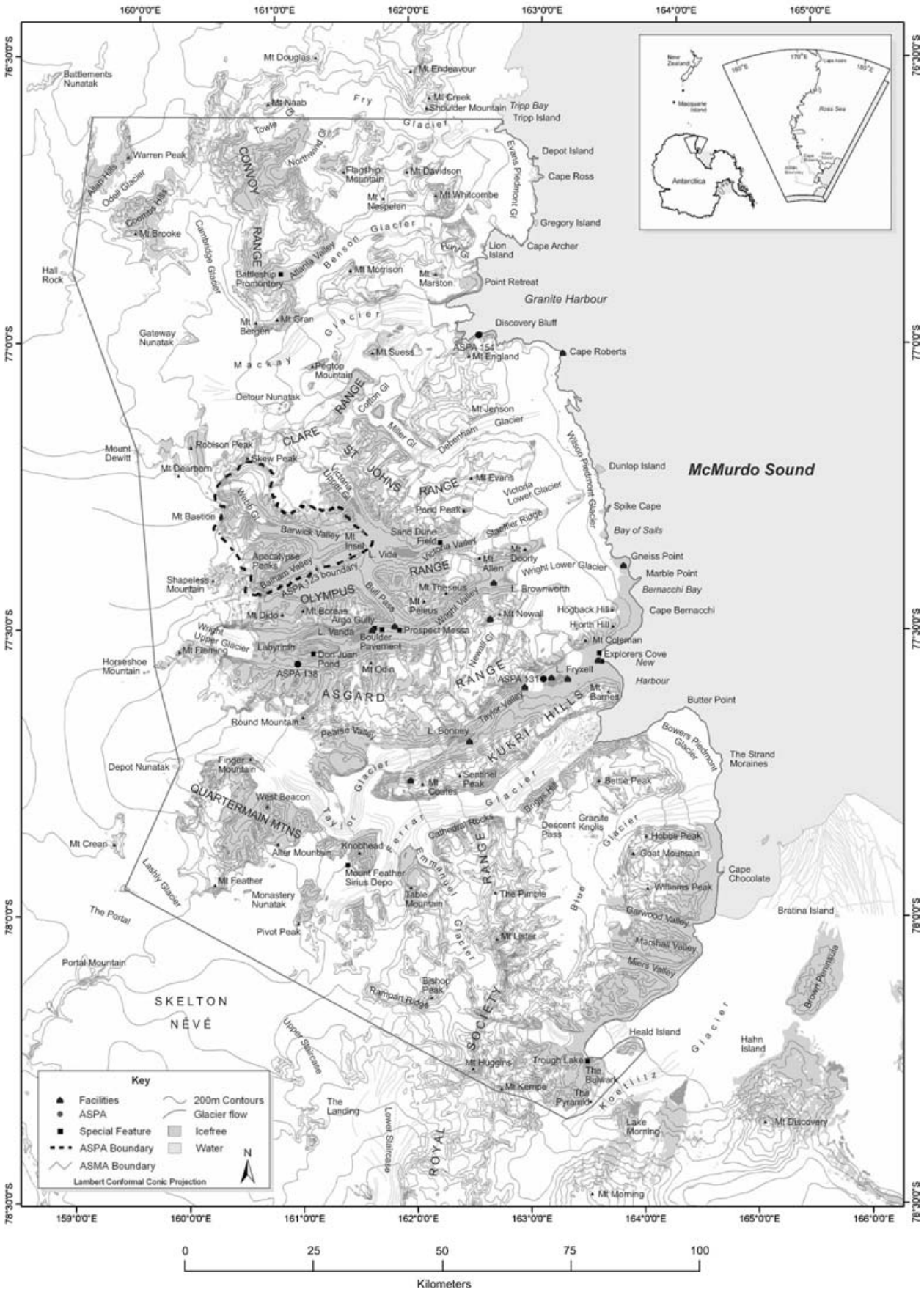
- Avoid walking in areas of scientific sampling and in tide pools after they thaw in mid-November.

9. Mount Feather Sirius Deposit (77.9320°S, 161.4367°E)

An important location of Sirius deposits.

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Map A: Map of the McMurdo Dry Valleys Area



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