

VII. Scientific Equipment

Section VII lists the principal scientific equipment available at McMurdo, South Pole, and Palmer stations and onboard USAP research vessels.

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Astrophysics Aeronomy						
Analyzer, Logic		X				
Antenna, VLF Loop		X	X			
Camera, All-Sky		X				
Centrifuge, Refrigerated 12K RPM Micro				X	X	
Chart Recorder, Eight Channel		X				
Cryogen, Transfer Equipment	X	X	X	X	X	
Cryogen Transfer Lines	X	X				
Data Acquisition Unit (DAU)						X
Data Control Unit (DCU)						X
Dewar, Liquid Helium	X	X				
Dewar, Liquid Helium Storage	X	X				
Dewar, Liquid Nitrogen Storage	X	X				
Heating Unit, Air		X				
Interferometer		X				
Ionosonde, Digital		X				
Leak Detection and Vacuum Pump Equipment		X				
Lidar	X	X				
Line Connector, 1.2 KVA		X				
Liquid Nitrogen Plant	X	X				

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Magnetometer, Three Component Air Core Induction		X				
Magnetometer, Three Axis Fluxgate	X					
Neutron Monitor, Super Multisection	X	X				
Nitrogen Liquifier	X	X				
Oscilloscope	X	X	X	X	X	
Photometer, Auroral		X				
Power Conditioner		X		X	X	
Pump, Turbomolecular	X	X				
Radiotelescope, Microwave		X				
Receiving System, VLF			X			
Riometers, 30 & 50 MHz	X	X				
Scintillator Array, 16-element		X				
Sky Monitor, Mid Infrared		X				
Sky Monitor, Near Infrared		X				
Signal Generator		X				
Spectral Analyzer		X				
Spectrometer, X-ray (high altitude, long-duration)		X				
Spectrometer, Infrared		X				
Spectroradiometer, Ultraviolet	X	X	X			
Tape Transport, Dual Density		X				
Tape Drive, Giga Tape 5 Mb		X				
Telescope, 12" (Optical)		X				
Telescope, Gamma Ray		X				
Telescope, Microwave		X				
Telescope, Mid-Infrared		X				
Telescope, NCAR Infrared		X				

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Telescope, Optical		X				
Telescope, Submillimeter		X				
Telescopes, Astronomical		X				
Thermal Electric Generator (TEG)					X	
Time Domain Reflectometer (TDR)		X				
Transport, Liquid Helium (leased)		X				
Transport, Liquid Nitrogen	X	X				
Uninterrupted Power Supply (UPS)	X	X	X			
Water Chiller		X				
Biology						
Aquaria	X		X	X	X	
Analyzer, Carbon/Nitrogen/Sulfur	X					
Analyzer, Infrared, Carbon Dioxide	X					
Analyzer, Infrared, Hydrocarbon	X					
Analyzer, Lactate	X					
Analyzer, Total Organic Carbon	X					
Autoanalyzer			X	X	X	
Autoclave	X	X	X	X	X	
Balance, Electronic	X	X	X	X	X	
Bath, Hybridization	X					
Bath, Water	X	X	X	X	X	
Bath, Water, Circulating	X		X	X	X	
Bath, Water, Shaking	X		X		X	
Calorimeter			X		X	
Camera, Digital Still	X	X	X	X	X	
Camera, Solid State, for Microscopic Image Analysis	X		X	X	X	
Camera, Still, Underwater	X					X

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Camera, Video, for Microscopy	X				X	
Camera, Video, Underwater, w/time lapse capability and remote viewing	X		X			
Cell Disrupter	X		X			
Cell Injector, Micro	X					
Centrifuge, Clinical	X		X	X	X	
Centrifuge, 20K RPM	X		X			
Centrifuge, Refrigerated Speed Vac	X		X		X	
Chart Recorder, Single Channel	X		X			
Chart Recorder, Dual Channel	X		X			
Chart Recorder, Three Channel	X		X			
Chiller, Aquarium	X		X			
Chromatography Equipment	X		X			
Chromatography, High Performance Liquid System (HPLC)	X		X			
Chromatography, Gas, System	X					
Chromatography, Ion, System	X					
Collector, Fraction	X		X			
Colorimeter	X		X			
Compressor, Air, Scuba Tank	X		X	X	X	
Cooler, Immersion	X		X	X	X	
Counter, Gamma	X					
Counter, Geiger Muller	X		X	X	X	
Counter, Particle	X		X			
Counter, Scintillation, DPM Output	X		X	X	X	
Counter, Liquid Scintillation			X	X	X	X
Cryostat	X					
Data Acquisition System	X		X	X	X	
Datalogger	X		X	X	X	

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Deck Unit/Transducer	X			X	X	
Detector, Column Absorbance	X					
Dewar, Liquid Nitrogen Storage	X		X	X	X	
Dive Propulsion Systems	X					
Dry Ice Maker	X		X	X		
Dry Shippers, Liquid Nitrogen	X		X	X	X	
Electrocardiograph	X	X	X			
Electrophoresis Equipment	X		X			
Electroporator	X					
Environmental Room, Temp. Controlled	X		X	X	X	
Evaporator, Rotary	X		X			
Filtration Apparatus, Water	X		X	X	X	
Filtration Apparatus, Membrane	X		X			
Fluorometer	X		X	X	X	
Fluorometer, DNA	X					
Freeze Dryer	X		X			
Freezer, to -20°C	X	X	X	X	X	
Freezer, to -70°C	X		X	X	X	
Freezer, Walk-in	X				X	
Furnace, Graphite	X					
Furnace, Muffle	X		X	X	X	
Gas Partitioner	X					
Hematology Equipment	X	X	X			
Hi-Vacuum System	X					
Homogenizer	X		X	X		
Hood, Fume	X		X	X	X	
Hood, Portable Fume Absorber			X	X	X	
Ice Maker			X	X		
Incubator,Hybridization	X					

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Incubator, Low Temperature	X		X	X	X	
Incubator, Percival				X		
Laboratory, Portable (for sea ice)	X			X		
Laminar Flow Bench	X		X		X	
Light Pipette	X					
Lipid Analysis System	X					
Luminometer			X			
Melter, Ice Hole	X				X	
Meter, Microoxygen	X					
Meter, Oxygen	X		X			
Meter, pH	X	X	X	X	X	
Microbalance	X		X			
Microcentrifuge	X		X	X	X	
Microscope, Compound, Epifluorescence	X		X	X	X	
Microscope, Compound (for light/dark field microscopy)	X	X	X	X	X	
Evap Microscope, Cold Stage	X					
Microscope, Differential Interference Contrast (DIC)	X		X		X	
Microscope, Dissecting (for light/dark field microscopy)	X	X	X	X	X	
Microscope, Compound (for phase contrast microscopy)	X		X			
Microscope, Image Analysis System	X		X			
Microscope, Inverted, Epifluorescence	X		X			
Microplate Reader	X					
Microtome	X					
Microtome, Cryostat	X					
Oscillograph, Recording, Thermal, 8 Channel	X					
Oscilloscope	X	X	X	X	X	

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Osmometer, Vapor Pressure	X		X			
Oven	X	X	X	X	X	
Oxygen-Analyzing System	X		X		X	
Photometer, Integrating (for ATP)	X					
Photometer, Flame	X					
Photosynthesis System	X					
Phototransilluminator	X		X			
Processor, Tissue	X		X			
Projector, Digital	X		X			
Pump, Suction		X	X	X	X	
Pump, Vacuum	X		X	X	X	
Pyranometer	X			X	X	
Pyrgeometer	X			X	X	
Receiver, ATS	X		X			
Receiver, VHF Radio	X		X	X	X	
Recorders, EPC Analog				X	X	
Refrigerator, Explosion Proof	X		X	X	X	
Respirometer, Gilson	X		X			
Scale, Platform, Sled Mountable	X					
Sensor, Irradiance (for dry use)	X		X	X	X	
Sensor, Irradiance (for submersible use)	X		X	X	X	
Sequencing System	X					
Spectrophotometer, Atomic Absorption	X					
Spectrophotofluorometer	X		X	X	X	
Spectrophotometer	X		X	X	X	
Spectrophotometer, Diode Array	X					
Spectroradiometer	X		X	X	X	
Stage, Cooling, Microscope	X		X			
Thermocycler	X		X			

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Thermocycler, PCR	X		X			
Thermometer, Digital	X		X	X	X	
Transponder Reader	X					
Ultracentrifuge	X		X		X	
Ultrafiltration Unit	X		X	X		
UV Sensor, Portable	X					
VCR, High Resolution	X					
Vibration-free table	X		X	X	X	
Video System, Underwater	X		X	X	X	
Voltage Clamp	X					
Water Purification System	X	X	X	X	X	
Workstation, PICO Tag	X					
Computers						
<u>MacIntosh:</u>						
Computer, G3	X					
Computer, iMac	X					
Computer, Desktop, LC		X				
Computer, Desktop, IICI	X		X		X	
Computer, Desktop, Pentium		X				
Computer, Portable, Powerbook 170	X		X			
Computer, Power 604 Clone	X			X	X	
Computer, Powerbook 5300c	X		X	X		
Computer, Quadra, 700	X					
Computer, Quadra 950	X	X				
Computer, Classic		X				
Macintosh Power PC 63					X	
Macintosh, Duo Power PC, Portable				X		
Macintosh Power PC 7100	X	X			X	

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Macintosh Power PC 7200	X		X			
Macintosh Power PC 7300				X		
Macintosh Power PC 8150						
Macintosh Power PC 8600				X		
Macintosh Power PC 9500					X	
<u>Mini:</u>						
DEC Microvax	X	X	X			
DEC PDP-II	X	X				
DEC PDP II-73		X				
<u>PC:</u>						
Computer, Desktop, XT	X	X	X			
Computer, Desktop, 286	X	X	X	X		
Computer, Desktop, 386	X	X	X	X	X	
Computer, Desktop, 486	X	X	X	X	X	
Computer, Desktop, Pentium	X		X	X	X	
Computer, Portable, 286	X					
Computer, Portable, 386	X		X		X	
Computer, Portable, 486	X		X	X	X	
Computer, Portable, 586	X					
Computer, Server, 486	X	X	X			
Computer, Server, 586	X			X	X	
<u>Workstation:</u>						
HP 9000			X			
SGI 02					X	
SGI Challenge L (Multibeam computers)					X	
SGI Indigo R3000						
SGI Iris	X				X	
SPARC IPX	X	X				
Sun SPARC 10	X					

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Sun U450	X					
Sun Ultra1	X					
Sun Ultra2	X					
Sun SPARC 2	X	X	X		X	
SGI Indy				X	X	
<u>Printers</u>						
Dot Matrix	X	X	X	X	X	
Dye Sublimation, Color	X				X	
Ink Jet, Color	X		X	X	X	
Laser	X	X	X	X	X	
Miscellaneous						
CDRom - R	X		X	X	X	
CD Writer	X		X			
Computer Interface						
Magneto-optical Drive	X				X	X
Digitizer	X					
Plotter, Ink Jet, Monochrome	X			X	X	
Plotter, Pen, Color	X	X	X		X	
Zip Drive	X	X	X	X	X	
Environmental Monitoring						
Acoustic Release	X			X	X	
Aethelometer		X				
Analyzer, CO	X				X	
Analyzer, NOx	X					
Analyzer, Pesticide/PUF	X					
Analyzer, SO ₂	X					
Calibration System, Multigas	X				X	

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG</u> ¹	<u>NBP</u> ²	<u>AGO</u> ³
Concentrator, Turbo-Vap II	X					
Current Meter	X			X	X	
Deck unit/Transducer	X			X	X	
Sampler, Air, Hi-Vol.	X					
Water Quality Logging System	X					
Water Quality System	X		X			
Geology/Geophysics						
Ball Mill	X					
Chronology Clock				X	X	
Data Translation D/A Converters				X	X	
Diamond Drill and Associated Equipment	X					
Echo Sounder, Knudsen, Sub-bottom Profiler				X		
Echo Sounder, Bathy 2000 "chirp" sub-bottom profiler					X	
Echo Sounder, Simrad EK500					X	
Gravimeter, Portable					X	
Gravimeter, Sea Fixed					X	
Heliocoder	X					
Jack Hammer	X					
Jumbo Piston Corer					X	
Kasten Corer				X	X	
Microscope, Electronic Stage w/point counter	X					
Microscope, Polarizing with Camera	X					
Microscopes, Petrographic	X	X	X	X	X	
Petrographic Scope					X	
Recorders, EPC Analog				X	X	
Rock Saws	X			X		
Rock Polisher, Automatic	X			X		

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Seismic, Benthos, Single Channel					X	
Seismic, G/I air-guns (210 cu in)					X	
Seismic, G/I water-gun (25 cu in)					X	
Seismic, ITI multi-channel streamer (48 channel, 25m group interval)					X	
Seismic, ITI single channel streamer					X	
Survey System, GPS	X	X	X			
Swath bathymetric mapping system					X	
Thin-Section Machine	X			X		
Time Standard		X	X		X	
X-ray Instrument, Diffraction	X					
Geomagnetism						
Antennas, Dipole		X				
Gradiometer, Magnetic--towed					X	
Magnetometer, Portable	X	X				
Magnetometer, Quartz, Horizontal		X				
Magnetometer, Standard Induction		X				
Magnetometer, Towed					X	
Magnetograph, Three-component, Standard, Low Sensitivity		X				
Magnetograph, Three-component, Rapid Run, Low Sensitivity		X				
Magnetometer, Visible Recording		X	X			
Time Standard		X		X	X	
Glaciology						
Drill, Jiffy w/ Power Head	X		X		X	
Drill, Shallow (100 meters)	X					
Drill, Ice Coring, Intermediate (500-1000m)	X					

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Generator, Shear Wave	X					
Geoceivers	X	X				
Ice Auger, SIPRE	X	X	X			
Rigsby Stage	X					

Meteorology						
Barometers	X	X	X	X	X	
Data Loggers	X	X	X	X	X	
Detectors, Aerosol and CN (balloon-borne)		X				
Laser Ceilometer		X				
Precipitation Gauges	X		X			
Pressure Indicators		X	X			
Pyrgeometers	X					
Pyranometer	X		X		X	
Radiotheodolite System, Automatic		X				
Receiver, High Resolution Picture	X		X			
Transmission (HRPT)						
Recorder, Four-Channel		X				
Satellite Receiving Data Manipulation System	X		X			
Set of Pyranometers, Tyrhelometers and Net Radiometers		X		X	X	
Temperature Probe Aspirators, Qualimetrics/Weather Measure		X				
Temperature Probes, RTD-Platinum	X	X	X			
Temperature Thermometers	X	X	X	X	X	
Transmitters, PTT	X					
Weather Station	X		X			
Weather Stations, Automatic	X	X	X			
Weather System				X	X	

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Wind System and Recorder with Transmitter	X		X	X	X	
Wind Anemometers	X	X	X	X	X	
Wind Indicators	X	X	X	X	X	
Wind Translators		X		X	X	

Oceanography/Limnology						
A-Frame				X	X	
Acoustic Doppler Current Profiler				X	X	
Acoustic Release with Surface Command Unit	X		X	X	X	
Nutrient Analyzer	X		X	X	X	
Bottom Imaging System, Multibeam					X	
Conductivity Temperature Depth Instrument (CTD)	X		X	X	X	
Current Meter, Electromagnetic	X					
Data Acquisition System	X			X	X	
Deep Sea Coring System				X	X	
Depth Finder	X		X	X	X	
Echo Sounder, Biosonics Acoustic Profiler			X			
Go-Flo Bottles	X		X	X	X	
Gradiometer, Magnetic					X	
Hood Laminar Flow, Portable			X		X	
Hydraulic Boom				X	X	
Hydrodavit				X	X	
Inflatable Boat, Zodiac			X	X	X	
Isotope Van				X	X	
Jumbo Depth Finder						
Laboratory Van				X	X	
Launcher, XBT				X	X	

	<u>McMurdo</u>	<u>SPole</u>	<u>Palmer</u>	<u>LMG¹</u>	<u>NBP²</u>	<u>AGO³</u>
Lhe Vapor Recovery System		X				
Magnetometers	X				X	
Messenger	X		X	X	X	
Metering Sheave	X		X	X	X	
Niskin Bottle	X		X	X	X	
PDR System, 3.5 and 12 KHz				X	X	
Plankton Net	X		X	X	X	
Pressure Transducer	X			X	X	
Radar				X	X	
Rosette				X	X	
Salinometer	X		X	X	X	
SAT P-Code GPS				X	X	
SAT VAV/GPS				X	X	
Satellite Navigation				X	X	
Seismic Systems, Single and Multi-channel					X	
Sonar, Side Scan				X	X	
Trawl Gear				X	X	
Winch, Deep Sea Trawl				X	X	
Winch, Hydrographic				X	X	
Winch, Portable, Electric	X		X	X	X	
Winch, Portable, Gasoline	X		X			
Winch, Portable Hand			X			
Seismology						
Gravimeters, Earth Tide						
Gravimeter		X				
Gravimeter, Lacoste & Romberg (Marine)					X	
IRIS System		X	X			
Receiver, GPS	X	X	X	X	X	

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Seismograph	X	X	X			
Other						
Cryogen Vaporizer	X					
Data Link, Satellite	X	X	X	X	X	
Drill Press	X	X	X	X	X	
Frequency Counter	X				X	X
Global Positioning System	X	X	X	X	X	
Handheld Global Positioning System	X	X	X			
Lathe	X	X	X	X	X	
LOX Transport	X					
Maritime Fixed Station (INMARSAT)	X		X	X	X	
Meter, Multi	X	X	X	X	X	
Meter, RCL	X				X	
Mill		X				
Milling Machine, Vertical		X				
Nitrogen Generator	X					
Projector, Video	X			X	X	
Resistors and Capacitors, Decade	X			X	X	
Scanner	X	X			X	
Tracking System, Satellite	X	X	X			
Transceivers, Satellite, ATS-3	X	X	X	X		
Un-interruptable power supply (UPS)	X	X	X	X	X	
Video Camcorder	X	X	X		X	X

1 = R/V LAURENCE M. GOULD

2 = R/V NATHANIEL B. PALMER

3 = AUTOMATED GEOPHYSICAL OBSERVATORY