
South Pole Users' Committee

Eighth Annual Meeting

25-26 June, 2001

Englewood, Colorado

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Distribution List

Committee and Affiliated Members

J. Carlstrom	R. Morse	R. Schnell
G. Hernandez	G. Novak	A. Stark (Chair)
A. Karle	R. Pernic	A. Weatherwax
R. Loewenstein	J. Peterson	
J. McConnell	J. Ruhl	

National Science Foundation

S. Borg	G. Gutheridge	D. Peacock
D. Bresnahan	B. Lettau	P. Penhale
F. Brier	H. Mahar	J. Rand
E. Chiang	J. Marty	P. Smith
K. Erb	A. Metcalf	B. Stone
D. Fisher	J. Palais	A. Sutherland

Raytheon Polar Services Company

T. Aldridge	S. Dunbar	B. McAfee
D. Atwood	B. Grant	N. Powell
T. Barfield	E. Jensen	P. Sullivan
A. Brown	M. Lewis	C. Walker

Executive Summary

The eighth meeting of the South Pole Users' Committee took place on 25-26 June 2001, at the Raytheon Polar Services Headquarters in Englewood, Colorado. NSF Representatives in Arlington joined the meeting via a video-teleconference (VTC) connection.

During the two-day meeting, the Committee, affiliated members, and guests reviewed past accomplishments and challenges, and discussed plans for the upcoming season. The Committee's primary concerns involved communications capabilities, cryogenics support, and population management during the continued SPSM construction.

CARA's presence at the Pole has been extended for one year with no additional funds. The Committee discussed several options for continuing world-class aeronomy and astrophysics in a post-CARA environment. Several valuable suggestions were provided for NSF consideration.

Other primary topics of discussion included the USAP Private Computer Network, satellite communications capabilities, and a Science Transition Plan from current lab space to the new elevated station and the Dark Sector Laboratory. If the construction schedule becomes delayed by another season of weather-related logistical shortfalls, the schedule for the Science Transition Plan will change as well. As always, flexibility and continued communication will be the keys to our success.

The Committee's recommendations follow. Other observations, questions, and Action Items are included in the Meeting Minutes or the appended documentation.

The Committee would like to thank Dr. Mark Dragovan for his service and welcome his replacement, Dr. Jeffrey Peterson.

Meeting Agenda

DAY ONE: 25 JUNE 2001

7:00 – 7:30	CONTINENTAL BREAKFAST	
7:30 – 8:45	Opening	
	Welcome and introduction of attendees (15 min)	Stark, E. Jensen
	Overview of meeting agenda (15 min)	Stark, E. Jensen
	NSF welcome and informational remarks (30 min)	Erb, Chiang
	RPSC welcome and informational remarks (15 min)	Atwood
8:45 – 10:00	Progress Since Last Meeting and Committee Business	
	Review and assessment of last year's action items and recommendations (30 min)	Stark, E. Jensen
	Review and approval of membership (15 min)	Stark, E. Jensen
	EMI Working Group Status Report (15 min)	Weatherwax
	SPSM Working Group Status Report (15 min)	Morse
	BREAK (15 min)	
10:15 – 12:00	IT and Communications	
	USAP Private Network	Abel
	IP migration (30 min)	
	Future email policies (15 min)	
	Security (15 min)	
	Wireless LAN (15 min)	Abel
	Iridium Access (15 min)	Abel
	GOES/MARISAT update (15 min)	Powell
	BREAK FOR LUNCH (1 hr)	
1:00 – 3:00	SPSE/SM Project review	
	FY02 Population (10 min)	Brown
	Construction – FY02 and FY03 (20 min)	Marty
	Electronic Systems (60 min)	
	High Frequency Radio	Rushing
	Meteorological System	Rushing

Satellite communication systems	Konen
Land Mobile radio	Konen
Operations Center	Konen
Science Occupancy Plan (30 min)	
Elevated Station B2 and space planning process	Stone
Skylab Transition Plan	E. Jensen

DAY TWO: 26 JUNE 2001

7:30 – 8:00 CONTINENTAL BREAKFAST

8:00 – 10:00 SPECIAL TOPICS

Health and Safety (30 min)	K. Jensen
Cryogenic Support (60 min)	
FY01 LHe and LN2 plans	Alcorta
Cryogen Facility design update	Rand
Dark Sector Laboratory (DSL) update (30 min)	
Configuration	Rand
Construction schedule	Marty

BREAK (15 min)

10:15 – 12:00 SPECIAL TOPICS (continued)

South Pole Power Planning (15 min)	Rand
ESP Project status and resource planning (15 min)	Copley
Science Support and LC-130 Plan (15 min)	Stone
South Pole field support for remote camps (15 min)	Dunbar
South Pole weather observing changes (15 min)	Powell
South Pole User's Manual update (15 min)	E. Jensen
PQ process: dental standards for foreign participants (15 min)	Morse

BREAK FOR LUNCH (1 hr)

1:00 – 4:00 SOUTH POLE USERS' COMMITTEE EXECUTIVE SESSION

Closed Session for SPUC Members – Discussion of Meeting Issues

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Recommendations of the South Pole User's Committee 2001

This memorandum summarizes the recommendations of the South Pole User's Committee (SPUC) for 2001. The topics on which these recommendations are based were discussed at the annual meeting on 25 and 26 June 2001; the minutes for that meeting are available as a separate document from Raytheon Polar Services (RPSC). The present memorandum was begun in executive session at that meeting and refined by committee members through email correspondence; it will be distributed in both email and paper form.

(1) Internet Security at South Pole

The RPSC plan for consolidation and reorganization of internet communications to the Pole is a laudable realization of past committee recommendations that packet filtering be implemented for all TCP/IP communications to the Pole. This plan allows RPSC to assert essentially complete control over internet communications to the Pole. Scientists working at South Pole are concerned that this control could be implemented in a way which is detrimental to scientific activity. In the past, science computers at the Pole have had unimpeded internet connectivity, and science groups have relied on this capability in the design of their systems. Some machines---those used for access to the World-Wide-Web using internet browsers---must still have full internet access for solicited incoming packets. This includes the use of "anonymous ftp" connections to remote machines. The World Wide Web has become an indispensable tool for accessing scientific and engineering information, and it is essential that this use not be disrupted for security reasons. Other machines---those used for real-time data acquisition and control---are best protected by severely restricting incoming packets by source and type. The policies for packet filtering and port blocking on science computers should be determined in consultation with each science group. RPSC might suggest a standard, default setting for communications to and from science machines, and the RPSC system should implement the security policies requested by each science group in a timely manner. The internet infrastructure must be capable of supporting a heterogeneous mix of machines and protocols. In particular, Appletalk must be supported. DHCP connections should be supported for science machines. Permanent IP addresses should also be supported for machines needing them, such as real-time data acquisition computers.

Two internet protocols requiring special security treatment are "telnet" and "ftp", because use of these protocols can involve the transmission of clear-text (non-

encrypted) passwords over the internet, where they are subject to interception and abuse. The use of "telnet" and "ftp" server applications at the South Pole should be phased out, in favor of their "ssh" (secure shell) replacements, and RPSC should implement this policy by packet filtering. On most computer systems, secure shell ("ssh") protocols can be used to replace all "ftp" and "telnet" applications. Secure shell encrypts all critical internet communications, and provides facilities for enhanced user and computer identity authentication using public key cryptography and certificates. There are, unfortunately, computer systems critical to some science projects which use "telnet" and "ftp" and cannot be readily upgraded to use "ssh". In order to facilitate the phaseout of "telnet" at the pole, the committee recommends that RPSC make available accounts for grantees on South Pole machines which can be accessed with "ssh". Grantees can then login to those RPSC South Pole machines using "ssh" and then use "telnet" or "ftp" to access their project machines. This restricts the transmission of clear-text passwords to the local South Pole network, and will allow shutting off of all "telnet"-protocol and "ftp"-server packets between the Pole and the outside world.

The committee recommends that RPSC implement public-key and certificate server machines at the Pole, and make them available to grantees as an optional service. This will encourage the use of public-key authentication protocols among South Pole computers. The use of this resource should be voluntary.

(2) Qualification of new computers

RPSC should develop and publish on the RPSC website a definitive set of requirements for allowing network access to grantee computers. Demonstration of working virus protection software is a reasonable and prudent requirement. Placing restrictions on science machines in the form of the required presence or absence of particular software is, however, an impediment to scientific productivity. In order to conduct scientific research at the Pole, scientists must be able to bring their own machines to Pole, connect those machines to the network in a timely manner, maintain administrative (root) control of those machines, and run programs of their own devising under any operating system. Any attempt to protect the network from hypothetical attack through inspection of the disk contents of science computers is ineffective against all but the most incompetent guilty. It can safely be assumed that grantee scientists will not deliberately damage the computer network. The committee notes that implementation of public key and certificate servers at the Pole, as recommended above, will facilitate the authentication of new computers and computer users.

(3) Full-time, high-priority email

Many science projects would benefit from the ability to exchange short email messages with Pole at any time of the day, even when the satellites which

normally carry internet traffic are not available. This is especially important for experiments which monitor transient events such as earthquakes and supernovae, but most experiments would benefit from reduced delay times for email correspondence. The committee recommends that RPSC implement this capability using the "Iridium" satellite network, and suggests that a priority mechanism be put in place so that the occasional top priority message is guaranteed a delivery delay of no more than one second.

(4) The need for TDRS-3

The current suite of communications satellites, TDRS-1, MARISAT-2, and GOES-3, are capable of fulfilling the current science communications needs of South Pole Station. TDRS-1, however, is in fragile operating condition, and may become unavailable at any time. The loss of TDRS-1 would be a significant detriment to South Pole science. Furthermore, it is likely that science communications needs over the next decade will expand to 20 Gigabytes per day, more than twice the current capacity. The committee therefore strongly supports and endorses initiatives to obtain additional satellite communications capacity. The most promising potential addition is TDRS-3, with a capacity of over 40 Gigabytes per day.

(5) Wireless Internet at Pole

Wireless communications, especially wireless internet, are becoming inexpensive, reliable, and easy to use. These systems have great potential utility for many science experiments at the Pole. It must be remembered, however, that the South Pole is one of the world's preeminent radio observatories for astronomy and ionospheric research, and that all radio transmissions are therefore a potential threat to science which is not easy to assess or ameliorate. The committee suggests that wireless internet be restricted to summer-only scientific use. Wireless internet is useful mostly in the summer, when station activity expands to temporary, remote work areas. Many critical radio observations are made in the winter. During the winter, radio silence should be enforced, consistent with health and safety, and wireless internet should be shut down.

(6) Overland traverse of cargo from McMurdo

The committee supports development of a capability for overland traverse of cargo from McMurdo station by tractor train. Overland traverses would greatly expand the potential scope of scientific activity at the Pole and would have no negative effects on any current South Pole science.

(7) Liquid Helium transport to experiments

Recent improvements to Liquid Helium storage facilities have dramatically improved the dependability of the station's Liquid Helium supply. The new cryogenics facility being developed as part of SPSM will further reduce single points of failure. The committee recommends that RPSC now consider the problem of delivery of Liquid Helium from the storage facility to the experiments which use it. It is important that delivery of Liquid Helium to the experiments be possible almost all the time during the winter. Otherwise, it is likely that experiments will shut down during the best and coldest weather conditions for lack of a method to transport Liquid Helium from the storage facility to the experiments.

(8) South Pole Science Support during South Pole Station Modernization (SPSM) and South Pole Safety and Environmental modifications (SPSE)

Science support during the construction of the new South Pole Station has been a primary concern of the committee. The scientific community appreciates the efforts made by RPSC and NSF to continue science support during SPSM. Science cargo has done an excellent job in both speed and reliability. The summer population limits continue to be tight and have resulted in the cancellation or postponement of some science activities.

Respectfully submitted for the committee,

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South Pole Users' Committee Meeting Minutes

Opening

Welcome and Introduction of Attendees

Mr. Eivind Jensen, RPSC South Pole Science Support Manager, welcomed the group to the eighth annual meeting of the South Pole Users' Committee. The use of a video-teleconference connection between the Denver group and NSF headquarters in Arlington made it possible for several guests and presenters to attend the meeting, prompting the question "has the SPUC meeting gotten too big?"

The group discussed the purpose of the SPUC meeting and agreed that it is a chance to review and consider the Committee's activities, as well as an opportunity for the Science Community to respond to and critique the Contractor.

Overview of Meeting Agenda

Dr. Antony Stark, SPUC Chair, opened the meeting by providing an overview of the meeting agenda. Committee members raised concerns about the South Pole Station Modernization (SPSM) construction project and its impact on science. Mr. Jerry Marty, NSF Facilities Construction Operations & Maintenance Manager, reported that SPSM construction is currently on schedule, but the project is "short" one million pounds of cargo. There are several possibilities for regaining lost ground for logistical requirements, but all are weather-dependant.

NSF Welcome and Introductory Remarks

The NSF Introductory Remarks continued to outline some possibilities for getting SPSM back on schedule. A new snow-compacted runway at the Pegasus airstrip in McMurdo would provide a landing site for wheeled aircraft during the

entire austral summer, freeing the ski-equipped LC-130s for an estimated 40-60 additional flights to South Pole.

Mr. Erick Chiang, NSF Section Head, Polar Research Support Section, reported that next year's budget for the NSF Office of Polar Programs (OPP) will probably be unchanged from FY01. NSF has therefore requested a flat budget plan from RPSC because any changes won't be disclosed until late September.

Dr. Stark inquired about the importance of completing SPSM on time. Mr. Chiang responded that every year SPSM is delayed costs \$2.5 million. This impacts how funds are managed to support construction projects, and the funds have to come from Congress.

Dr. Joe McConnell, University of Arizona, asked about use of the Basler aircraft. Mr. Brian Stone, NSF Research Support Manager, reported that last season's testing of the Basler aircraft was successful, and NSF is evaluating possibilities for alternative airframes, but a long-term collaboration would require funds that are not currently available.

RPSC Welcome and Informational Remarks

Dr. Donald Atwood, RPSC Director of Science Support, reviewed changes that took place during the previous year, including improvements made to the ticketing and physical qualification (PQ) process and the creation of a Deployment Specialists Group (DSG). Dr. Atwood commended the teamwork that had been required to manage the previous season's cryogenics crisis, and he reported that a year-long Cryogenics Technician position has been hired at Pole beginning in FY02. In addition, Paul Sullivan has been promoted to a new full-time position dedicated to South Pole science support.

Dr. Atwood announced that restructuring the Science Support Division has been a tremendous success. Two new science support branches have been created: a planning branch to manage the Electronic Support Plan (ESP) and a Technical Services Branch for management of cryogenics support, AGO projects, and CTBT projects.

Progress since Last Meeting and Committee Business

Review and Assessment of Last Year's Action Items and Recommendations

Dr. Stark summarized the issues from last year. The Users' primary concern during SPSM construction has been the RPSC's ability to manage population and support science. Improvements are appreciated (the transition to New Power Plant went smoothly, the Wessington dewars will improve the liquid helium supply at South Pole, MARISAT is a "giant step forward") but the Science Community requires more flexibility with population planning and improved communications systems.

Members of the committee expressed an interest in being involved in IT planning and suggested that issues relating to ESP and medical qualifications should be web-based.

Dr. Dennis Peacock, NSF Section Head, Antarctic Sciences Section, asked whether or not the AASTO (Automated Astrophysical Site Testing Observatory) should be moved this season. Possibilities were discussed, and a decision will be made after subsequent meetings.

Dr. Peacock also asked how astronomy will operate at Pole once CARA "goes away." Will there exist another "umbrella" organization, or will each project be represented individually? At what level will RPSC be able to support post-CARA experiments? Several alternatives were discussed, and Dr. Stark suggested the solution might lie within NSF Astronomy Division.

Dr. Stark reminded the group that CARA personnel often provide station support for the station machine shop and computer network, so RPSC will have to plan future support in these areas.

Action: Dr. Peacock asked the CARA come to a consensus and supply recommendations to Dr. John Carlstrom, CARA Project Director. Dr. Carlstrom and Dr. Peacock will approach NSF regarding these issues.

Review and Approval of Membership

Mr. Jensen distributed the revised SPUC Charter. Dr. Stark emphasized that there should be a three-year rotating membership with no more than seven members.

Members attending the June 25-26 meeting included the following people:

Dr. Gonzalo Hernandez, AO-110-S

Dr. Albrecht Karle, AA-130-O

Dr. Robert Loewenstein, AC-370-O

Dr. Joe McConnell, OO-324-O

Mr. Robert Pernic, AC-370-O

Dr. Jeffrey Peterson (replaced Mark Dragovan), AC-375-O

Dr. Russ Schnell, OO-257-O

Dr. Alan Weatherwax, AO-111-S

Absent members included the following people:

Dr. John Ruhl (AC-378-O)

Dr. Giles Novak (AC-376-O)

Dr. Stark suggested that an effort should be made to recruit new members for the committee. Because there will be no CARA members next year, this would be the ideal time for the group to determine functionality and foster a membership that represents a wider spectrum of science projects.

EMI Working Group Status Report

Dr. Allan Weatherwax, University of Maryland at College Park, presented the status of the EMI (Electro-magnetic Interference) Working Group.

Action: RPSC will provide information to SPAWAR for a master on-site Frequency List and Spectrum Management Plan.

Dr. Stark reminded the group that, from a radio astronomy standpoint, an EMI plan is inherently flawed since radio telescopes are sensitive to all frequencies. Mr. Stone suggested the addition of a set of guidelines to the project proposal

process, which would alert NSF of potential EMI concerns. Mr. Stone also recommended polling current users for interference issues regarding a new Stanford VLF (Very Low Frequency) antenna scheduled for installation at the South Pole in FY03.

Action: Dr. Weatherwax will poll users and compile a list of questions or potential concerns to be addressed by the Stanford group.

Dr. Stark stated that an environmental impact report for the VLF antenna should be written to ensure transmitters will not effect other experiments. The onus is on the Stanford electrical engineering group, but it's a difficult without specific knowledge of each system.

Action: RPSC will work with the SPUC and the SPAWAR Spectrum Manager to create a formalized review process. Recommendations will be collectively conceived and SPAWAR will write up as a USAP procedure. NSF will solicit EMI information in project proposals.

SPSM Working Group Status Report

Dr. Robert Morse, University of Wisconsin, reported that the SPSM Working Group is primarily concerned with power, bandwidth, and space issues. Science groups require clean power, increased bandwidth, and flexible lab space.

Mr. Stone asked if the SPSM Working Group has been involved in the design of the new cryogenics facility. Dr. Robert Loewenstein, Yerkes Observatory, stated that there hasn't been much involvement yet. Dr. Stark presented some suggestions for design. Mr. John Rand, NSF South Pole Engineering Projects Manager, is currently soliciting reviews for the 35% design process, and Dr. John Ruhl, University of California, Santa Barbara, has reviewed the design as a SPUC representative.

IT and Communications

USAP Private Network

Mr. Dale Abel, RPSC IT Systems Engineer, presented an introduction to the USAP Private Network, including IP Migration, Future Email Policies and Security issues.

Committee members expressed concerns about forwarding email and congestion on the network. Mr. Abel suggested that the Science Community provide a business impact statement for review. Mr. Patrick Smith, NSF Technology Development Manager, stressed that these changes are a Federal mandate to make networks more secure. Transitional issues should be addressed, and if the timeline is unrealistic, then the roll-out plan will be adjusted accordingly. Mr. Smith suggested another round of grantee reviews should be completed before any changes are made.

The group discussed timelines and possibilities for science users to create their own networks, which led to further discussion about supportability and control of security. Mr. Stone stated that we have to decide where to draw the line between “experiment” and “network” in order to determine support requirements and options for flexibility. Mr. Abel stated there will be a “test connection” available at RPSC HQ where grantees can test their systems’ compatibility with the network before deploying.

Mr. Smith announced that Paul Eden is retiring, so the “Malibar” station is moving to a new Florida location in August. The transition should be complete by October or November. Also, Air Force Space Command will stop supporting LES-9 after FY02. NSF is trying to get the decision reversed or delayed. Palmer will be more severely impacted than South Pole, and we will use the Iridium satellite as a backup when LES-9 is no longer available.

Wireless LAN

Mr. Abel presented current plans for testing wireless LANs in Antarctica. These systems are particularly attractive as backups for cable failures and use in temporary research sites. Committee members expressed concern about signal interference and suggested that wireless LAN technology should be used during

only the austral summers; however, some groups are hoping to use permanent wireless systems.

Iridium Access

Mr. Abel presented the current rates for Iridium use. USAP pays DOD rates, which are much cheaper than commercial rates. Mr. Smith described potential models for USAP Iridium use, including limited data transfer over the DOD gateway. NSF will discuss further to decide what can be supported this season.

A concern was raised about “call drop-outs” on the Iridium system. Mr. Abel stated that this problem is not Pole-specific, and it may be a software problem. Motorola suggests a “reflash kit” may help, but funding is limited.

GOES/MARISAT Update

Mr. Nick Powell, RPSC IT Sustaining Engineer, presented an update on the MARISAT/GOES earth station at South Pole. Testing of the MARISAT system (short transmissions at varying data rates) continues to be successful, but not without significant logistical challenges.

Committee Members discussed the long-term plan to run fiber cable from the South Pole to a site that can access satellites 24 hrs/day. Cost estimates, traverse studies, and risk assessments are underway. The model is a 9-meter dish to be installed in 2008-2009, and the current estimated cost is approximately \$100 million.

SPSE/SPSM Project Review

FY02 Population

Ms. Alex Brown, RPSC South Pole Assistant Area Manager, presented the FY02 population plan and changes resulting from the creation of the RPSC Deployment Specialists Group. Mr. Marty reminded the committee that, per NSF, this year’s priority will be on smaller science groups and remote seismic activities. Mr. Stone stated that there is a lot pressure on everyone to limit the number of field team members and the duration of their stay, to provide an

equitable allocation of space. “Double deployments” will be especially scrutinized because of the shortfall of construction cargo. (Though the number of science cargo flights will remain unchanged at 12, each person represents 330 pounds charged against the Station Operations total.)

Construction—FY02 and FY03

Mr. Carlton Walker, RPSC South Pole Facilities, Engineering, Maintenance, and Construction Manager, presented an overview of projects completed in FY01 and the proposed construction schedule for FY02. The FY02 focus will be completion of the shell for pods A3 and B2 and the interiors of pods A1 and A2. Other projects include construction of a new water well and the South Pole Remote Earth Science Observatory (SPRESO), and completion of the new utility tunnel. The Flight Schedule Summary presented by Mr. Walker demonstrated a “need and feed” situation for construction cargo, where crews are literally waiting for each piece of material to arrive so they can add it to the new station.

Dr. Stark asked if we could use the new housing to increase the population cap. Mr. Marty explained that “more people” equates to more fuel, more buildings, and more support, all of which are limited by airlift capabilities. The population cap of 220, with a science population cap of 50, means the impact of any inspectors, vendor representatives, and technical representatives will affect resources for construction or support.

Electronic Systems

Matt Rushing, ATS Systems Engineer, presented plans for modernization of the South Pole HF and meteorological systems. SPAWAR is using McMurdo as a model for the system replacements. The HF system will be a complete replacement of equipment (with a minimal footprint) and the meteorological system will be designed for a one-year test concurrent with the current system.

Dr. Stark inquired about transmitting data over HF. Mr. Rushing said Pole would continue using radio-teletype for certain transmissions. Mr. Smith re-emphasized the possibility of using Iridium instead, especially during solar events.

Mr. Rushing described a Horizontal Visibility sensor that will be tested at Pole this year. Mr. Stone asked who will be responsible for various aspects of USAP meteorology. Meteorologists will operate the equipment, and SPAWAR will provide annual calibrations.

Mr. John Konen, RPSC, gave a presentation on South Pole Electronic Systems, including satellite systems, Land Mobile Radio, and configuration of an Operations Center.

Science Occupancy Plan

Mr. Stone introduced the Science Occupancy Plan. The plan will be reviewed on an annual basis as projects and requirements change. NSF will try to anticipate future projects for long-term planning, but allocation must be based on actual funding.

Mr. Marty stated that the occupancy plan for B2 will begin with approved, funded projects—especially those currently on-site—and then add projects as space and compatibility allow. NSF is beginning the process of choosing “tenants” and allocating lab space in B2 and the Dark Sector Laboratory. Mr. Stone stated that NSF cannot expend funds to re-locate projects that are not included in funded proposals. The transition will have to take place in FY03 because of logistical constraints.

Action: Dave Scheuerman, RPSC Project Engineer, will gather information and specs for cabling. He is in charge of procurement funded by SPSM. Dr. Weatherwax is the spokesperson for the SPUC Transition Working Group.

Mr. Stone mentioned concerns regarding population during the transition. Does every group need to send representatives, or can one person per group accomplish the tasking? A minimal number of people will deploy for the transition.

Transition will occur in FY03, with any concurrent testing taking place during the winter of FY03. Demolition is currently scheduled for FY04, but schedules will have to be reviewed in light of possible construction delays.

Special Topics

Health and Safety

Ms. Katy Jensen, South Pole Area Manager, introduced the RPSC Health and Safety Program and expectations for the upcoming season. There will be an increased awareness of health and safety in the USAP, based on the Dupont training program that teaches “every injury is preventable.” Primary topics of concern are ergonomic issues, muscle strains in the hands, neck, and lower back, and control of hazardous chemicals.

Dr. Stark commented that winter-overs feel that the issued clothing is inadequate for outdoor work. Mr. Stone assured the Committee that the Field Support Division is reviewing new gear, including boots. All recommendations should be passed to RPSC for consideration.

Dr. Albrecht Karle, University of Wisconsin, suggested methods for preventing the spread of illness at the South Pole. Dr. Harry Mahar, NSF Safety & Health Officer, announced that each station will provide participants with a “code of conduct” explaining responsibilities and regulations.

Cryogenic Support

Mr. Jesse Alcorta, RPSC Cryogenics Technician, reviewed last year’s cryogenics situation and presented the plan for FY02. The Wessington dewars have been installed at South Pole and seem to be working well, but RPSC is waiting for a vendor quote on a redesigned head for the dewars. Mr. Alcorta stressed a need to pay closer attention to the cryogenics supply during the summer to ensure an adequate supply at the end of season.

Mr. Rand presented plans for the new Cryogenics Facility, which is designed to attach to the current Balloon Inflation Facility. The plan is to avoid outside storage of cryogenics. Dr. Stark noted that requirements for liquid helium and power are both expected to increase, so the trade-off must be considered in the plan. The facility should be planned not with current requirements but with projected requirements in mind.

Action: RPSC will provide updated drawings of the Cryogenics Facility for review.

Dark Sector Laboratory

Mr. Rand and Mr. Marty presented the current plans for the Dark Sector Lab. The transition plan is matched with an aggressive construction schedule, so progress must be monitored and evaluated continuously.

Action: Mr. Rand will review construction schedule and report at next year's SPUC meeting whether or not an FY03 transition is feasible.

Jeff Thompson, USAP IT Engineer, raised a question about Building 61 and whether or not the cabling will be ready for an FY03 transition. Installation of cable will require several people (population impact) and aggressive purchasing/shipping schedules.

Action: Mr. Marty will provide an updated construction schedule at next year's SPUC meeting so the FY03 transition can be reviewed.

South Pole Power Planning

Mr. Rand expressed his appreciation to the South Pole construction personnel who were involved in the smooth transition to the New Power Plant (NPP) last January. He reminded the group that "power will always be an issue" as long as we require the delivery of fuel to run the plant. Conservation will always be important.

Action: The RPSC Facilities Engineer will update power projections to reflect current SIP requirements and SPSM data. The first draft is due in August; the final draft, in October.

Mr. Rand explained that there will be at least one planned power outage at the Pole in FY02 to move Feeder 9 from the Old Power Plant to the New Power Plant.

Mr. Jensen announced that RPSC is launching an Energy Conservation Plan drafted by the RPSC EH&S Director. Information will be passed to the science community as the program is developed.

The group suggested future requirements for energy conservation and coordinated use of UPS or filter systems. Several modifications have been funded as part of the MAPO remodel/DSL move, and a task force will investigate the cost- and energy-effectiveness of replacing old computers and monitors.

ESP Project Status and Resource Planning

Ms. Karin Copley, RPSC, described recent improvements to the Science Support Planning process. She emphasized the need for long-term planning and accurate ORWs, SIPs and RSPs. Mr. Stone stated that NSF is pushing hard for long-term planning in all areas.

Ms. Copley stated that eventually the ESP will be web-based for ease of access by the users. Problems with the current ESP were discussed, and suggestions for improvements were noted for changes in FY02.

Science Support and LC-130 Plan

Mr. Stone presented the LC-130 plan for FY02. Field Site activity will be similar to FY01. The ITASE project will traverse to the old Siple Station, and there will be increased activity in West Antarctica over the next few years. Several projects in East Antarctica will require LC-130 support for put-ins and airdrops.

Mr. Stone stated that there will also be significant Twin Otter support for groups using South Pole as a base camp for field research. NSF is investigating alternative airframes and methods for increasing the efficiency of our current resources.

Mr. David Bresnahan, NSF Systems Manager, Operations and Logistics, described progress on the Pegasus snow-compacted runway. NSF is aggressively investigating additional sources of wheeled LC-130s to fly between Christchurch and McMurdo so the ski-equipped planes can concentrate on transport of construction materials to the South Pole.

Dr. McConnell relayed a request from another science group to remind the ANG not to fly through the Clean Air Sector.

Action: Mr. Marty will confirm with the ANG that LC-130's should turn to the (grid) northwest upon takeoff from the South Pole skiway, to prevent contamination of the Clean Air Sector.

South Pole Field Support for Remote Camps

Mr. Steve Dunbar, RPSC Field Support Manager, described the McMurdo model for remote camp support and suggested methods for incorporating McMurdo's successes at the South Pole. Mr. Dunbar emphasized the need for accurate planning for effective distribution of resources. The SIP will be modified to simplify McMurdo-based requests for South Pole grantees. (For example, equipment—including tracked vehicles—must be obtained in McMurdo before proceeding to the South Pole.) Mr. Dunbar described the USAP equipment replacement plans and the improved capabilities of new equipment.

Mr. Dunbar presented plans for remote camps operating out of South Pole in FY02. A drill team will camp 8km from the Pole for most of the season as part of a USGS/IRIS collaboration. Communications will take place primarily via VHF (or perhaps wireless LAN?) If field science out of McMurdo is too remote for VHF, groups use Iridium phones.

Mr. Stone stated that there may be an increased number of science projects using South Pole as a staging point for field research.

South Pole Weather Observing Changes

Mr. Powell updated the committee on improvements to the South Pole weather observing process. Additional visibility markers will be added to the horizon during FY02 to facilitate surface visibility observations. NSF, RPSC, and ANG are meeting to discuss operational requirements and plans for further improvements.

South Pole User's Manual Update

Mr. Jensen provided an update on the progress of the South Pole User's Manual. Plans have been made for a Science Technician and a Technical Writer to develop the manual, using the Cray Lab manual as a template. The Science Tech, Darin Blythe, will contact grantees for information and draft reviews.

Mr. Jensen informed the committee that RPSC has hired three excellent science technicians for FY02, one of whom will be dedicated to cryogenics support.

PQ Process: Dental Standards for Foreign Participants

Dr. Robert Morse, University of Wisconsin, asked if there is any way to improve the dental PQ process for foreign USAP participants. He suggested that allowing the foreign dentist to speak directly with the reviewing dentist might eliminate current difficulties regarding standards and required care.

Dr. Mahar stated that he has arranged this between National Antarctic Programs, but it is only accepted for the summer season. Winter-overs will be subjected to USAP PQ standards. For summer participants, a letter from that country's program attesting to that individual's PQ status would be required. If the country does not have a National Antarctic Program, the participant must go through our PQ process. The national basis for coordination has been negotiated to recognize the other programs' needs. More standardization for screening needs to be developed. The criteria are reviewed each year, and the process will become more stringent.

Dr. Stark adjourned the open session of the eighth annual SPUC meeting.

SPUC Executive Session

(See "Recommendations of the South Pole User's Committee 2001" above.)

Appendices

- 1. Presentation: Population Management Milestones**
- 2. Presentation: Proposed FY02 Project Tasking**
- 3. Presentation: SPSM HF Modernization**
- 4. Presentation: SPSM Meteorology Systems**
- 5. Presentation: Electronic Systems**
- 6. Presentation: South Pole Health and Safety**
- 7. Drawings: Science Occupancy Plan**