SIT REPS FOR JULY 1958

Little America IGY Station

IGY Nr. 81, July Sit Rep - Aurora: Aurora observations were taken on each of the 25 clear days during the month. 700 feet of all sky camera film was expos The all sky cmaera clock failed and was replaced. Some trouble has been encountered with frost on the mirror of the all sky camera caused by the smake from the towers stove. The patrol spectrograph was operated the entire month. Infrared spectra of brilliant red aurora was obtained on July 8 and 9 during period of eleven hours pf continuous red display. This overall twenty hour period of display ended with a curious sun-lit type alfa bright red auroral arc just over the lens of pale pink twilight on North Horizon. Three attempts to use the scanning spectrometer on HA type aurora of medium intensities unsuccessful due t low gain necessary to prevent oscillation and freezing of cam motor when operati through piball dome. Geomagnetism: Magnetic activity for the month of July w marked by sudden commencements at 211636 Z and 3115292 with moderately disturbed conditions existing before and after the former. A kilo sum of 51 was recorded for the magnetic storm pf July 8 where largest single change was 9.5 Degree chan in declination within three minutes. Overall variations recorded were: Horizontal intensity 1610 gammas; Vertical intensity 1545 gammas; Declination 12 Degrees. The transmission of kilo scaling data between Little America and Byrd and Mirny and Wilkes continues. The Soviet Stations using upper limit gamma value for kilo scale through eight cl 20, 40, 80, 160, 280, 480, 800, 1300, 2000. Calibration and standardization of vertical intensity magnetometer begun in preparation for use on the coming traverse in Victoria Land. The program machine jammed and failed with a resulting loss of time marks for a six hour period. Other operations were normal. Glaciology: The average snow accumulation for July measured on 10 stakes, 1.5 cm. Ionosphere: Conditions were normal with approximately 97 percent coverage of available data. There was increased recurrance of the blanking circuit malfunction in recording scope causing large variations in the film intensity. On the whole the records are easier to scale due to less spread of the criticals near the end of the month. Echo layer traces are showing increased occurance while the foxtrot layer critical ciritical frequency peak remains near 1800 local time although critical peak is near 8 mc . Meteorology: During weekly series of lectures to all hands Rodger Brown delivered a talk on tornadoes. About the middle of the month 800 gram balloons were again tried for a few radiosonde runs but results were again highly unsatisfactory and 500 gram balloons were used without exception thereafter. 59 Successful releases were made with an average height of 19,092 meters. The highest run reached 24,800 meters at 1200Z on July 7. The lowest temperature of minus 70 Degree F. on July 9 was the lowest recorded this year. Oceanography: A hydrographic station was made for ten levels, surface to 365 meters getting temperature and salinity samples. The lowest temperature recorded was -2.03 Deg. C. at 15 meters. All temperatures were below -1.80 Deg. C. Correlation was made between tidal current obtained with current meter and tidal change in shelf elevation made with Gravimeter. Seismology: Data analysis of the Ross Shelf Traverse seismic records completed with mapping of the ice thicknesses and depths of water. The ocean floor lies between 600 and 900 meters below sea leval in the western half and southern third of the shelf plus all the area east of Rossevelt Island. Depths below 900 meters were found near Minna Bluff, near Liv Glacier and Mile 160 on the Byrd Trail. Traverse Operation: The overhaul of three vehicles has been complete

1000 bamboo markers prepared for the Skelton and for Victoria Land Plateau route. Weather Central: Research activity is nearly current with data accumulation. Jean Alt gave a seminar in Antarctic Circulation discussing the conditions resulting in the considerable cloudiness reported during June at Vostok and the Circulation Balance of the Antarctic Continent. 400 feet of of IGY 16 mm movie film accompanied by magnetic tape was taken for sound movie of the Weather Central while the Navy did a simultaneous filming.

Communication reception report;(Read station percent surface data received, percent upper air data received.)

Mawson Collective		
Norway	78	57
Belgium	85	82
Davis	92	90
Taylor	81	XX
Mawson	96	83
Port Stanley Collective		
Group Average	52	37
Halley Bay	32	32
Gon. Videla Group	25	XX
New Zealand and Australia	95	95
South Africa	25	XX
Macquarie	73	67
Campbell	78	63

Mirny Collective		
Mirny	82	75
Pioneerskaya	82	XX
Komsomolskaya	92	XX
Oasis	82	77
Vostok	82	20
Sovietskaya	85	38
Decepcion Group	40	77
McMurdo Collective		
Amundsen Scott	98	100
Ellsworth	97	98
Wilkes	98	95
McMurdo	100	98
Hallett	90	100
Byrd	100	100
Durville	100	97
Charcot	90	XX

Radio blackout was the cause of loss of three days data for some reports plus three no availables for all levels. Blizzard conditions in East Antarctica caused Mawson Collective losses and some of Mirny's losses. Aspatenko lectured the entire Station on the Soviet Antarctic Program and on Leningrad.

BYRD STATION

Byrd Nr 81, August Status Report - Meteorology: There continues to be extreme difficulty in releasing balloons, due to a combination of drifting snow completely covering the inflation shed and three months accumulation of hand shoveled snow. This has resulted in the necessity of releasing balloons from a 15 foot hole. The comparatively poor heights reached by the balloons is due to the use of day flight balloons which are considerable sturdier than the night flight balloons and therefore less likely to break when released from the pit. A tent like structure being completed over the inflation shelter to assist in balloon releases. Average surface temperature 1 through 10 was -37.1 Deg. f., 11 through 20, -27.2 Deg. F., 21 through 31, -58.0 Deg. F. The coldest upper iar temperature was -93.3 Deg. C. on the 10th of the month at 18 MB . Glaciology: All regular measurements of snow temperature, accumulation, surface study area, deformation and surface densities are complete for the month. Mean accumulation for July was 508 cm with water equivalent of 1.7 cm. Yearly pit deformation data follows: Vertical compaction measured from old surface, 10 meters to 9.92 meters, 8 meters to 7.92 meters, 6 meters to 5.92 meters, 4 meters to 3.82 meters, 2 meters to 1.965 meters; horizontal closure measured at indicated depths, old surface 5.10 cm, 2 meters 5.72 cm, 4 meters 3.88 cm, 6 meters 3.31 cm, 8 meters 2.17 cm, ten meters 1.92 cm. Traverse Seismology: reflection and long refraction

studies complete. Vertical shots at many stations show very weak arrival 0.1 to 0.3 sec before main reflection. Wide andle shots give velocity of about 3600 meters per second in layer average 300 meters thick at ice bottom. Layer point accurate determination average vertical velocity for main reflection; 3820 meters per second used. P wave velocity agrees within ten meters per second with R layer results (Antarctic Report, Fig 38, 155, Alfa curve Charlie) from -26 to -32 Deg. C. Geomagnetism: The station seismic installation recorded 65 quakes even though interference in the vertical recording was accute. An RF line filter has been installed, but some interference continues. On the 26th of the month onset P wave carried over and was recorded on rapid run D and H. Motion continued for 3 min interval. This condition has not been previously noted at this station. A voice conference on the 30th sith Scott Base (New Zealand) resulted in the exchange of seismic data between the two stations. Magnetism: July was a very disturbed month characterized by largest recorded storm to date. Maximum H on the 8thwith change of 2360 gammas. Good recored was made throughout the month with only one day loss of rapid run records, due to failure in the drive reduction gear system, resulting in complete failure of drum. Repairs were completed. The temperature variation in the building holding well considering outside temperature of - 80 Deg. F. Ionosphere: The discipline functioned normally, with only minor equipment difficulties. An unusual diurnal curve reported May and June also apparent this month. FOF-2 low median value 3.2mc occurred 0800M, SI value 6.4 at 2300M. July '58 FOF-2 medians 0.8 mc higher than July '57 and 0.2 above last month. Diurnal FOF-2 median curves for July 57 and 58 manifested noteworthy similarity. A severe ionospheric disturbance began 0615M July 7 and terminated about 2000 M July 10. It was locally the most disturbed period of DF 3 characterized by 55 continuous hours of complete absorbtion.Generally July is the must disturbed month probably resulting from many radio active solar regions and relatively low position of the sun to the ionosphere overhead at this location. Radio Noise: Regular recording continues. Several days of data was lost due to equipment failures and detector modification. June data showed a great loss in the diurnal curve. VLF program continues with normal operation, and slight equipment changes have caused an improvement in recording quality. There was very high whistler activity 0000Z on July 23, up to four multiples. Maximum was two echoes. Many echoes of great length and high intensity. Average activity is low. Aurora: The visual observation program reports less activity than during other similar periods this season. Non-auroral free nights which are clear have permitted meteor observations. All sky camera operation continued. It has been determined that antiha - lation backing may be removed from spectroscopic film by using 5 percent solution alcohol preferable isopropal. On the 25th the mimute and 15 minute time control mechknism was disengaged. Exact time control is now accomplished utilizing ionosphere recorded and master clock contacts. Modification was deemed advisable because of failure of the 60 cycle frequency standard. Exposure time at the present is known to within one second. 5 days data lost for spectrograoh due to shutter failures. Due to the unavailability of spare proba bulbs it has been necessary to modify data box and use different type bulb.

South Pole Station

IGY Nr. 647 - Celestial observations continued as previously. Aurora: Bright displays were observed on 18 days for the month, red forms on 3 days, and complete overcast for 41 hours. Activity was less than in June. Observer was

ill for 9 nine days and during this period observations were made by Ionospheric observers assisted by G. DuBois (USN) without loss of data. Failure of blower caused frosting of all sky camera dome during the beginning of the month. Excess play was corrected by wrapping copper foil around the motor shaft. Dome has been frost free since the repairs. Ionosphere: 4.4 % of the records were lost due to a faulty relay and switch contact, power failure, and periods of maintanence for broken transmitting antenna. Ionospnde now operating on 240 volts. Median FOF-2 values are lower taken for June. E layer echoes have beenmore frequent and there is increasing evidence of F region stratification. Tape recordings of atmospheric noise began on July 23 and will continue at convenient times as long as tape supply holds out. Reords are being made on an Ampex 601 supplied to the station as recreational gear. Each recording is two minutes long and begin 35 minutes after the hour. Geomagnetism: Operation normal for the month. Seismology: Station operation has been normal. 312 disturbances were reported in July. At least 55 confirmed quakes were observed in June. Glaciology: Monthly snow accumulation was 3.3 cm. The density profile is complete to 27 meters and linked with outside pit stratigraphy. Period 1860 through 1910 bracketed for double filtering. Discontinuity in summer versus winter layer presents the difficulties in determination. There is plus or minus a years margin in the determination of age. Summer crusts are still apparent to approximately the year 1720. Despite sastrugi migration, mature erosion features maintain position though they lose volumn and change orientation. Meteorology: 100 % scheduled radiosonde flights completed during the month with an average height of 16629 meters. Balloons are being conditioned in warm diesel. 17% of the 500 gram balloons are able to penetrate -88 Deg. C. temperatures found between 60 and 50 MB on 16th of month. 800 Gram balloons found desireable for high wind releases and maximum height. Radiosonde flight terminations as follows; 57 due to balloon burst, 4 due to bloating, 1 due to power failure. 62 flights in all successful with 70 charges of chemicals. 11.6 lbs of caustic soda used per sucessful flight. 720 lbs caustic soda used during the month 2880 lbs remaining. A new station record for the highest monthly avergae wind speed 17.0 knts lowest station pressure 19.09 in. warmest winter month average temperature minus 55.2 Deg C. was recorded. Micrometeorology: 171 wind profiles were run on 31 days during the month. The temperature recorder was in continuous operation except during periods of heavy drifting. The month, windiest on record, featured many hours with 8 meter wind speeds of 10-13 m/s. Highest one hour speed at 8 meters was 14.7 m/s on the 28th. The warmest winter month on record relatively few sheep surface inversions were noted. The largest surface to eight meter inversion was 19.8 Deg. F. on the 24th.

Hallett Station

IGY Nr. 109, July Sit Rep - Aurora: Aurora were seen on 21 nights. All other nights were cloudy. There were some good displays during the month, with intense auroras on the 8th and 21st. Red glows were observed on both occaisions. All displays show nitrogen group enhancement and usual oxygen lines. Sodium doublet 5890 also present on most occasions and much enhancement during twilight. First positive bands of nitrogen two strongly recorded on the 8th and 21st., as was nitrogen doublet 5200. Hydrogen Alfa and beta recorded occasionally. Ionosphere: Two periods of obsorption were observed, the first commencing 070000Z becoming total from 071200Z to 092100Z. The F-Min raised on the succeeding days and returned to normal on 220200Z. No equipment failures this month. Brilliant variations considerably reduced by replacing 6 KV scope supply with spare. Geomagnetism: Two periods of storm activity were recorded;

the first started 071100 Z with minor activity changing to major activity at 080730 Z ending about 082300 Z; the second was only minor acitivity sudden commencement at 211636 Z ending about 220100 Z. Seismology: 60 earthquakes were recorded out of which 55 were verified. The peculiar microseisms of periods of 1 to 2 minutes reported in April and May have been now tracked down and found to be produced in the seismic hut probably by quasi-periodic air movement. Top of hut was previously at a lower temperature than the bottom. Some 80 watts of heating were placed at ceiling level and the phenomenon has been irradicated. Meteorology: Conrad adjuster gears for the asar recorders successfully cut. There only was one intense storm this month. 14 radiosondes at the end of this month terminated at low altitudes due to eastern horizon. The contact for the oxidation 2 meter anemometer requires periodic removal, but no trouble at the ten meter level.

Wilkes Station

IGY Nr 402 Wilkes July Sitrep - Aurora: Aurora were seen on 3 of 7 clear nights. Spectrograms have been much improved since sky lens cleaned. Despite complete overcast diverse airglow was recorded during the magnetic storm on 6 to 7 July. First negative nitrogen enhancement was the major feature. Spectrograms during the 21 st of daily display showed first positive and negative nitrogen plus first 2 lines of Balmer series. Spectrograph was operated two days manually for maintenance and replacement of trigger circuit relay. All sky camera operation periods for the month. Visual program was maintained throughout all dark hours. Cosmic Rays: Operation was routine except for one day and a few hours repair of intermittent tube on coincidence chassis. There was 5 % decrease in intensity recorded during the magnetic storm of early July. Data has been forwarded on a weekly basis. Geomagnetism: Magnetic storm recorded on July 8. D baseline value continues to change abruptly by seven minutes. Other operations are normal. Glaciology: Large areas of the lower cap surface still are bare ice. Routine stratigraphic and crystallographic programs continue with 2 men daily in the field while the third works in the lab. Plans are proceeding for the September and October Traverse inland east and to Mt. Long. Ionosphere: Night E layer observed more frequently in July. Also noted was E, F-1, F-2 combination night and day. The full retardation of the F layer was noted for several 24 hour periods. Interpretation has become more involved. Seismology: Seismic waves from 29 earthquakes recorded. Microseismic activity high on 5, 6, 10, 14, 25, 30, 31 July. North and vertical components operated well, east needed frequent adjustment. Oceanography: Open water continues on South and West of a line between Shirley and Chappel Islets with a band of snow covered new ice north and east of this line. Trips with snow-cat and weasel were made to Chappel Islet. Fast ice is now about 3 feet thick. Special Projects: A report prepared on the sudden ionospheric disturbance of the 7 to 10th of July prepared by Edman correlated the geomagnetic activity and cosmic rays anomaly. The cosmic ray data of the period shows a moderate depression. The class 2 plus gradual short wave fade out which accompanied the class 3 flare was studies. Field intensity records of the WWV 15 MI over a 19500 km path were analysed to determine the received vertical and horizontal components and irregularities in field strength during the turbulent period. Definite correlation with the commencement of SID and magnetic activity was evident. Meteorology: Maximum temperature was 28 Deg. F., minimum temperature - 36 Deg. F on July 27, with average station pressure 29.270 inches, total precipitation 3.08 ins. maximum wind velocity 70 mph. The satellite station was manned from 22 July to 4 Aug. by Zimmerman, Ommundsen, and Tressler. Maximum temperaturefor that period was

+ 3 Deg. F, Minimum - 49 Deg F. This is also minimum temperature recorded this year at this site. 4 pibals were completed from this site on different days. Accumulation stakes were measured at the Satellite Station and on the trail.

Ellsworth Station

IGY Nr 271 July Sit Rep.- Aurora: Aurora was observed on 18 nights including the great display of July 8. This appeared to be two peaks of acitivity at approximately 0100 Z and 0500 Z, the second fainter and less active. The spectrograms show more sodium this month even on moonless nights. There were very sharp Hydrogen A lines in the early morning of the 9th. All sky camera operations normal. Magnetograph not in operation most of month due to jammed film drive mechanism, which is now repaired. Ionosphere: Persistant F type sporadic E line trace, varying in height from 73 to 91 km visible on high gain 71 % of the month, on medium gain 24 % ofthe month Records showed multiple echoes of trace only once;a number of S-like traces at frequencies of 2 to 4 mc are often associated with it. After two days of complete absorption, July 8-9 this trace was the first to reappear and manifested itself strongly. The abnormally low height suggest a thin reflecting layer sporadic in the D region. There may be some relationship between the persistence of the low layer sporadic layer and the persistant sodium line in the patrol spectrograph. Cosmic Rays: Extremes in press causing extremes in neutron counting rates occurred as expected. There is still some trouble from interferrence with the Ionosphere recorder. Glaciology: Program operation is routine. Months accumilation is 0.4 cm. Sea ice now totals ten feet with additional 10 inches in July. Side tunnel at 10 meter level of Deep Pit excavated for 15 meters. Survey setting of strain pins in the tunnel almost complete. Meteorology: Strongest wind storm of year occurred on the 27-28th leaving drifts covering most of the equipment and mountings in snow field which were 5 to 6 feet above the [illegible] before the storm. Rearrangment and some relocation of instruments will be necessary. Inflation shelter and release problems multiply. Snow surface now several feet above top shelter and hole in from top of the doors is maintained only by constant shovelling. Due to settling of shelter, doors no longer close properly and several feet of snow cover the floor after each strong South wind which is nearly every day. A New inflation shelter on the North Side of camp must be constructed as most urgently needed if raob program is to be continued another season.

IGY NEWS

News Message Nr. 15 - Arctic: The U. S. Navy plans to fly a blimp from South Weymouth, Mass., to drifting Station B with U. S. and Canadian Scientists aboard. Rockets: Nine rockets were launched between July 5 and 22 from Fort Churchill. The vehicles and experiments included three Aerobee Hi studying charge density, two Nike Cajun for horizon studies, one Nike Cajun for magnetic field studies, two Nike Cajun for pressure temperature studies, one Aerobee Hi for pressure temperature density studies. Geodesy: The Army Map Service has announced a new value for the flattening of the earth obtained from Minitrack observations of satellites, 58 Alpha and 58 Beta. New value is 1/ 298.3 derived from analysis of rate of motion of nodes and rate of motion of perigee, Initial spheroid uses value 1/297. Earth Tides: During the first year of the IGY earth tide measurements were completed at eleven station; Glendora, Calif., Honolulu, Wake, Baguio (Philippines), Saigon (Vietnam), New Delhi, Bermuda, Azores, Bukovu Bunia (Belgium Congo), and Trieste. The series will be completed by two additional station in England. 29 days of observations are required for each station using LaCoste and Romberg Gravimeter with accuracy of one microgal under ideal conditions. Gravity at Sea: During the first year of the IGY, 131 submarine gravity measurements were made in cooperation with Australia in area bounded by Australia, New Zealand, Tonga Trench, and the Fijis. Thirty submarine measurements were made between New York and Bermuda. A cruise from New York to the Mediterranean and return was made using the Graf Sea Gravimenter from surface vessel during March and April. A continuous gravity record was obtained for about 70% of the time. Of special interest were the crossing of five sea mounts and a large anomaly - 90 to - 120 milligals through strait of Gibralter.

IGY News Message Nr. 16 - The fourth U. S. Earth Satellite, 58 Epsilon, was launched in a Northeasterly direction from Cape Carnival on July 26, 1958. A little more than six minutes after launching the satellite , known as Exlorer IV, entered into an orbit which will cover an area between 51 Deg. North and 51 Deg. South as compared with aprroximately 34 Degrees for the satellites 58 Alpha and Gamma. The launching vehicle was identical to those used in the launching of these latter except for additional thrust in the high spped upper stage. The steel satellite is 8 inchs long and 6 inches in diameter and weighs 38.43 lbs, about 7.5 lbs heavier than its predecessors. It does not carry a turnstile antenna with its whip-like extensions, but rather utilises the skin of the satellite itself. The satellite carries two Geiger Mueller Counters and two Scintillation counters designed to measure corpuscular radiation at several levels of intensity. The total concentration upon study of corpuscular radiation is prompted by data obtained from the earlier explorer satellites. These had suggested the existance of radiation of very high intensity at altitudes greater than about 1000 km.

IGY News Message Nr. 17 - Underwater explosiion in Lake Superior will be used during August to test the theory that the thickness of the earths crust can be correlated with certain irregularities in gravity measurements. Approximately 15 explosive charges will be fired at various distances from observation points in Northern Wisconsin and upper Michigan. The Maximum charge will be about 500 pounds depending upon relative seismic sensitivity on inland recording sites. Similar experiments on land would require blasts of several tons of explosives,, but in water relatively small charges can be used up to distances of 150 miles.. The Lake Superior area was chosen because observed

gravity values in this region are higher than theoretical values computed from Latitude and elevation. The gravity is greater near the poles than at the Equator and normally is greater at low elevations than at high. Presence of rock of unusual high density, however, will increase local value of gravity. It is supposed, therefore, that high value of gravity in the Lake Superior region may be accounted for by thinning of the earths crust which is composed of light rocks, This thinning would bring denser subcrustal rocks closer to the surface and thereby increase the value of gravity. From seismic measurements thickness of the crust can be determined directly using the principle similar to that of the echo sounder or by using methods based on refraction of sound waves.

IGY News Message Nr. 18 - Space information from the IGY Satellite Explorer IV is already adding dramatic information to the findings of the Explorers I and III. The main purpose of the Explorer IV is additional data for identification of the high intensity radiation encountered above 600 miles by the earlier Satellites. The data shows that the orbiting instrument is speeding through an invisible rain of electronically charged particles probably electrons directly hitting the instrument. These possibly include hydrogen protons or other atom fragments with some of their electrons knocked off. At leat 60% of these charged particles readily penetrate the 1/16 inch thickness of lead shielding each of the Geiger Counters aboard the Explorer. Starting about 250 miles up the intensity of space radiation appears to double with approximately every 60 miles of altitude.

SIT REPS FOR AUGUST 1958

Little America IGY Station

IGY NR 23 August Sit Rep - Aurora: Aurora were observed on all bout one of 20 clear days in the month. Six hundred feet all sky camera film were exposed. Trouble was experienced on days when temperature was below minus 60 Deg. F., with wind in excess of 15 kts with frost in the all sky camera. The Patrol Spectrograph was operated automatically the whole month. Infrared program was discontinued due to the failure of the film to register emissions other than 5577 due to the low sensitivity of the emulsion. It is recommended that some 1-N spectroscopic emulsion be supplied for neat season's operation. Geomagnetism: The H base line which dropped off approximately 20 gammas in July below previous consistent value for past six month is now slowly drifting back towards the original value. Similar activity is also noted with the Z base line. Disturbed conditions were prevalent throughout the latter half of the month. Calibration of the traverse instrument is now compl eted. Glaciology: Strain stake measurement across Crevasse Valley shows about 10 meter increase in width since February 1957. Time rate of strain very uniform and most of the strain occurs across the narrow crevassed zone near the center of the valley. The August accumulation for 34 stakes averaged 10 cms nearly all during the first part of the month. Ionosphere: Normal operation continued with 96% data coverage. The arrival of the sun was celebratedwith a five day partial blackout. At the same time second daily peak of F-2 layer criticals occured ar about 0900. Meteorology: Summer season observational program commenced with the rise of the sun. Pyreheliometer and illuminometer readings began while unbooked thermometer readings from the snow surface were discontinued. The snow surface thermom a was allowed to be buried. Day flight balloon s now are used on 007 radiosonde runs. Station Met data for period December 1957 to July 58 inclusive was microfilmed and two boxes packed for Conus shipment. Infrared hygrometer and associated gear including Brown Recorder was packed for shipment to Instrument Division of the U.S. Weather Bureau. All major Met equipment for the Byrd Station Tractor Swing packed and loaded. The belt pulley on the motor shaft pump for the dust sampler sheared off and program was temporarily suspended for repairs. 59 successful radiosonde flights were made during the month with an average height of 17,635 meters, the highest run was 23,978 meters at 1200Z on August 18. During a warm period in Mid August a new maximum temperature record for the month was set with readings of plus 22 Deg. F., on August 11. Traverse: Preliminary data analysis for the Ross Shelf Traverse continued with the mapping of the major coastal peaks between Beardmore and Liv Glaciers. Weather Central: Operations for the month were normal. Research activity continues with work on Simpson Waves, monthly mean charts, interior weather patterns, topography influences, mean tropopause charts and cross section, and studies of the Southern ocean circulations. Astapenko lead a seminar with reference to the frontal passage over the South Pole. Communications reception report for the month is as follows: (Read Station percent surface data received, percent upper air data rec'vd)

Mawson Collective		
Norway	85	68
King Badouin	90	45
Davis	85	XX
Taylor	94	84
Mawson	95	89
Port Stanley Collective		
Average	47	17
Halley Bay	44	22
Gonzales Vid.	34	XX
Decepcion	54	93
New Zeland and Australian		
	75	75
South Africa	35	XX
Macquarie	77	70
Campbell	69	57
Amsterdam	86	03
Kerguellen	86	70

Mirny Collective		
Mirny	79	73
Pioneerskaya	79	XX
Komsomolskaya	79	XX
Oasis	79	70
Vostok	79	63
Sovietskaya	79	67
McMurdo Collective		
Amundsen Scott	97	100
Ellsworth	99	100
Wilkes	99	98
McMurdo	100	100
Hallett	99	100
Byrd	100	100
Durville	99	100
Charcot	98	XX

Radio. Blackout caused seven surface and nine upper air analyses to report no analysis. Data missed from Mirny during the blackout was not supplied, Port Stanley and Gonzales Videles data from the blind broadcast was also missed. A new point to point skedule was established with Port Stanley near the end of the blackout with considerable improvement in reception of Weddell Sea data for both surface and upper air. Mirny has been relaying some South African upper air data. General: 8000 lbs IGY cargo was loaded on the tractor swing for Byrd Station including 5000 lbs of explosives, 2000 lbs of Meyeorology equipment, and 1000 lbs of Glaciology, Geomagnetic and General Supplies. To date 37 boxes of Glaciological equipment, 4 boxes of seismic, 7 boxes Aurora equipment destined for Scott Base and NAF McMurdo have been packed. Meteor Radar equipment has been packed for shipment to Conus.

Byrd Station

Byrd Station NR 3, August Status Report - Aurora: This month a new low was recorded in auroral activity with poorest visibility yet due to ice fog deposit. One hour of data was lost in the All Sky Camera program due to the failure of a connecting spring from governor to the shutter shaft brake. There was a photomultiplier power supply failure in the Patrol Spectrograph, requiring manual operation of the instrument while repairs were carried out. Tje photomultiplier cell was damaged. Intermittantly the photomultiplier will fire fast and sparadically. After each exposure spectrograph goes through two data cycles. Although annoying this is thought not to be serious enough to warrant time loss of data resulting from necessary repairs. Station Seismology: 81 disturbances were noted during the month. A casual observer felt tremous on 252115Z coincident with well defined surface waves from previous earth quake beginning. Local RF transmissions continue periodically to hamper the reading of the vertical record, without however any loss of information about horizontal traces. Geomagnetism: K values prove month to be the calm est magnetic period this year, Intense storm occurred on the 17th, 24th, and 27th of the month with high gamma range. Construction of the observatory is complete. All compoment systems operating satisfactorily at the close of Aug.

Glaciology: All regular measurements were made. Surface area showed more changes and larger relief during August than any previous month. Surface irregularities from wind sculpturing of the new snow sastrugi show relief up to 35 cms. Gear for the traverse was inspected and prepared for the summer. A hanging support for a camera to improve the traverse pit photography was completed. Accumulation for the month was measured at 2.2 cms with 0.8 water equivalent. More accurate measurements were made of the deep pit deformation. Ionosphere: Ionospheric sounder operating satisfactorily. Minor data loss resulted from film jam. With the return of the sun there was a pronounced increase of FOF-2 particularly at midday. Highest median FOF-2 was 7.6 MC at 1100 with a second peak 7.2 at 2200 and 2300. FOF-2 median values for August were 1.6 mc higher than for August 57 and 2.0 mc higher than last month. Current findings suggest excellent possibility for the reception of signals in the 50-60 mc region over long distances during Sept and Oct. at this location. Severe ionospheric disturbances were observed on the 16th and 17th, on the 22nd-25th, and on the 26th-27th. Radio Noise: Noise recorder operating satisfactorily. Several periods of poor propogation caused low noise levels above 2.5 mc. NSS signals are not being received recently; cause is unknown. Whistler: The recorder is operating well. There was low activity this month. Meteorology: The vertical extension of the inflation bhed has stopped a good share of the drifting. Missed runs were primarily due to strong wind breaking the balloon on release. The use of the Navy supply of caustic probably will eke out the supply for the remainder of the year, using 5 - 7 lbs caustic per charge. Will know for certain by end of September if supply of caustic large enough to last year. Other Met program operated routine. Traverse Seismology: surface slopes at and between stations were computed, compared with ice thicknesses. Average basal shear stress per Nyes formula was 0.7 bars, individual values varying widely. The correlation of ice thickness to surface value is poor. The reduction of representative short refraction profiles has been completed. The correlation of the P wave velocity to desity, surface to 10 meters is excellent. The check of the seismic gear has been completed. Only minor repairs necessary after two rough traverses.

South Pole Station

IGY NR 735 - Celestial observations the same as previously reported. Aurora: The All sky camera and visual observation program was discontinued 310000 Z August. The spectrograph was set for rotation following the sun on 112341Z August. Bright Aurora was seen on 16 days, red on three days during the month. There was a total of 18 hours complete overcast. Due to intermittant failures of the frequency standard it use was discontinued on August 12. The following applies to the entire season; No flaming or pulsating Aurora were observed; maximum period of acitivyy appears to be 2000Z to 0100Z although coronae appeared most frequently near 1200 Z approximately 95 % of all Aurora were yellow-green in color and red was the only other color seen; Eastward moting predominates. Meteorology: There were 61 successful rawinsonde flights with 72 charges of chemicals. 11.5 lbs of caustic was used per flight; 700 lbs used during the month; 2180 lbs remaining. Rawinsonde flight terminations were due to following causes; 55 bursts; 3 due to the flattening of the balloon, 3 due to instrument failure. Seismology: Station operation was normal. 295 disturbances were recorded during the month. There were 51 confirmed quakes in July. Glaciology: Month's accumulation was less than half a centimeter. Stratigraphy observations show that during last half of past century accumulation was approximately 4 cms of water per year. Accumulation since 1920 is six cms of water. Double filtering of 60 layers covering 50 years completed; Now coming up towards surface filtering and sampling for isotopes. Micro-Meteorology

156 wind profiles run for the 31 days of the month. Low winds with relatively little drifting characterised month. The maximum 8 meter hourly profile was only 9.8 meter/second. Lightest wind profiles measured during the winter occurred on the 11th ranging from 1.8 meters/second to 3.0 meters/second. On the 17th a 23.4 Deg. F. inversion from surface to 8 meters was recorded, the largest of the season. Ionosphere: Transmitter antenna opened early in the month and it has been necessary to use receiving antenna until extreme weather subsides. Two hour constant observations were begun on August 12, which will be continued until after sunrise. The 05 and 55 minute sweep were eliminated commencing August 12 to conserve film; there is sufficient remaining for period through November 1. 59 atmospheric noise recordings were made. Geomagnetism: 20 days records were lost between July 17 and August 14 because of heater failure in shelter. Operations have been normal since.

Hallett Station

IGY NR 115, August Sitrep - Aurora: Aurora were seen on 21 nights; all others were fully overcast. Observing conditions were generally poor due to haze and moon light. Faint red upper boarders of forms reported occaisionally, but no major displays. The all sky camera operated well in open air and the records through the haze were better than those with the naked eye. The spectroscope is acting satisfactorily. A line at approximately 6190 angstroms as yet unidentified first recorded on 5 August and daily from the 12th to the 24th of the month at morning and evening twilights. The film from this date on has not yet been examined. Ionosphere: Equipment is operating satisfactorily. A switch for initiating Ionosonde sweep installed in the Aurora tower to assist possible correlation with overhead arcs. Periods of high absorption were as follows: Commenced 160930Z with total blackout between 161630Z and 170915Z; short periods of blackout throughout the 17th and 18th; recovery was complete about 181900Z; another period commenced 211530Z with total blackout again between 221731Z and 230530Z; absorption period remained high and blackout again between 232031Z abd 241645Z except for brief weak appearance between 241015Z abd 241100Z Absorption again remained high until next period blackout commencing 261330Z and lasting until 272130Z except for weak reflections between 170815Z abd 271100Z. Absoption was not back to normal until 291900Z. Geomagnetism: Activity has been as follows; Trace slightly disturbed from about 161300Z followed by sudden commencement 170622Z; most of the activity ended by 180600Z; sudden commencement occurred at 220227Z followed by a big bay and minor acitivity which continued till sudden commencement at 240140Z with another big bay; activity was only minor after 250500Z becoming moderate again about 262330Z until280000Z. One set of absolutes was made on the 20th. Seismology: Program is running smoothly. A total of 69 earthquakes were recorded during the month, 60 having been reported. Meteorology: Snow drifts covering the radiation instrument site levelled. Larger and stronger instrument stands were installed with base six inches in the ground. The wiring was replaced as necessary. The radiometer was mounted down wind after repainting and calibration check. One pyrehilometer has been damaged and is unusable although it can be repaired in Conus. Sunshine switch has been replaced by a spare. Solar radiation recorder has been thoroughly bench checked eliminating errors prior to recording seasons data. The sun was first observed on the the 6th for 7 minutes. Removal of the four foot drifts resulted in a marked effect on soil temperature. Average height of the radiosonde runs was 14,938 meters; 21 flights were aborted due to eastern horizon; highest flight was 19 millibars or 24250 metters on the 11th. Only two GMD thyratron tubes re-

main in stock. Remainder of the observation program has been routine.

Wilkes Station

IGY NR 437, Wilkes Station August Sit Rep - Seismography: 48 earthquakes were recorded during the month. Strong microseisms occurred on the following days of the month; 2, 8, 9, 18, 19, 22, 23, 31. The drum drive was modified to accept reversible motor rotation making available two spare motors hitherto judged unusable. Glaciology: The worn coring bits have been successfully rebuilt by welding. Pit, Core, crevasse and icecliff studies were completed in 30 localities below the 1500 foot contour. Particular attention was paid to temperature, conductivity and rubble patterns, and dirst content in the ice, and to cyrstal size and orientation. Fabrics seem similar to various Northern Hemisphere ones that have been found. In superimposed ice zone individual annula layers have been identified but it has proved impossible so far to establish a continuous stratigraphy. A detailed study of the formation of the superimposed ice is planned forccommencement after the September and October Traverse. Preparations for the Traverse have included the construction of a wanigan, Nansen type emergency sled and flags. Aurora: There were 11 clear nights during the month during 5 of which Aurora were observed. Nearly all Aurora were recorded with brightness four or less. Spectrograms continue to show intense nitrogen first negative. Sodium D of ten remains all night. On the few occaisions of mist there was an intense line on the spectrograms, 6861 Angstroms very intense during twilight. Line reported by Salmon at Hallett seen on 061005Z about an hour after sunset. It is thought to be first positive nitrogen 5-2 12-10 which includes 6982 and 6996. Equipment is operating weal. Cosmic Rays: Operation is routine. Geomagnetism: Four sudden commencements recorded in the latter half of the month. Daylight activity is increasing. Other operations are normal. Oceanography: Ice remains in Vincennes Bay as far West as line from O'brien to Southern most Chappel Islets. The thickness is still 42 inches. A series of bottom samples from 1 to 37 fathoms have been completed. In the survey work pipe signals were placed on the two northern Chappel Islets. Two ten foot tripod signals were placed on Cape Folger, one 75 yards and one one third of a mile from the tip of the cape. These are to be used for self ice movement studies The ice at Cape Folger has moved Westward 78 feet since March 25, average rate being .5 feet per day. Meteorology: The average monthly temperature was -0.2 Deg. F., highest +21.3 Deg. F., lowest -20.6 Deg. F. The average wind was 7.8 mph with the fastest 60 mph, maximum gust 89 mph. The snowfall was 6.6 inches. Ionosphere: There was a considerable increase in ionospheric disturbances in the last two weeks of August. 11 SID's were recorded in this period. There were no SID's during the first 15 days. Most pronounced started at 16 2245 finish 181700 ç start 250015 finish 251715, start 261200 finish 261930, Nine other SID's occurred between the 16th ans 28th with duration of 5 to 8 hours. Communications were curtailed during most of these periods or at best transmission was limited to short periods. Critical values FOF-2 increased during the latter half of the month on an average of 2.5 mc. There was also a marked increase in Sporadic E activity. F-MIN values have in the main shown a marked increase this month.

Ellsworth Station

IGY Nr. 311, August Sit Rep - Aurora: All programs were curtailed as the twilight increased. Auroras were seen on 19 nights despite the 50% cloudiness during the observation period. Vivid displays were seen on the 5, 15, 17, and 21 st of the month. All sky camera operation was normal. A week of spectrograph data was lost when the gear controlling the take up reel jammed. The camera Paul release solenoid LS-1 failed and was replaced. A spare is needed for next y year. Magnetograph operation was sporadic. It is suggest that more thorough familiarization with the working of the Chernowsky instrument be given to next year's observers. Cosmic Rays: The station operations were normal except for some faulty counting due to large voltage transients in the 60 cycle generators because of overloads in the circuits. Meteorology: Arrangments of the snow field were completed, necessitiated by the huge drifts left by the storm of July 27-28. Neww walkout doors were installed in the inflation shelter to keep the snow out and heat in. The snow level is now above the top of the shelter and several soundings were lost at the end of the month when winds prevented the digging of a hole through the drifts packed against the doors. During one week the release hole from the shelter had to be dug out 4 times to get the balloon away. The first sunrise was on the 20th. Glaciology: The program remianed routine. Snow accumulation was 1.8 cm for the month. Sea ice is now 121 inches thick. A considerable press was created during the middle of the month and a wide lead open up off shore but this later collapsed creating new ridges and rafting. Ionosphere: Operations normal.

General

The following greetings have been received from Dr. H. Hoinkes in Austria. " Dear Mr. Crary, best wishes for a lovely sunrise and for a most successful scientific work during the coming summer season to you and to all the scientists on Little America and at the other US Stations in the Antarctic. Yours sincerely."

IGY Wash DC Circular Nr. 133 - The following message is sent to all Antarctic Station for the 2nd meeting of the Special Committee on Antarctic Research held in Moscow August 1958. "SCAR on the occasion of its second meeting in Moscow sent to all Antarctic Stations greetings and best wishes for continued success in their scientific investigations. Reports to this meeting indicate that scientific work in Antarctica will be continued in 1959 on a scale commensurable with that during the IGY. Your scientific results and experience will be most valuable in insuring continuity with future Antarctic research. Signed Laclavere." (president SCAR). Dr. Larry Gould is US delegate to SCAR. Dr. Harry Wexler is alternate Delegate. US was representated by this meeting by Dr. Wexler.

From Mirny, Rubin Nr. 17 - Outline of forth coming Soviet operations. Lena is to depart Kaliningrad Oct. 15 to proceed directly to Queen Maud Land to establish a seven man station which will be called Lazarev. The Lena will then conduct oceanographic studies in the region. The Ob will depart November 1 for Mirny with cargo. It will then proceed to the Bellingshausen Sea to establish a seven man base which will be called Bellingshausen. The OB will then conduct scientific and oceanographic studies in that region. The passenger ship Dzerzrinsky and the refigerator ship will depart for Mirny about November 5. All ships will proceed via Capetown. The Glaciological and seismic traverse will leave Mirny for Sovietskaya October 1. On the same

date the tractor swing for Sovietskaya will depart. This Soviet Station will be transferred 800 kms westward to the region of the Pole of Inaccessibility. Pioneerskaya will be closed. Komsomolskaya will continue as a way station. Vostok will remain as a scientific station with two additional scientists. Oasis will continue as a three man station carrying out meteorology and magnetic programs. One new ski equipped LI12 and one new LI2 are expected on the ships.

Sub-surface celius temperatures were measured 31st March to Mid April 1958 at levels 10, 20, 40 cms respectively at the following distances from Mirny in the direction of Pioneerskaya:

Dist.	10	20	40
50 kms	29.5	30.2	31.8
225	30.4	32.4	33.2
325	35.2	36.0	36.5
375	36.0	37.5	39.0

Minimum temperature for Vostok was 35.8 Deg. C., between 0712Z and 0800 Z August, Sovietskaya 86.7 Deg. C.b between 0919Z and 0920Z August. These were measured by distance reading with electrical resistance thermometer with known correction exposed in standard shelter. Temperature went lower immediately after observations but no calibration could be made of thermometer. The synoptic situation was a deep vertical low with central heights 456 dekameters at 500 mb and 76 dekameters at 300 mb which moved slowly from 75S-70E on August 4 to 82S-130E on August 10, thence northeasterwards. Sovietskaya and Vostok temperatures were below seventy much of this period.