

DEPLOYMENT SUMMARY

The ER-2 (NASA 706) conducted, in conjunction with the DC-8 (NASA 717), the Airborne Antarctic Ozone Experiment from 12 August 1987 through 3 October 1987. The aircraft transited from Ames Research Center to Punta Arenas, Chile with enroute stops at Howard Air Force Base, Canal Zone and Puerto Montt, Chile.

Twelve flights were conducted from Punta Arenas over the Antarctic Peninsula to as far as 72° south latitude. In addition to the atmospheric science experiments on board the aircraft, pilot observations included extremely high winds aloft (<150 knots) and the presence of cirrus cloud above 64,000 feet.

The deployment concluded with the ferry of the aircraft back to Ames with the same enroute stops.

Airborne Antarctic Ozone Experiment ER-2 Principal Investigators

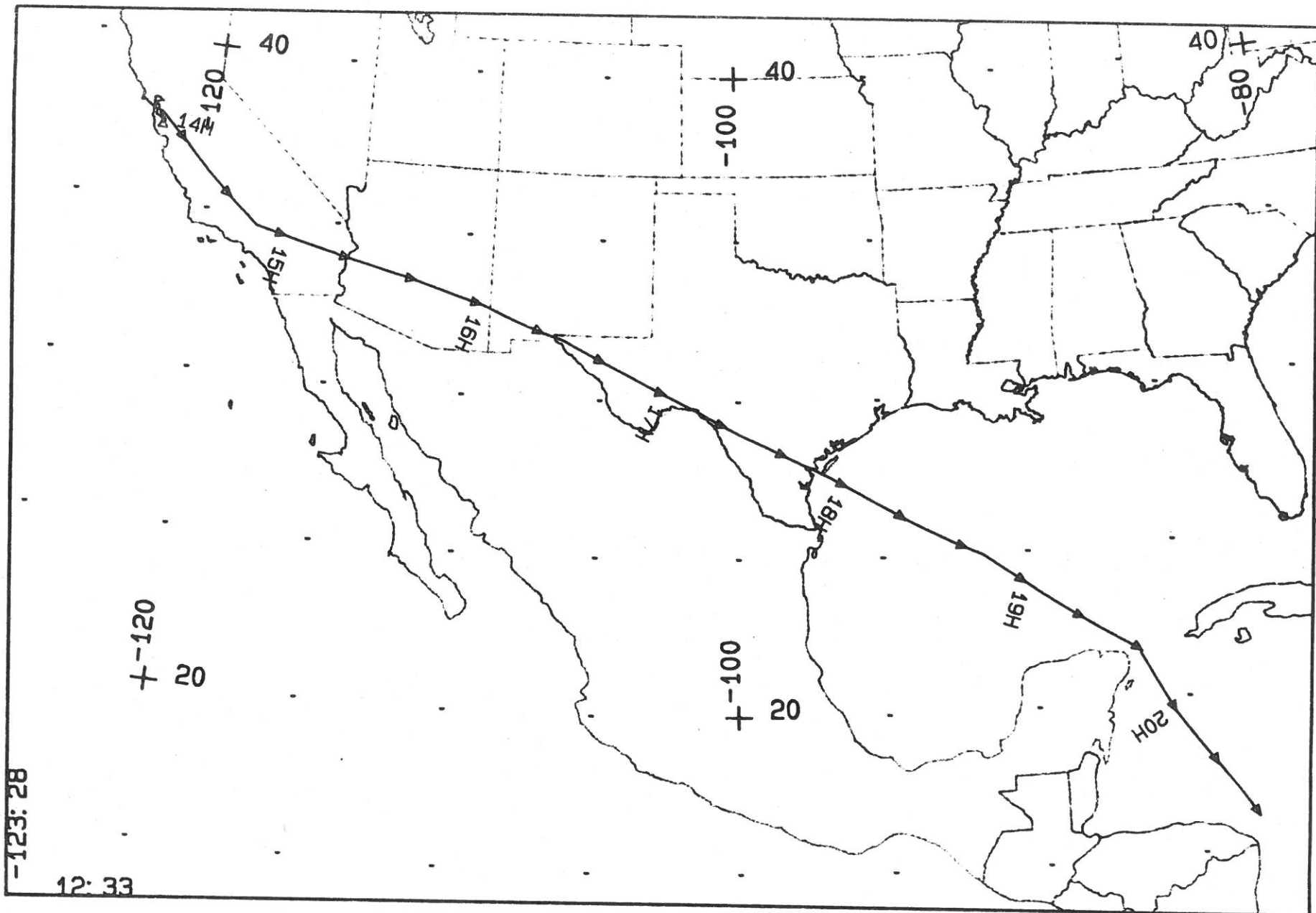
| <u>Instrument or Measurement</u> | <u>Name/Affiliation</u> |
|------------------------------------|-------------------------|
| Meteorological Measurements System | Chan/NASA-ARC |
| Resonance Fluorescence Detector | Anderson/Harvard |
| NO _y Detector | Fahey/NOAA |
| Aerosol and Cloud Spectrometers | Ferry/NASA-ARC |
| Multi Filter Sampler | Gandrud/NCAR |
| Microwave Temperature Profiler | Gary/JPL |
| Whole Air Sampler | Heidt/NCAR |
| | Vedder/ NASA/ARC |
| Lyman-alpha Hygrometer | Kelly/NOAA |
| Laser Absorption Spectrometer | Lowenstein/NASA-ARC |
| Particle Chemistry Impactor | Oberbeck/NASA/ARC |
| UV-Absorption Ozone Photometer | Proffitt-NOAA |
| UV Ozone Photometer | Starr/NASA-ARC |
| Condensation Nucleus Counter | Wilson/U of Denver |

AIRBORNE ANTARCTIC OZONE EXPERIMENT
ER-2 FLIGHT SUMMARY

| FLIGHT NUMBER | FLIGHT DATE | FLIGHT DURATION | FLIGHT DESCRIPTION |
|---------------|-------------|-----------------|--|
| 87-159 | 12 AUG 87 | 8:20 | Ferry of Aircraft from Moffett Field, CA to Howard AFB, Canal Zone |
| 87-160 | 14 AUG 87 | 8:45 | Ferry of Aircraft from Howard AFB to Puerto Montt, Chile |
| 87-161 | 15 AUG 87 | 2:30 | Ferry of Aircraft from Puerto Montt to Punta Arenas, Chile |
| 87-162 | 17 AUG 87 | 6:00 | Flight 1 over Antarctica |
| 87-163 | 18 AUG 87 | 6:00 | Flight 2 over Antarctica |
| 87-164 | 23 AUG 87 | 7:00 | Flight 3 over Antarctica |
| 87-165 | 28 AUG 87 | 7:00 | Flight 4 over Antarctica |
| 87-166 | 30 AUG 87 | 7:00 | Flight 5 over Antarctica |
| 87-167 | 2 SEP 87 | 7:05 | Flight 6 over Antarctica |
| 87-168 | 4 SEP 87 | 6:45 | Flight 7 over Antarctica |
| 87-169 | 9 SEP 87 | 5:55 | Flight 8 over Antarctica |
| 87-175 | 16 SEP 87 | 6:55 | Flight 9 over Antarctica |
| 87-176 | 20 SEP 87 | 7:15 | Flight 10 over Antarctica |
| 87-177 | 21 SEP 87 | 7:00 | Flight 11 over Antarctica |
| 87-178 | 22 SEP 87 | 6:55 | Flight 12 over Antarctica |
| 87-179 | 29 SEP 87 | 2:25 | Ferry of Aircraft from Punta Arenas to Puerto Montt, Chile |
| 88-001 | 1 OCT 87 | 8:15 | Ferry of Aircraft from Puerto Montt, Chile to Howard AFB, Canal Zone |
| 88-002 | 3 OCT 87 | 7:45 | Ferry of Aircraft from Howard AFB, Canal Zone to Moffett Field, CA |

AIRBORNE ANTARCTIC OZONE EXPERIMENT
Aerosol Particulate Sampler Summary

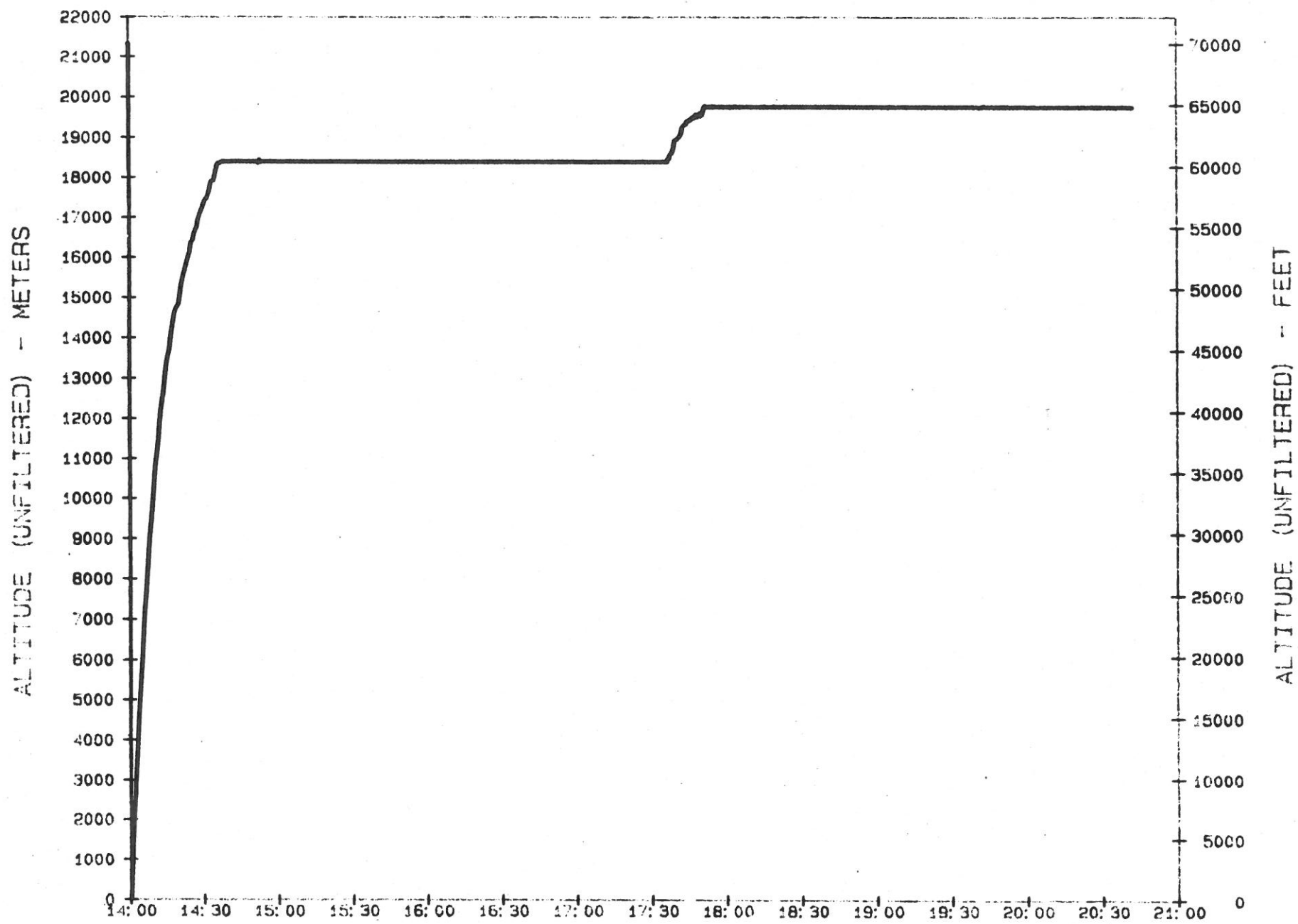
| FLIGHT NUMBER | FLIGHT DATE | | APS #1 | APS #2 | APS #3 | APS #4 | APS #5 | APS #6 | |
|---------------|-------------|----------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|--|
| 87-159 | 12 AUG 87 | Exp Time Altitude | 1805-1820 65,000 | 1821-1831 65,000 | | | | | |
| 87-160 | 14 AUG 87 | Exp Time Altitude | | | 1752-1802 65,000 | 1802-1814 65,000 | | | |
| 87-161 | 15 AUG 87 | Exp Time Altitude | | | | | 1640-1650 65,000 | 1651-1701 65,000 | |
| 87-162 | 17 AUG 87 | Exp Time Altitude | 1522-1532 60,000 | 1537-1547 60,000 | 1648-1658 60,000 | 1658-1708 60,000 | 1832-1842 63,000 | 1842-1852 63,000 | |
| 87-163 | 18 AUG 87 | Exp Time Altitude | 1505-1510 61,000 | 1518-1528 61,000 | 1607-1619 61,000 | 1620-1631 61,000 | 1654-1705 61,000 | 1709-1720 61,000 | |
| 87-164 | 23 AUG 87 | Exp Time Altitude | 1512-1522 55,000 | 1527-1537 55,000 | 1630-1640 55,000 | 1700-1710 55,000 | | 1718-1728 55,000 | |
| 87-165 | 28 AUG 87 | Exp Time Altitude | 1416-1426 56,000 | 1446-1456 56,000 | 1519-1529 56,000 | 1554-1604 56,000 | 1617-1627 56,000 | 1632-1642 56,000 | |
| 87-166 | 30 AUG 87 | Exp Time Altitude | 1412-1422 58,000 | 1442-1452 58,000 | 1511-1521 58,000 | 1546-1556 58,000 | 1627-1637 66,200 | 1649-1659 52,000 | |
| 87-167 | 2 SEP 87 | Exp Time Altitude | 1457-1507 57,000 | 1508-1518 57,000 | 1555-1605 57,000 | 1606-1616 57,000 | | 1658-1708 65,400 | |
| 87-168 | 4 SEP 87 | Exp Time Altitude | 1441-1451 58,500 | 1452-1502 58,500 | 1539-1549 58,500 | 1550-1600 58,500 | | 1641-1651 64,400 | |
| 87-169 | 9 SEP 87 | Exp Time Altitude | 1507-1518 63,000 | 1528-1538 63,000 | 1548-1558 66,000 | 1641-1651 61,500 | 1656-1706 61,500 | 1722-1732 58,000 | |
| 87-175 | 16 SEP 87 | Exp Time Altitude | 1539-1549 63,000 | 1600-1610 63,000 | 1744-1754 60,000 | 1800-1810 60,000 | | 1724-1734 67,000 | |
| 87-176 | 20 SEP 87 | Exp Time Altitude | 1554-1604 59,000 | 1622-1632 59,000 | 1637-1647 67,000 | 1703-1714 45,000 | | 1714-1724 45,000 | |
| 87-177 | 21 SEP 87 | Exp Time Altitude | 1543-1553 62,500 | 1616-1626 64,000 | 1645-1655 66-45K | 1840-1850 61,000 | | | |
| 87-178 | 22 SEP 87 | Exp Time Altitude | 1629-1639 65,000 | 1702-1712 45,000 | 1726-1738 61,500 | 1738-1748 61,500 | | 1552-1602 65,000 | |
| 87-179 | 29 SEP 87 | 2:25 | Ferry of Aircraft from Punta Arenas to Puerto Montt, Chile | | | | | | |
| 88-001 | 1 OCT 87 | 8:15 | Ferry of Aircraft from Puerto Montt to Howard AFB, Canal Zone | | | | | | |
| 88-002 | 3 OCT 87 | 7:45 | Ferry of Aircraft from Howard AFB to Moffett Field, CA | | | | | | |



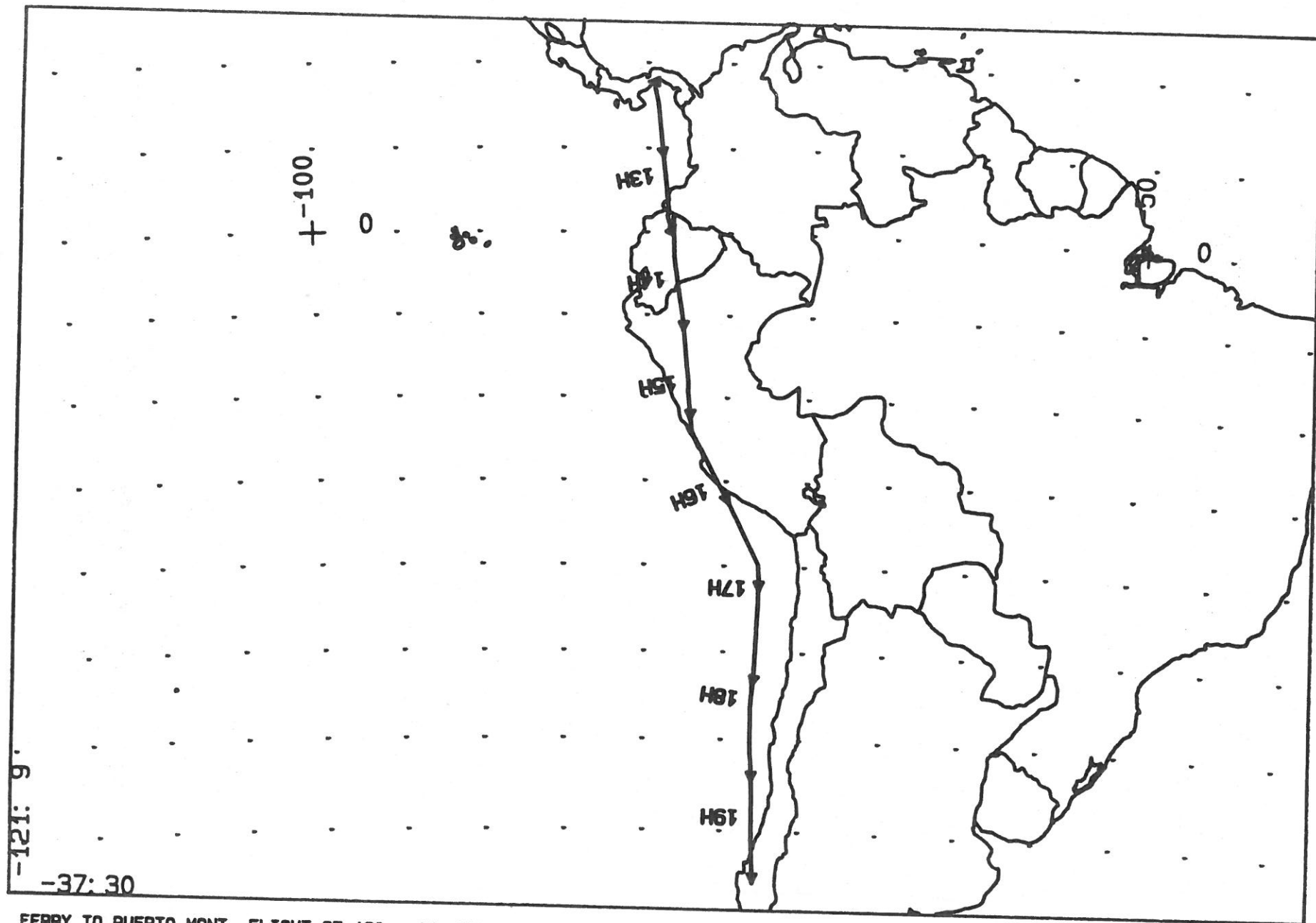
FERYY TO HOWARD AFB FLIGHT 87-159 12 AUGUST 1987 A/C 706

OVERLAY FOR %CWRLD LAMBERT CONFORMAL PROJECTION: SP1 = 12.3 SP2 = 34.1 CM = -102.7 ROTATED BY 0.0

14: 00: 00 TO 20: 42: 40 UT SCALE = 1: 1.86E+07 TIME TICS EVERY 20.00 MINUTES



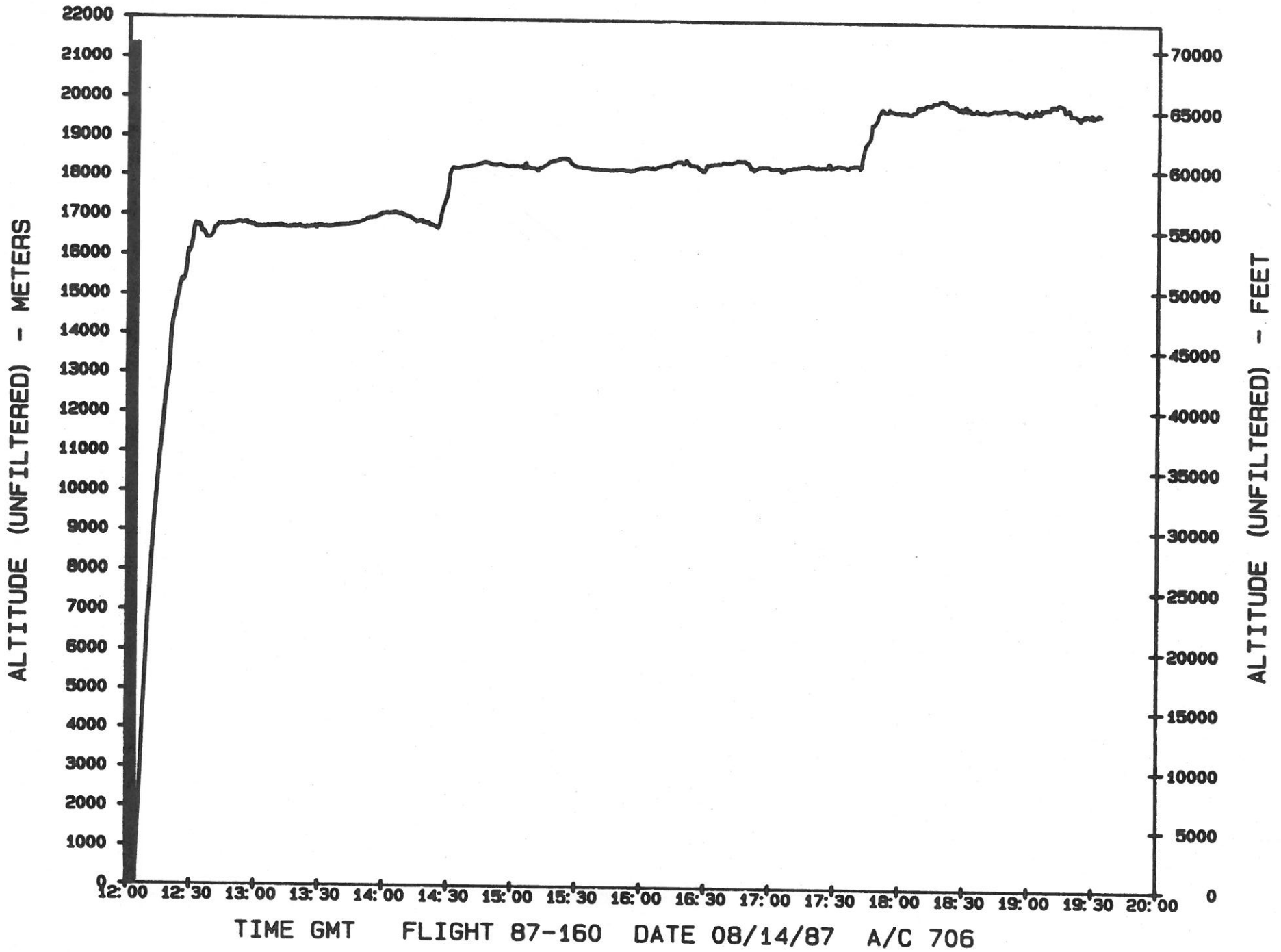
TIME GMT FLIGHT 87-159 DATE 08/12/87 A/C 706

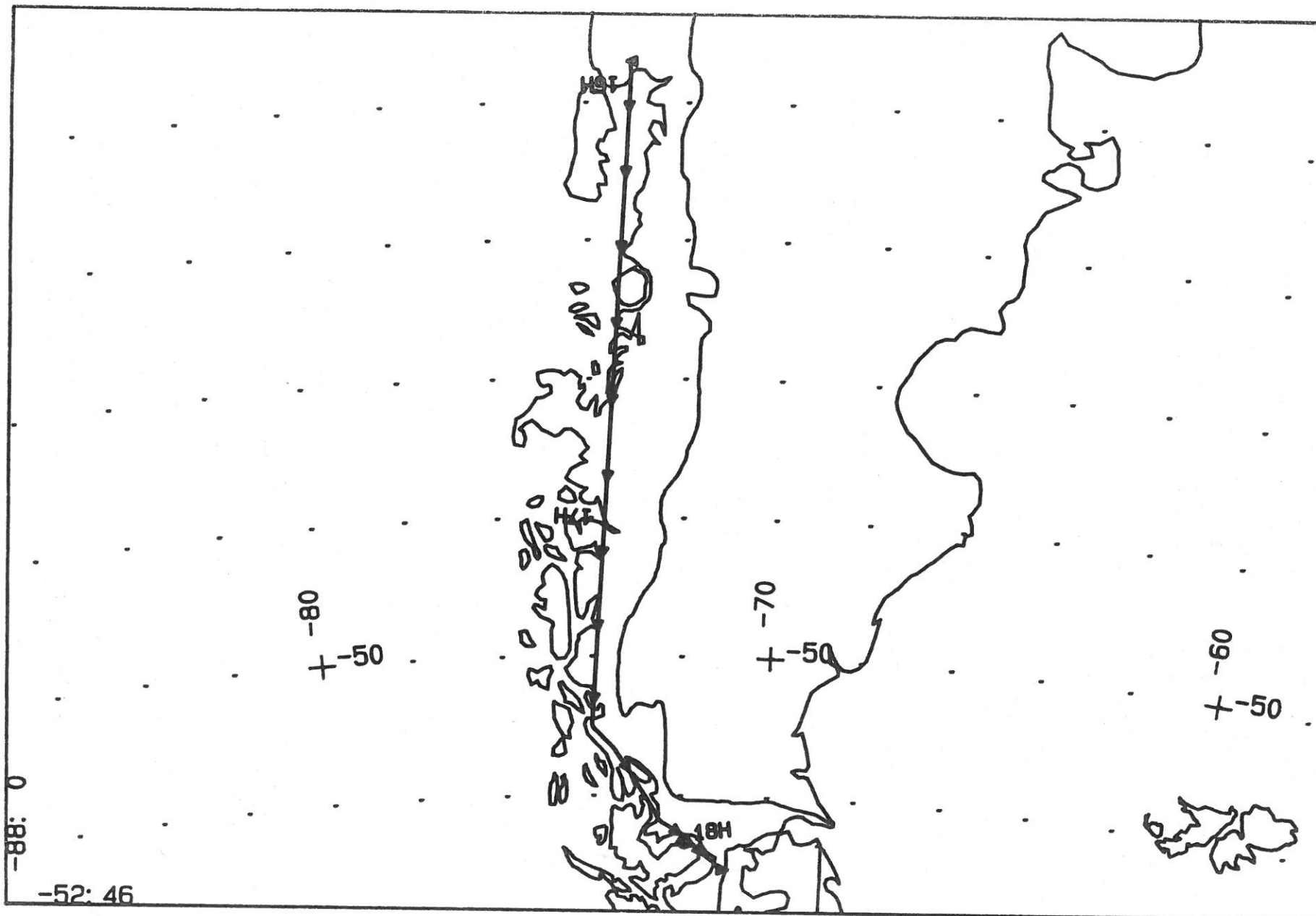


FERRY TO PUERTO MONT FLIGHT 87-160 14 AUGUST 1987 A/C 706

OVERLAY FOR %CWRLD LAMBERT CONFORMAL PROJECTION: SP1 = 16.7 SP2 = -29.8 CM = -76.1 ROTATED BY 0.0

12:00:05 TO 19:33:15 UT





FLIGHT 87-161

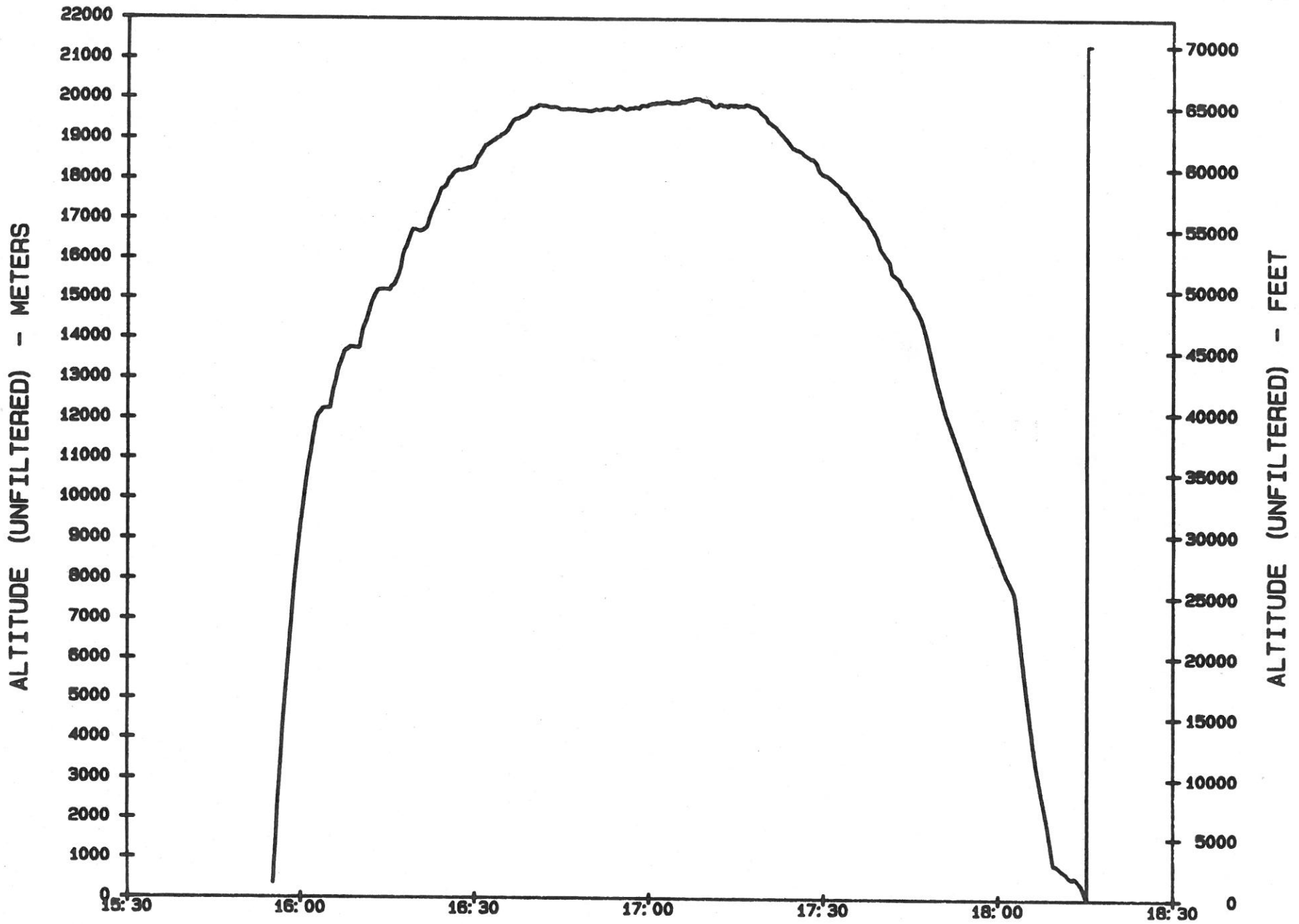
15 AUGUST 1987 PUERTO MONTT TO PUNTA ARENAS, CHILE

OVERLAY FOR %CWRLD

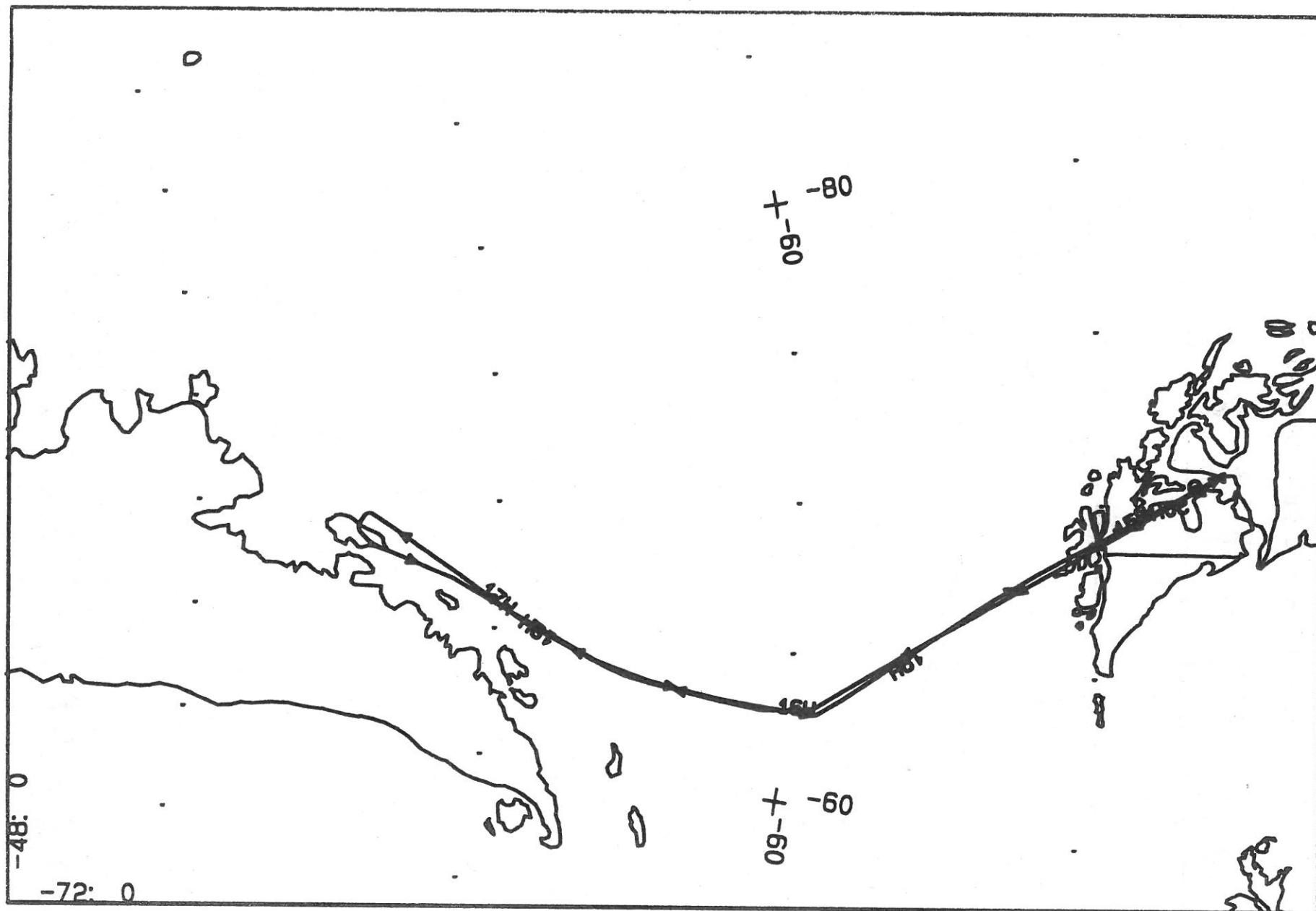
LAMBERT CONFORMAL PROJECTION: SP1 = -39.5 SP2 = -51.1 CM = -72.5 ROTATED BY 0.0

15: 55: 10 TO 18: 16: 00 UT

SCALE = 1: 8.67E+06 TIME TICS EVERY 10.00 MINUTES

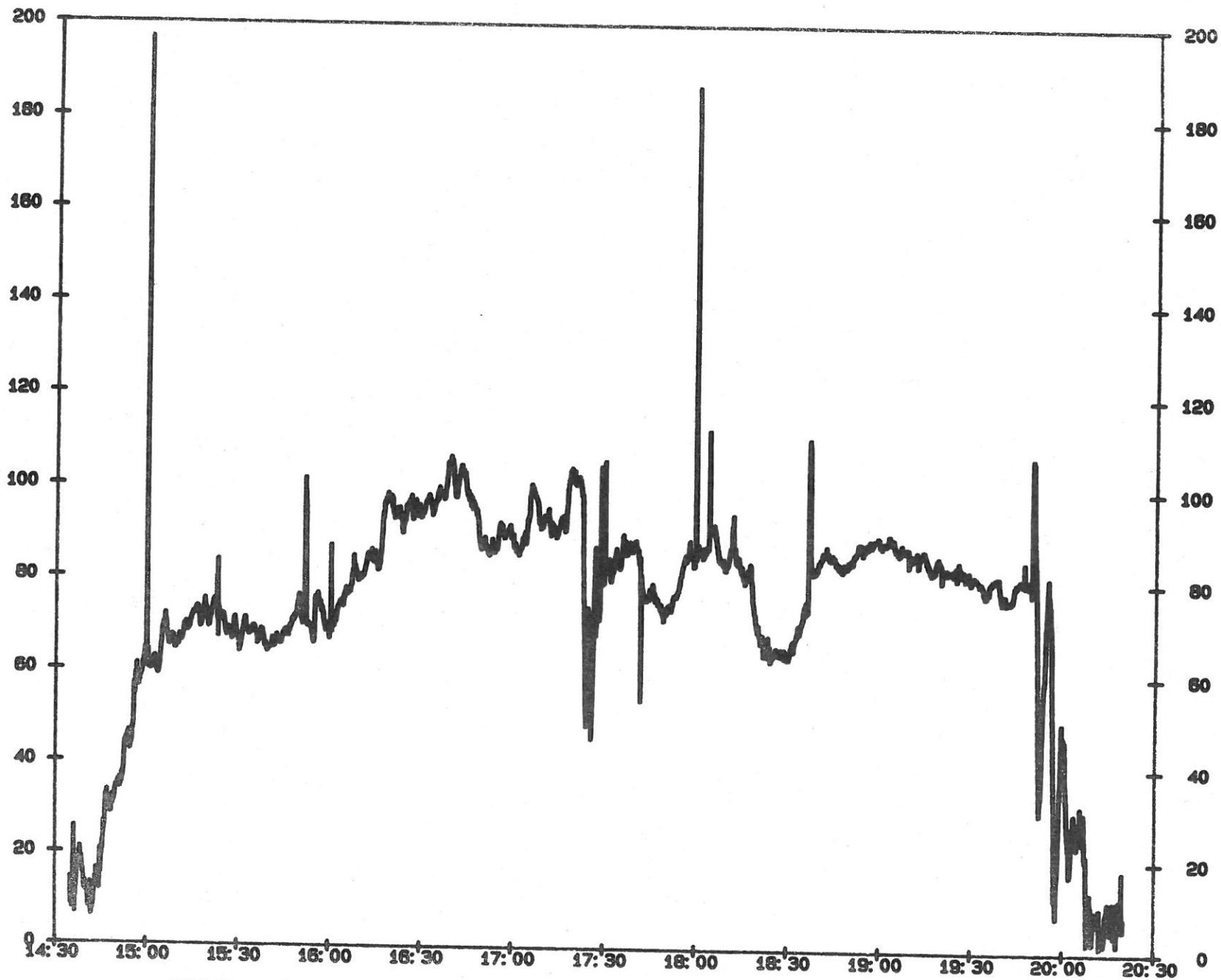


TIME GMT FLIGHT 87-161 DATE 08/15/87 A/C 706

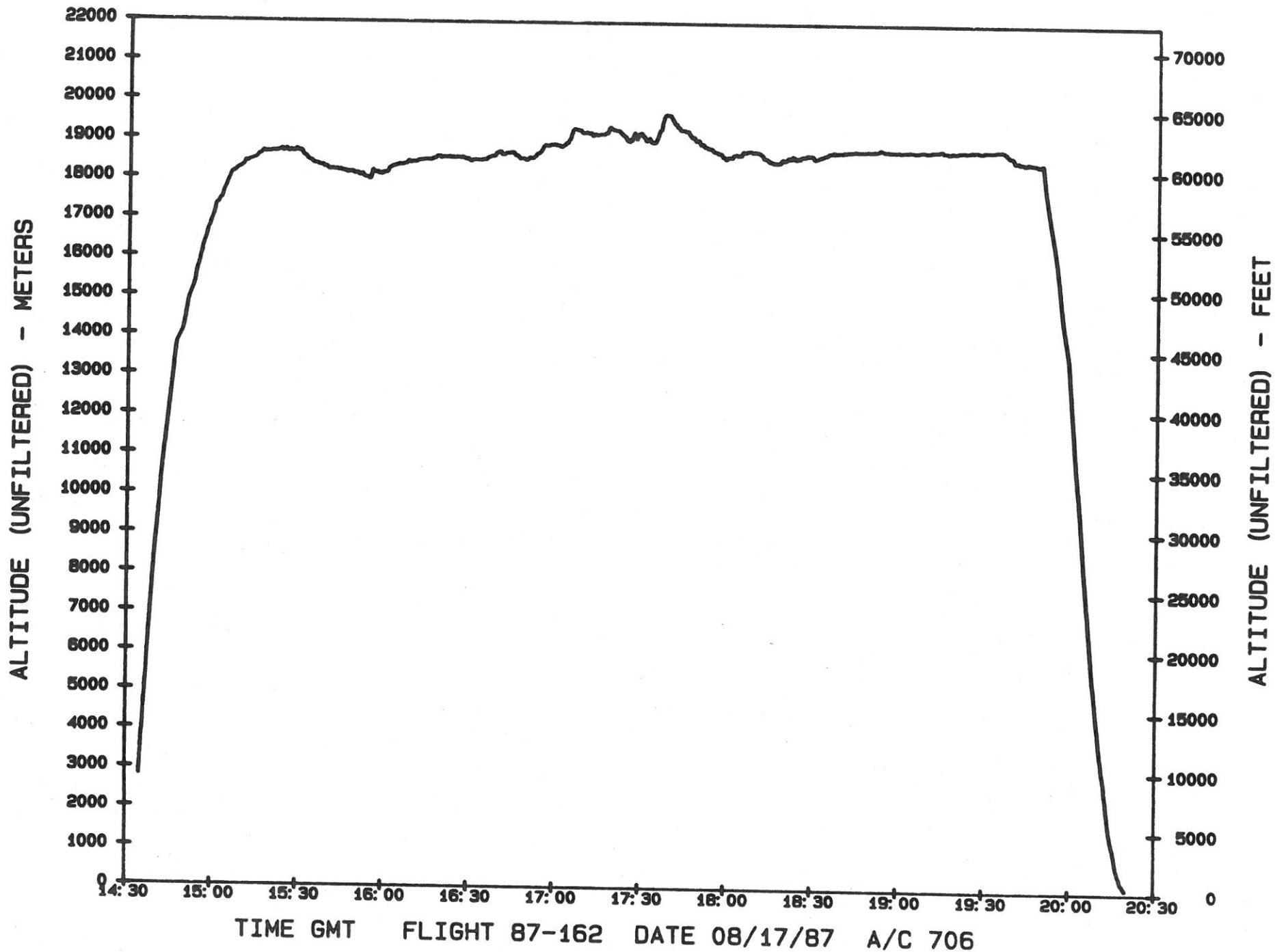


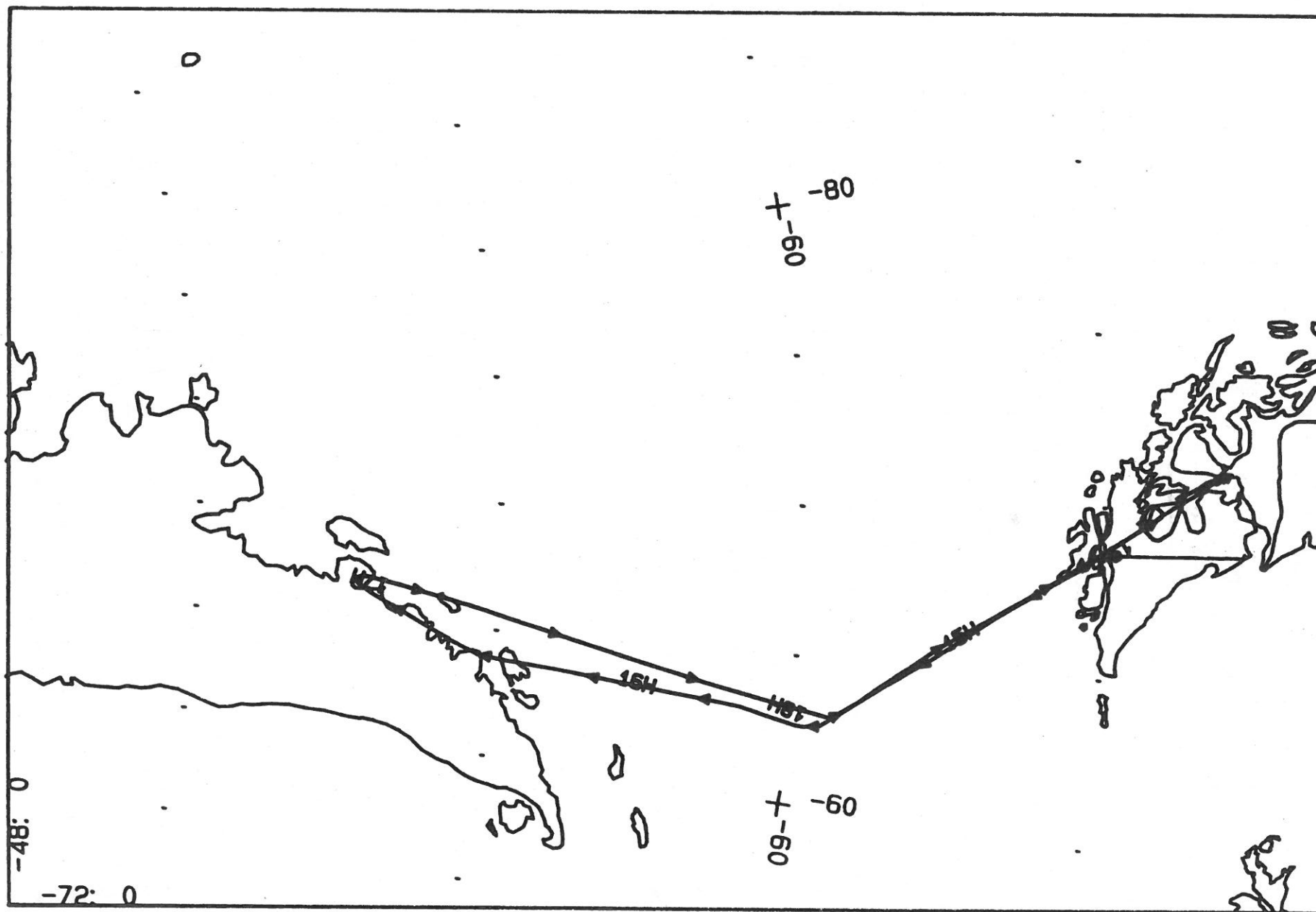
FLIGHT 87-162 17 AUGUST 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 1 OVER ANTARCTICA
 OVERLAY FOR %CHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 14: 35: 00 TO 20: 20: 10 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES

WIND SPEED - KNOTS

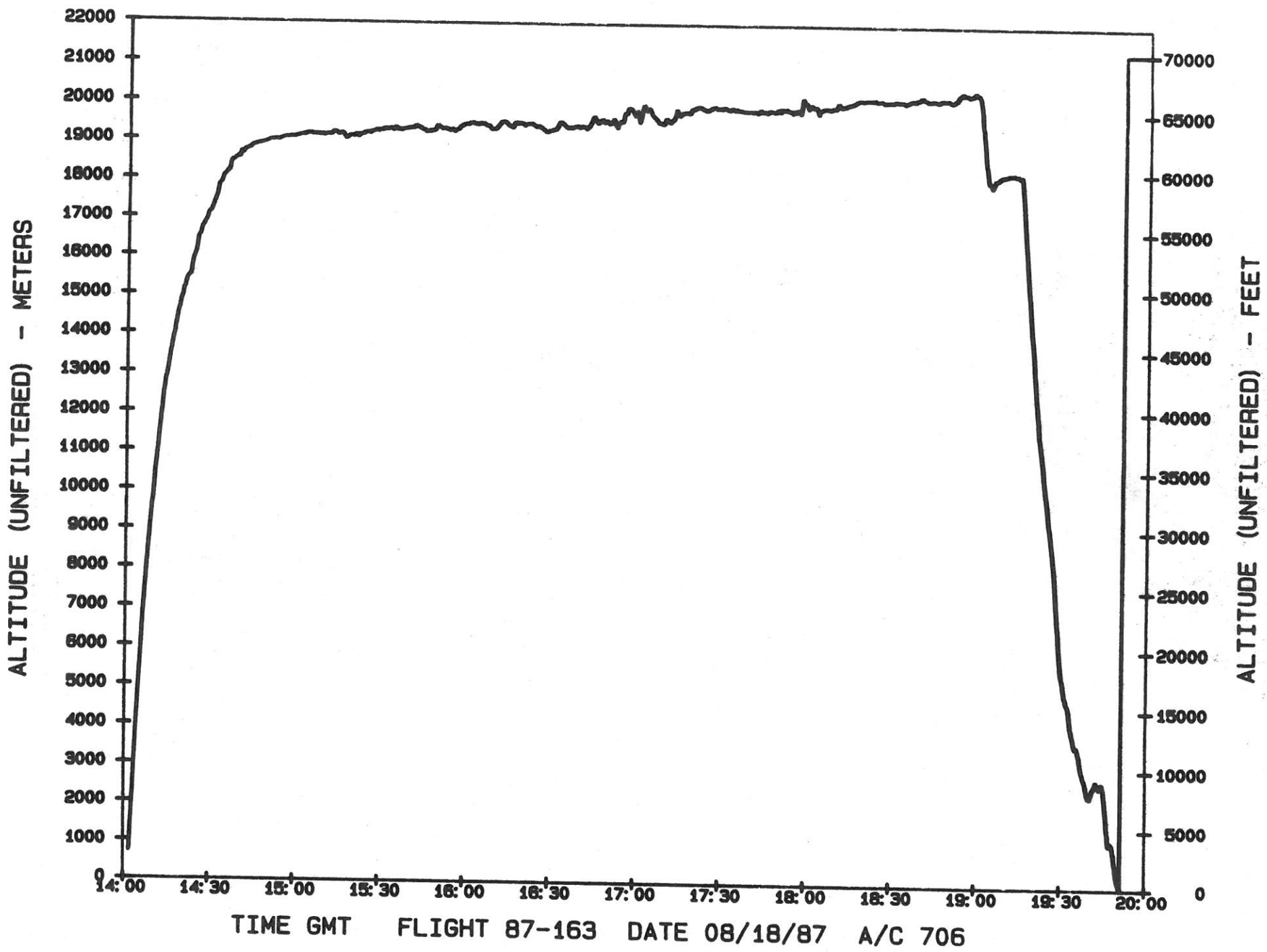


TIME GMT FLIGHT 87-162 DATE 08/17/87 A/C 706



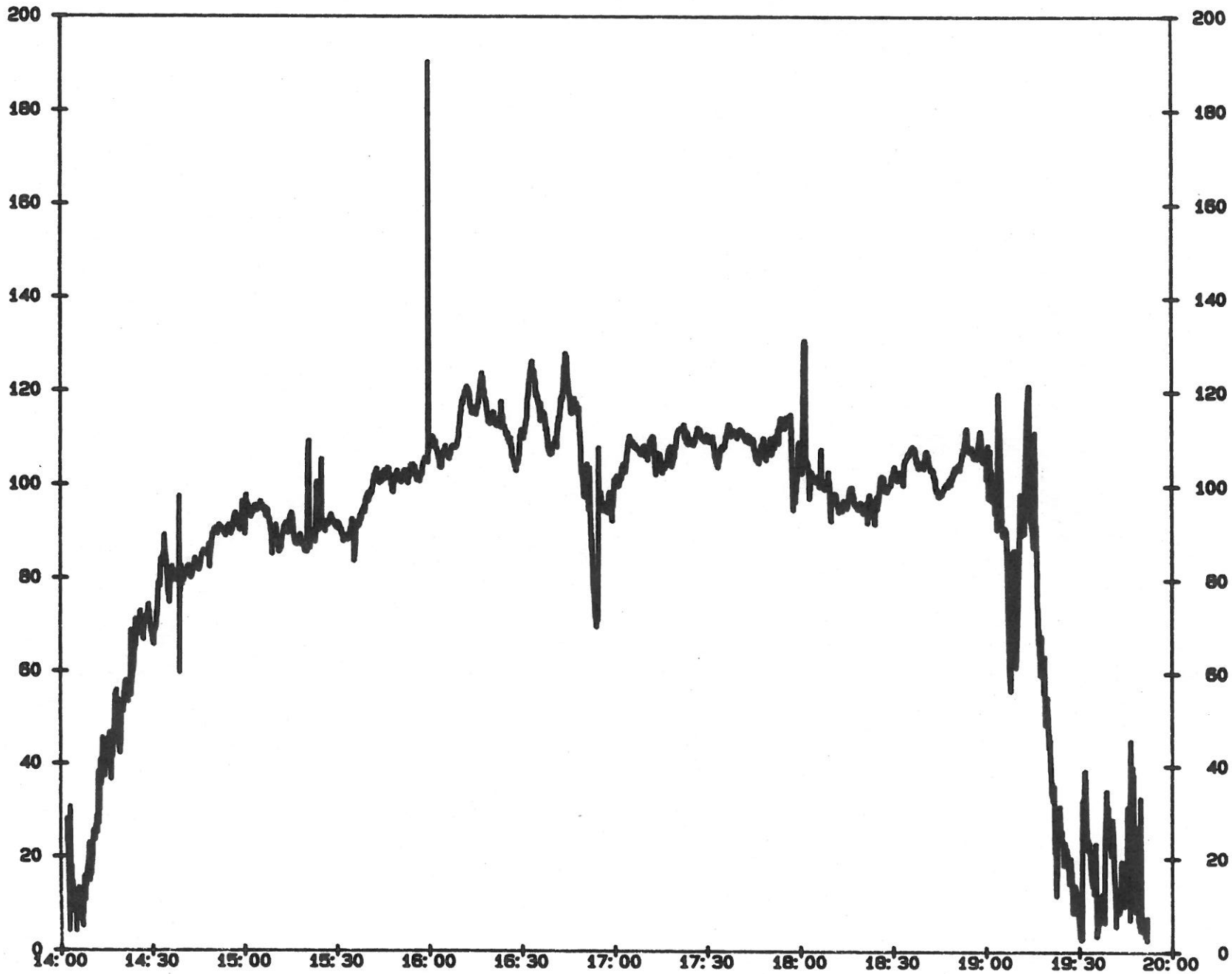


FLIGHT 87-163 18 AUGUST 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 2 OVER ANTARCTICA
 OVERLAY FOR XCHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 14:02:00 TO 19:51:10 UT SCALE = 1:1.00E+07 TIME TICS EVERY 20.00 MINUTES

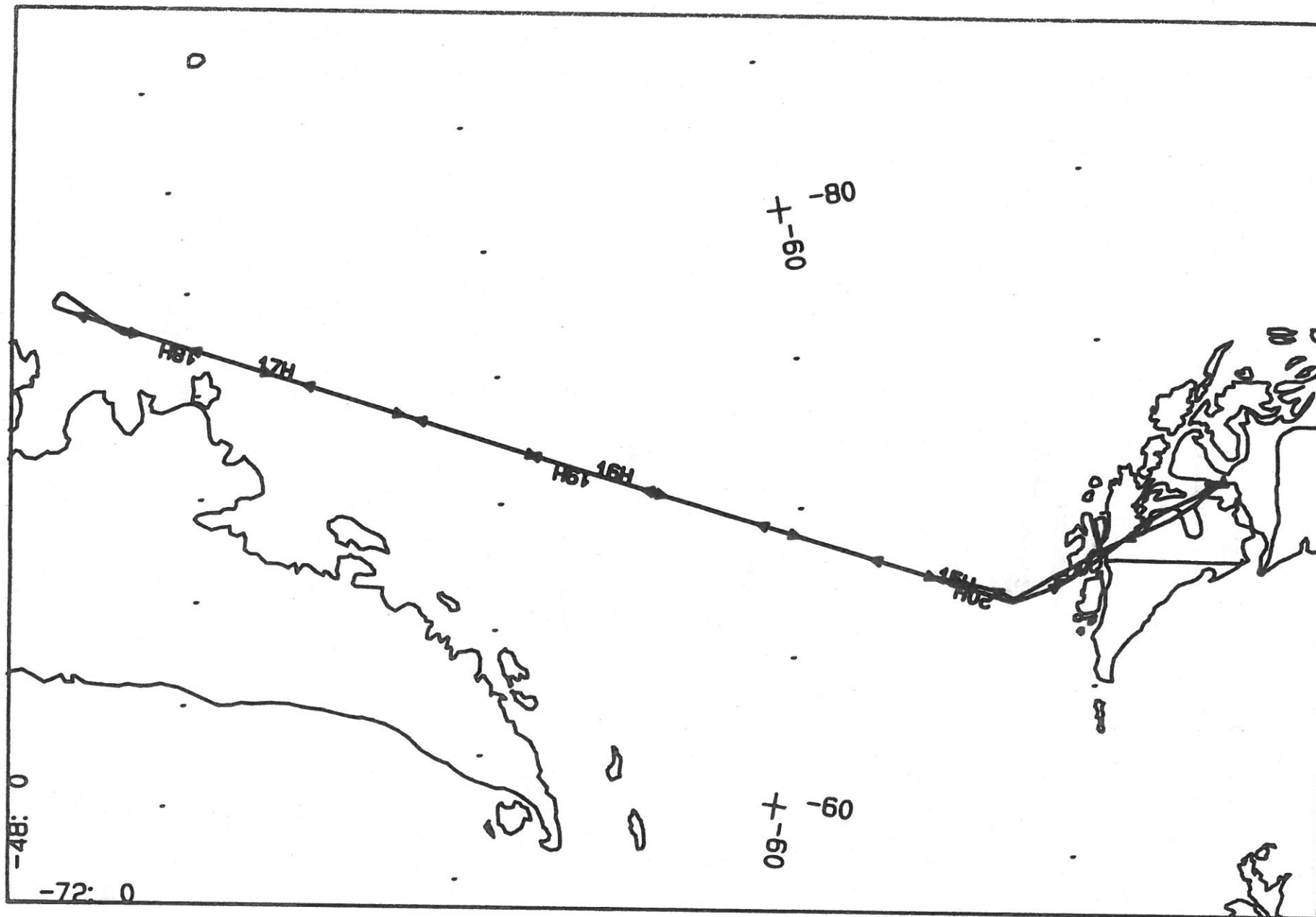


TIME GMT FLIGHT 87-163 DATE 08/18/87 A/C 706

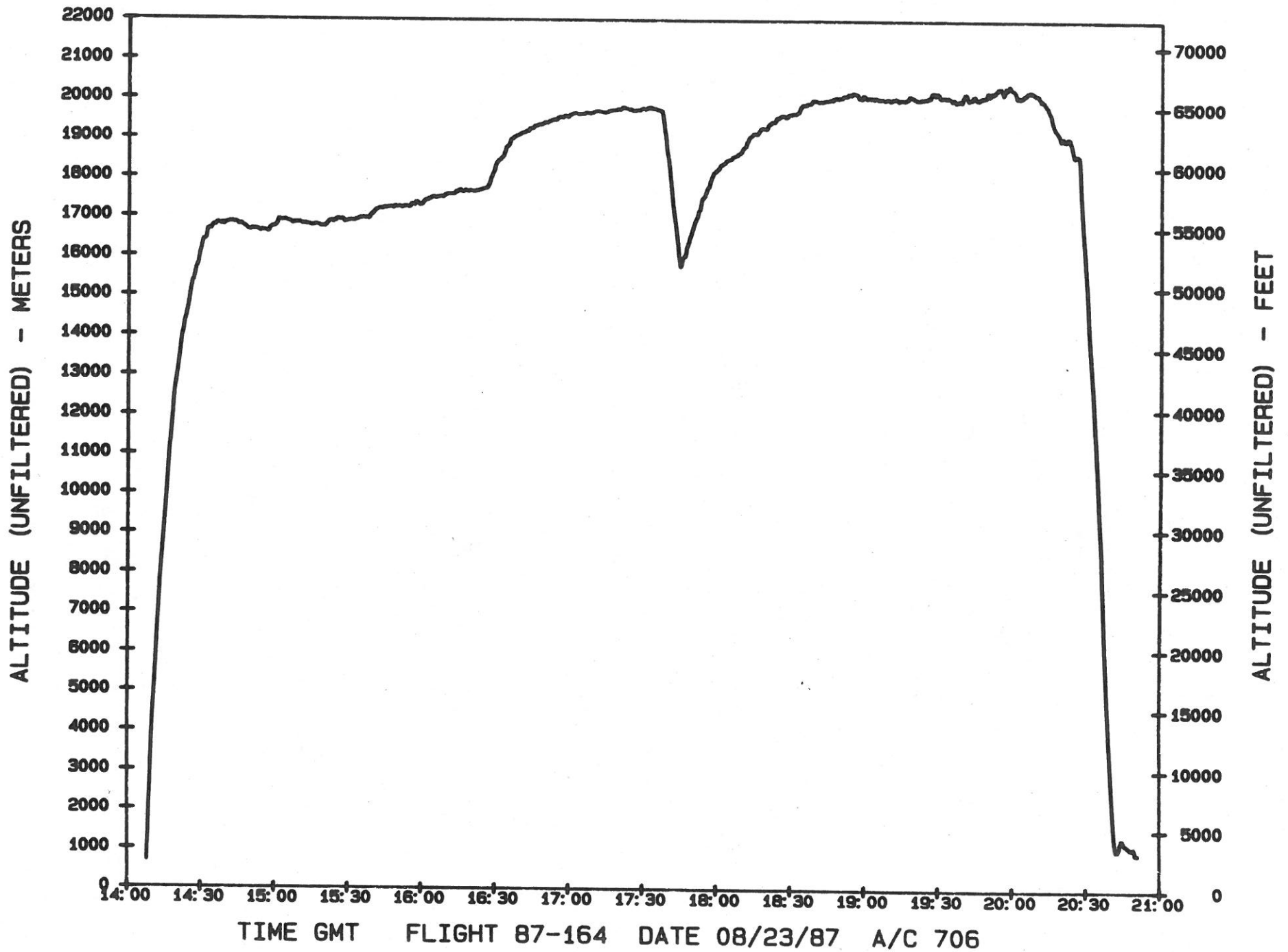
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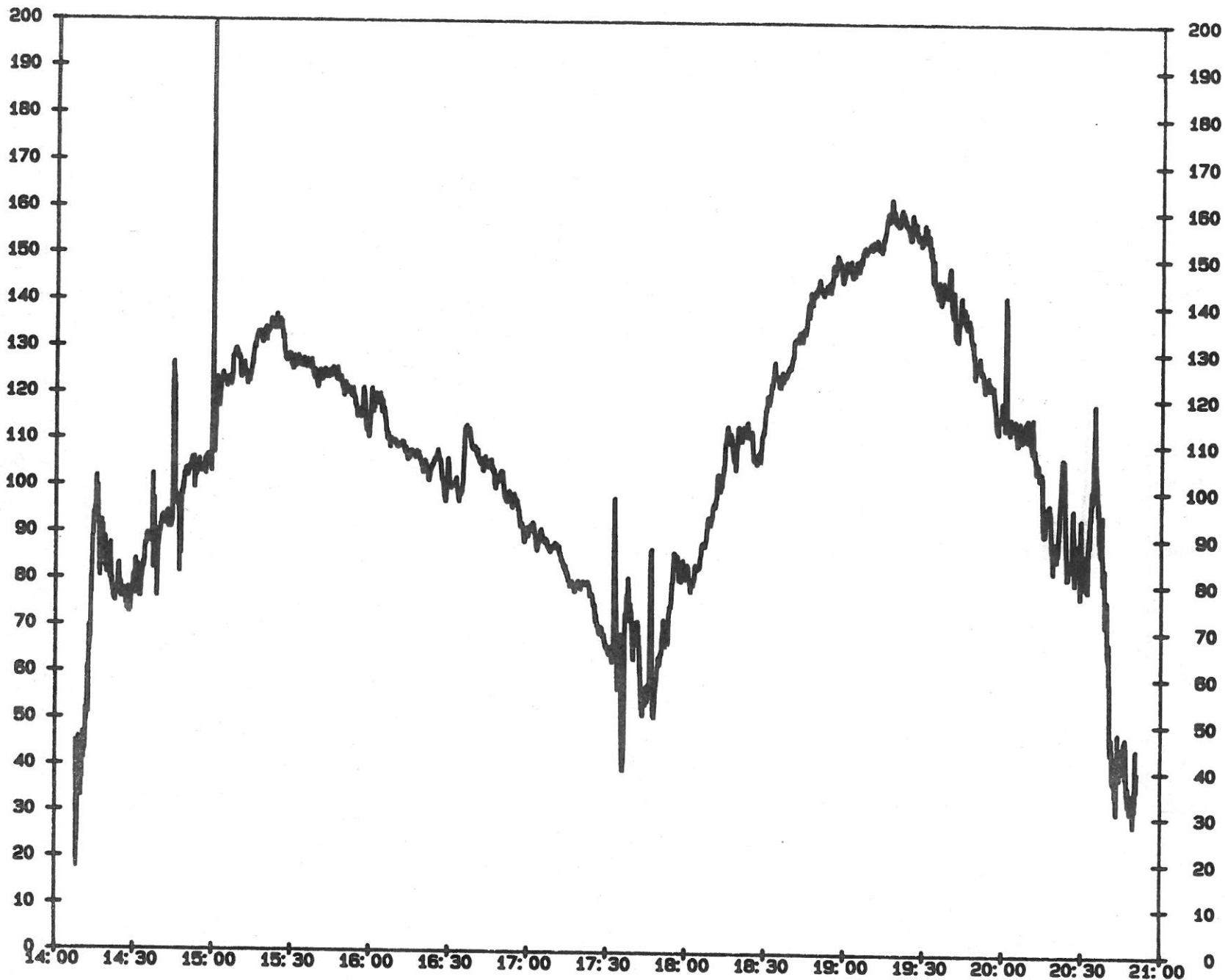
TIME GMT FLIGHT 87-163 DATE 08/18/87 A/C 706



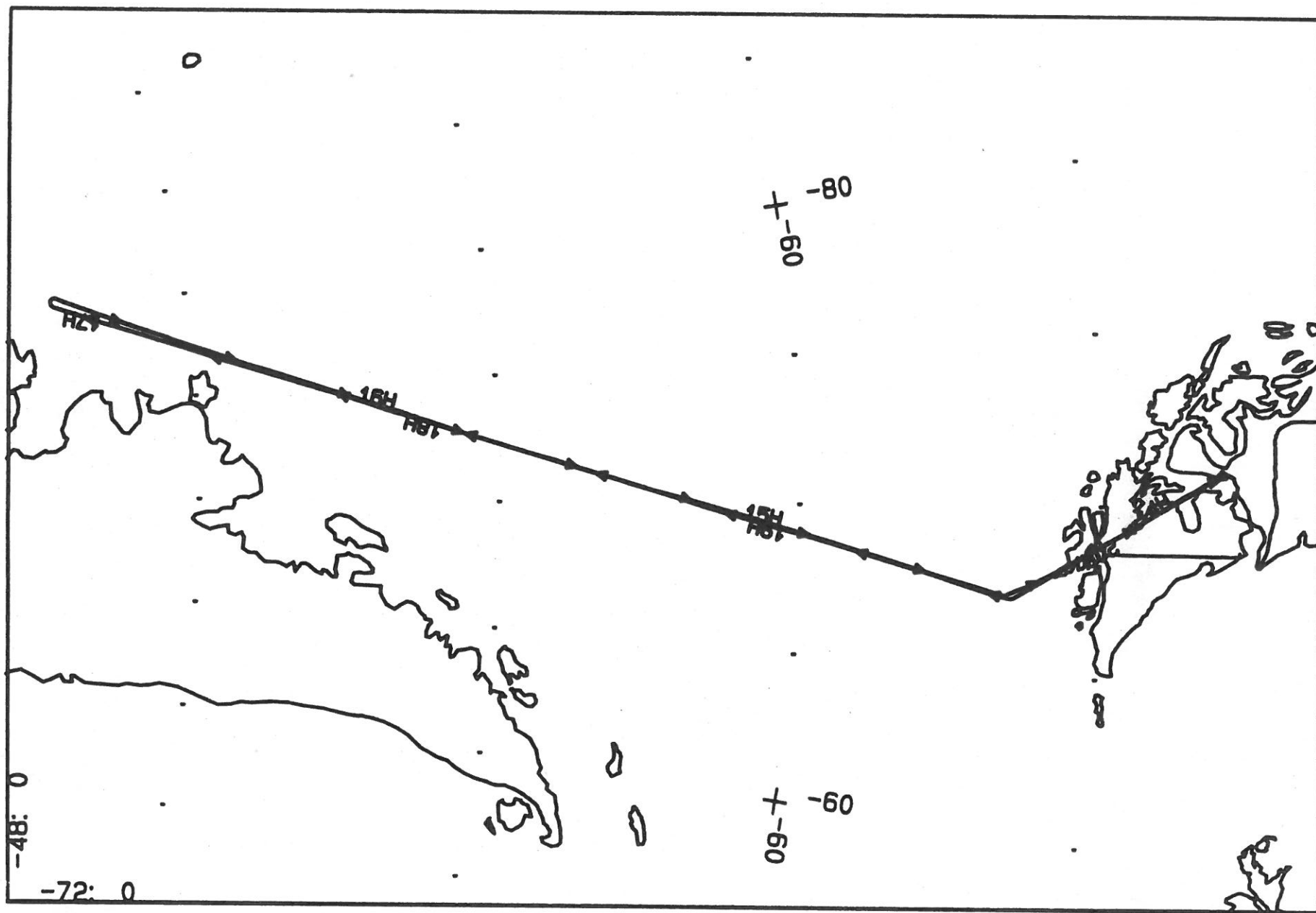
FLIGHT 87-164 23 AUGUST 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 3 OVER ANTARCTICA
 OVERLAY FOR %CHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
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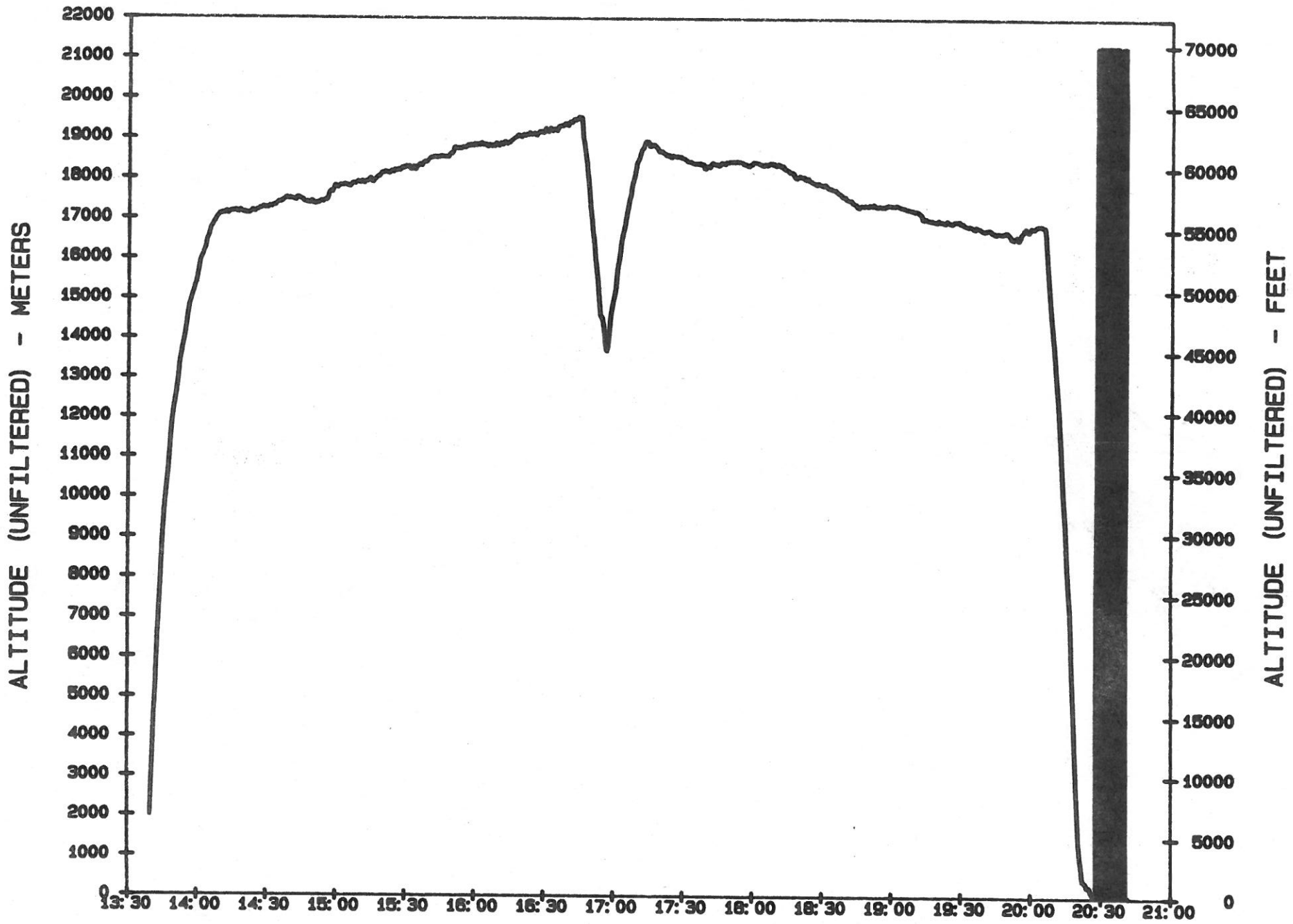
WIND SPEED - KNOTS



TIME GMT FLIGHT 87-164 DATE 08/23/87 A/C 706

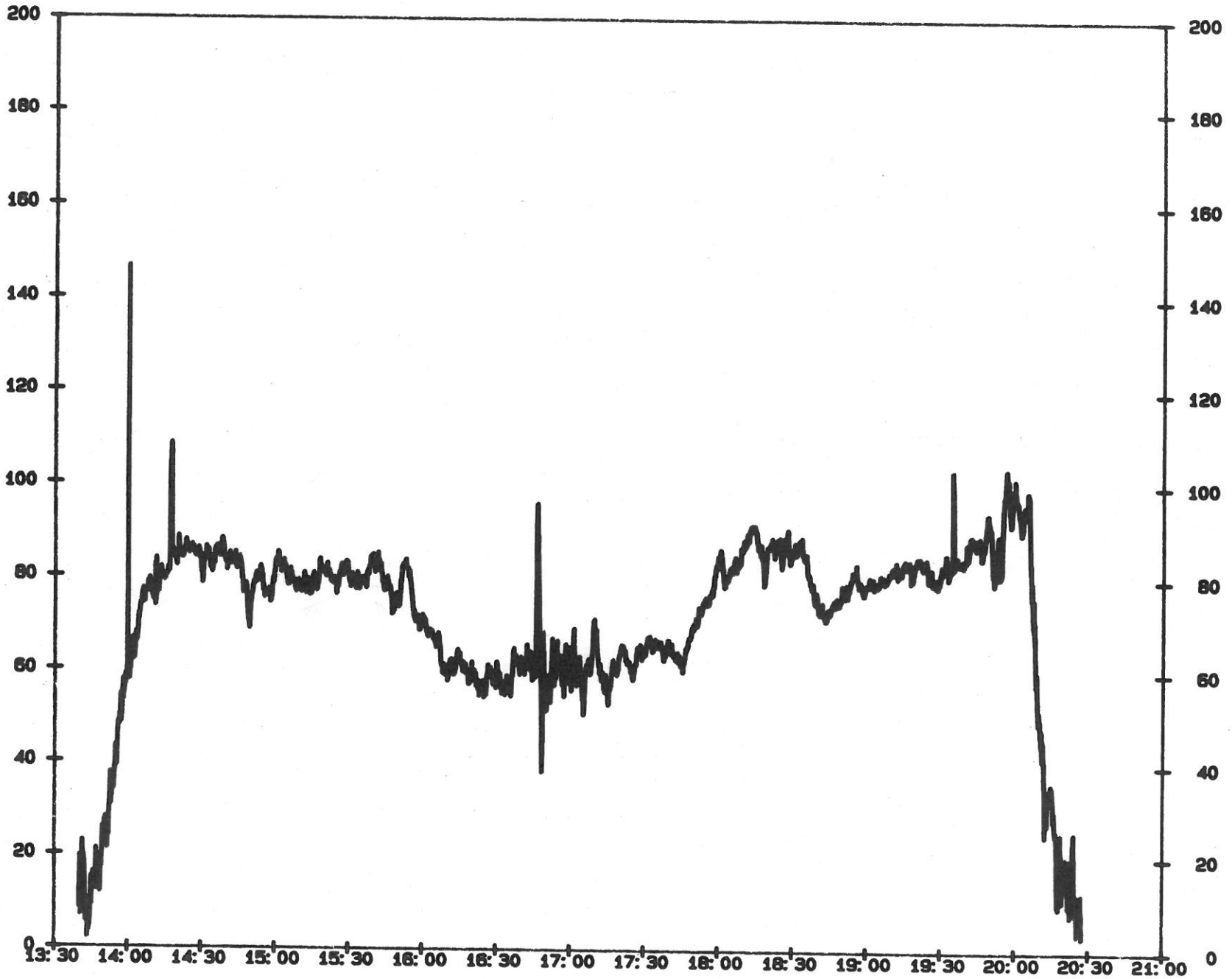


FLIGHT 87-165 28 AUGUST 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 4 OVER ANTARCTICA
 OVERLAY FOR XCHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 13: 40: 00 TO 20: 41: 05 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES

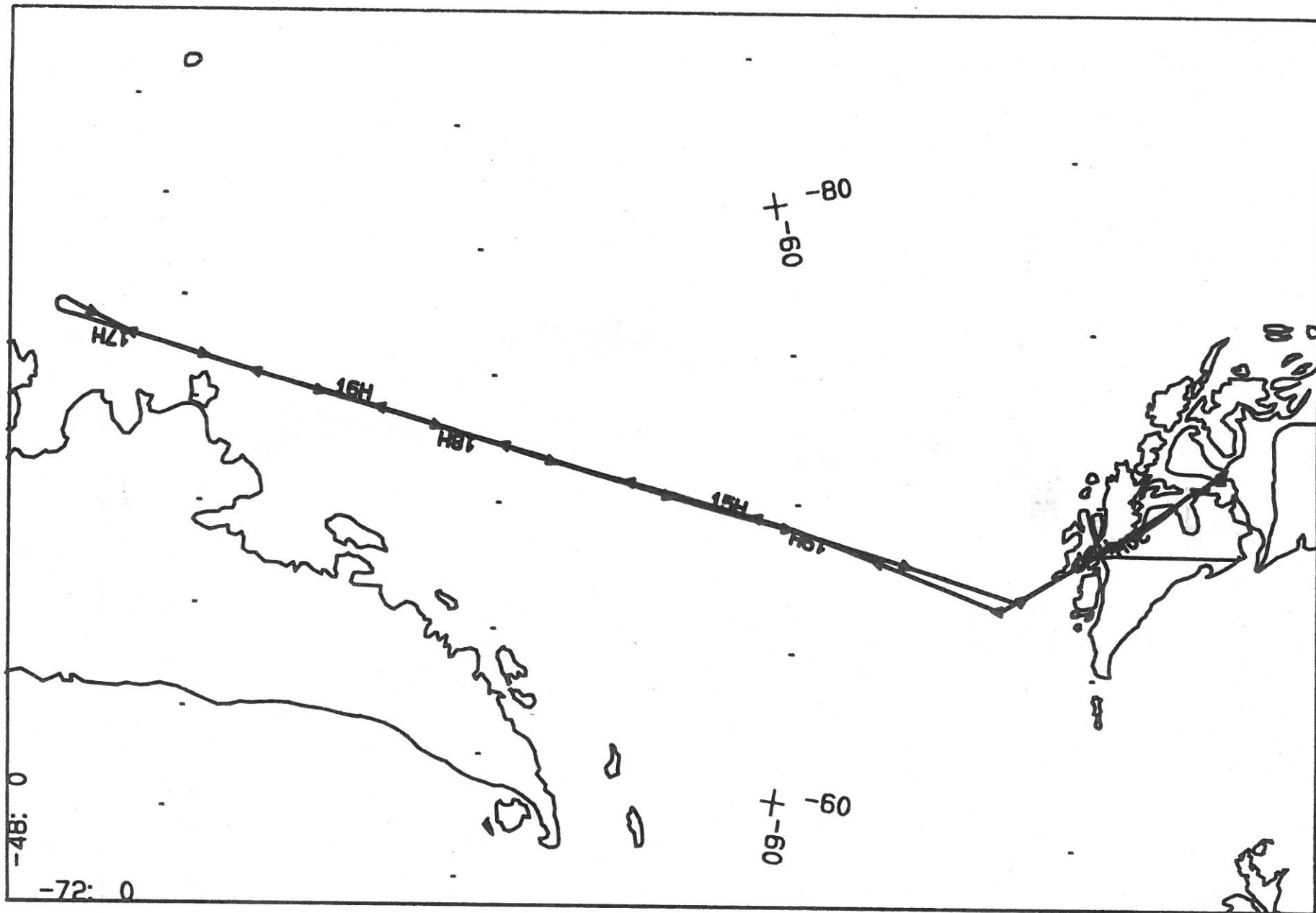


TIME GMT FLIGHT 87-165 DATE 08/28/87 A/C 706

WIND SPEED - KNOTS



TIME GMT FLIGHT 87-165 DATE 08/28/87 A/C 706



FLIGHT 87-166

30 AUGUST 1987 PUNTA ARENAS, CHILE FLIGHT 5 OVER ANTARCTICA

OVERLAY FOR %MRD

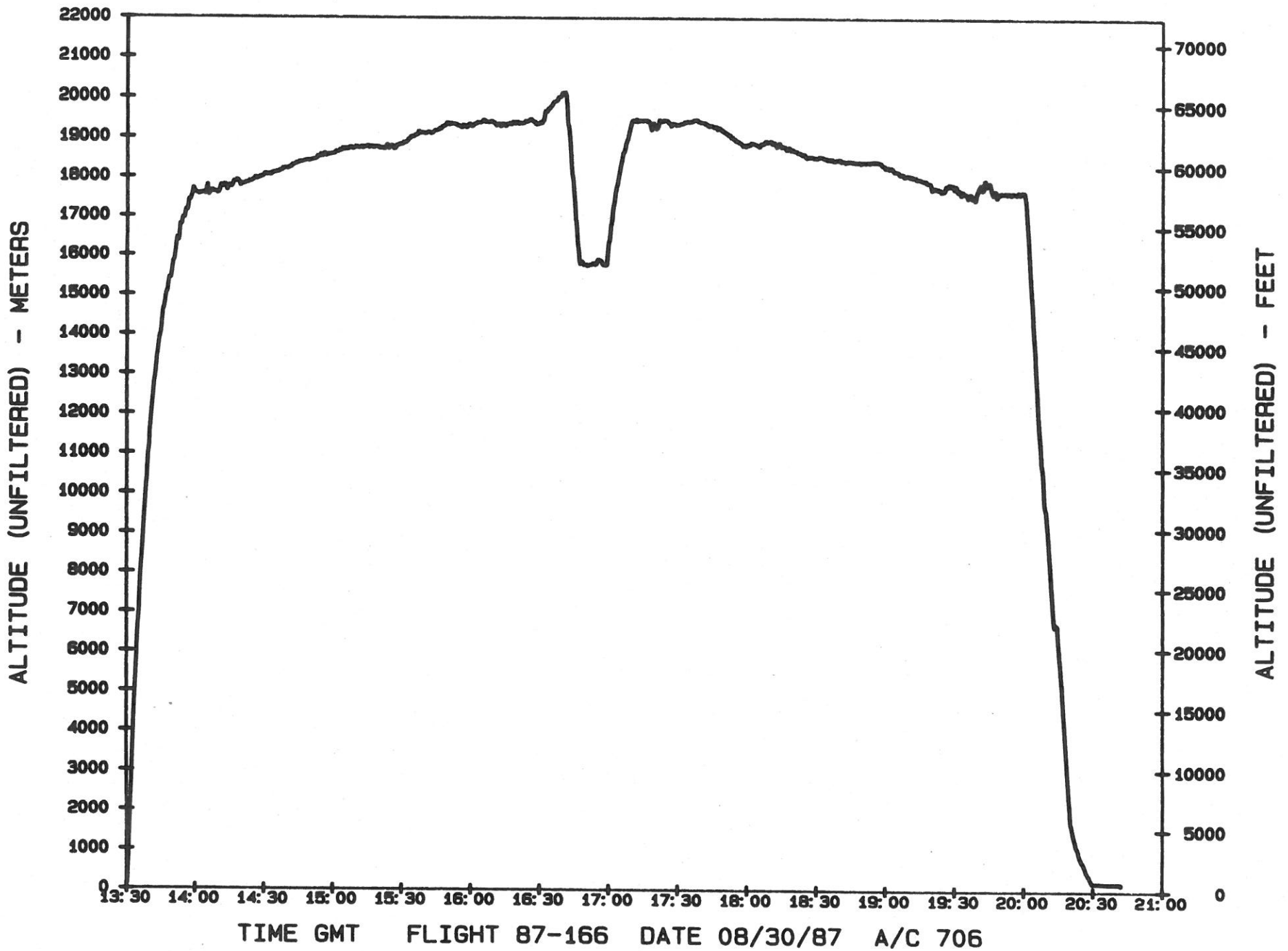
LAMBERT CONFORMAL PROJECTION:

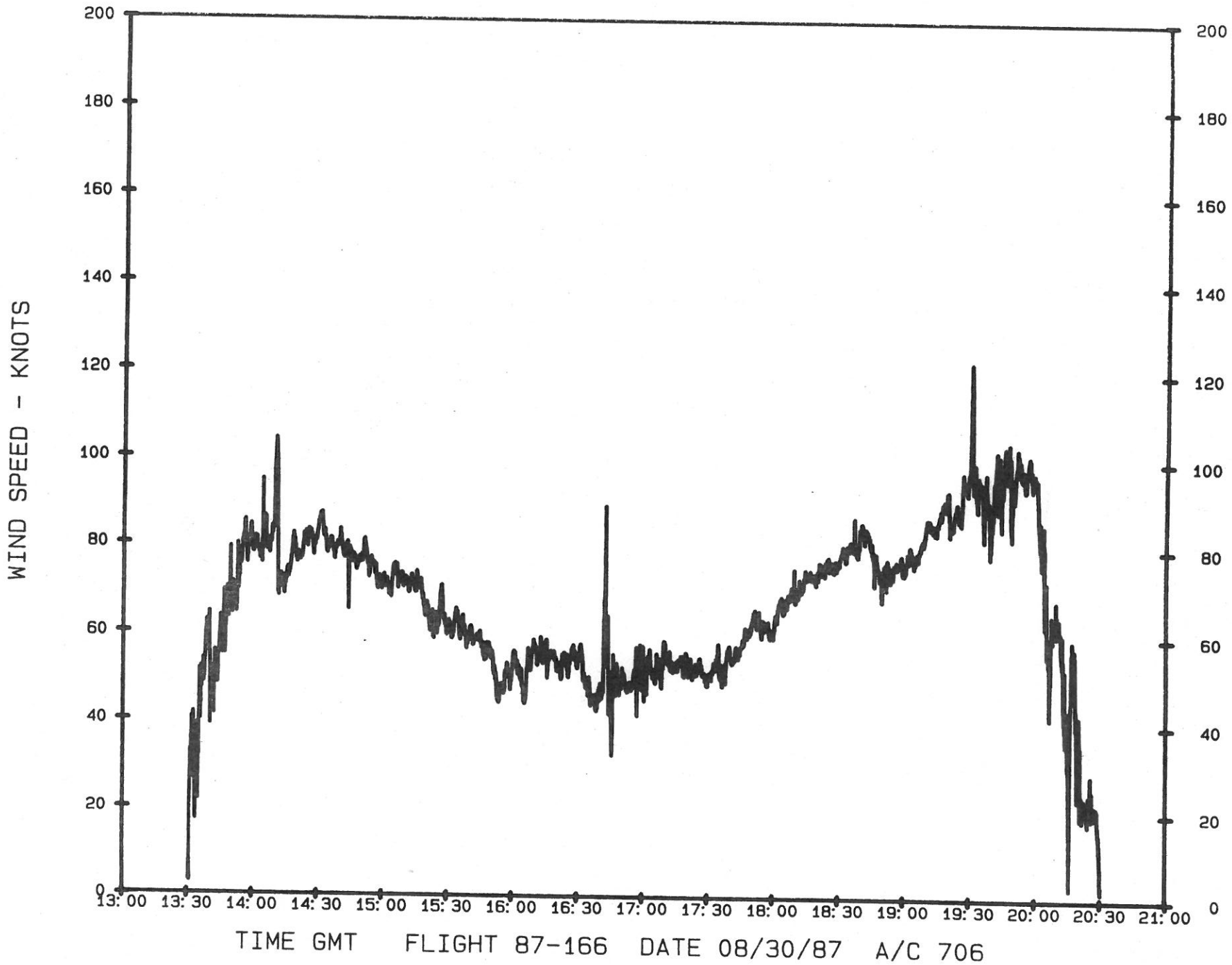
SP1 = -70.0 SP2 = -55.0 CM = -70.0 ROTATED BY -90.0

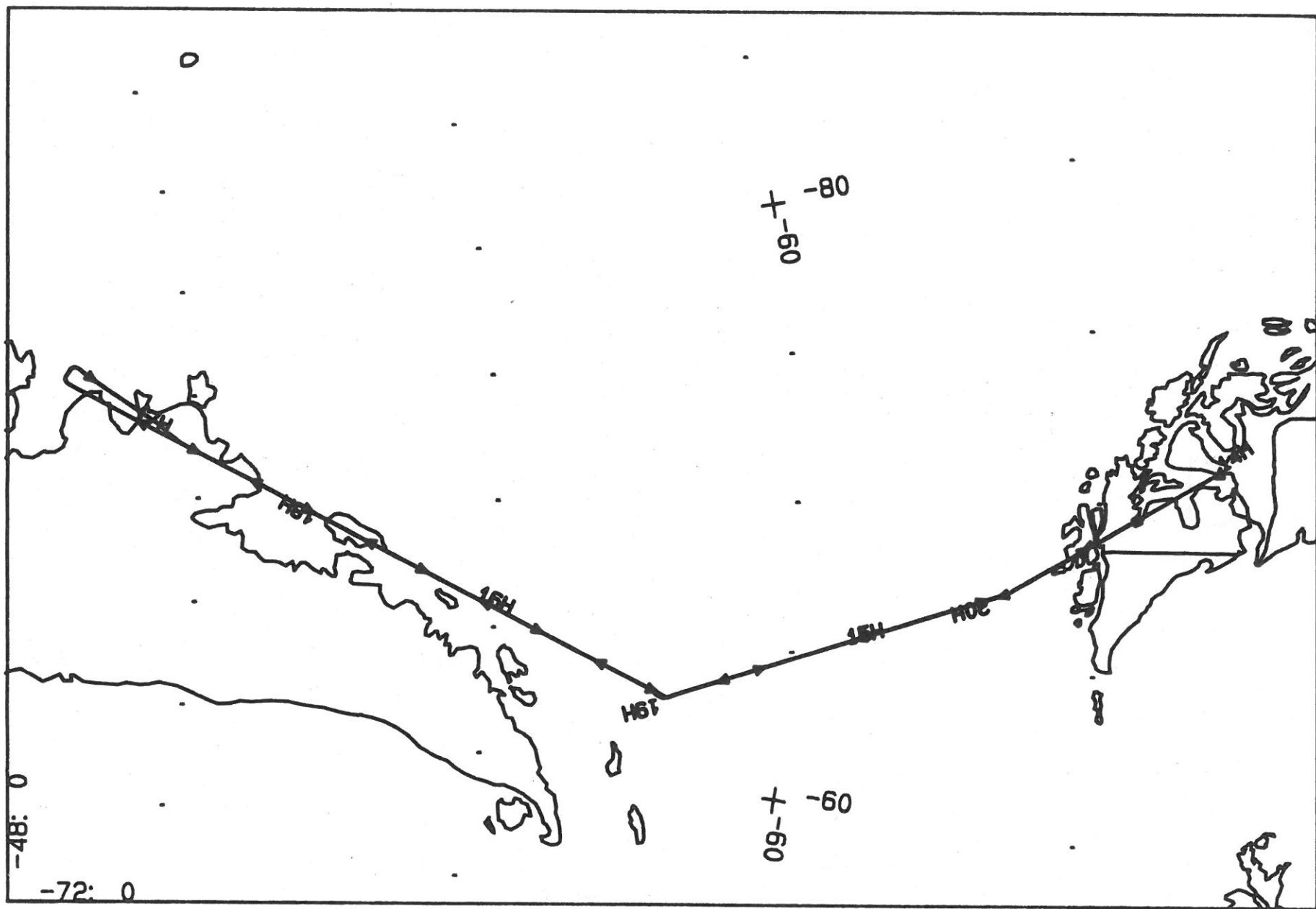
13:30:00 TO 20:42:15 UT

SCALE = 1:1.00E+07

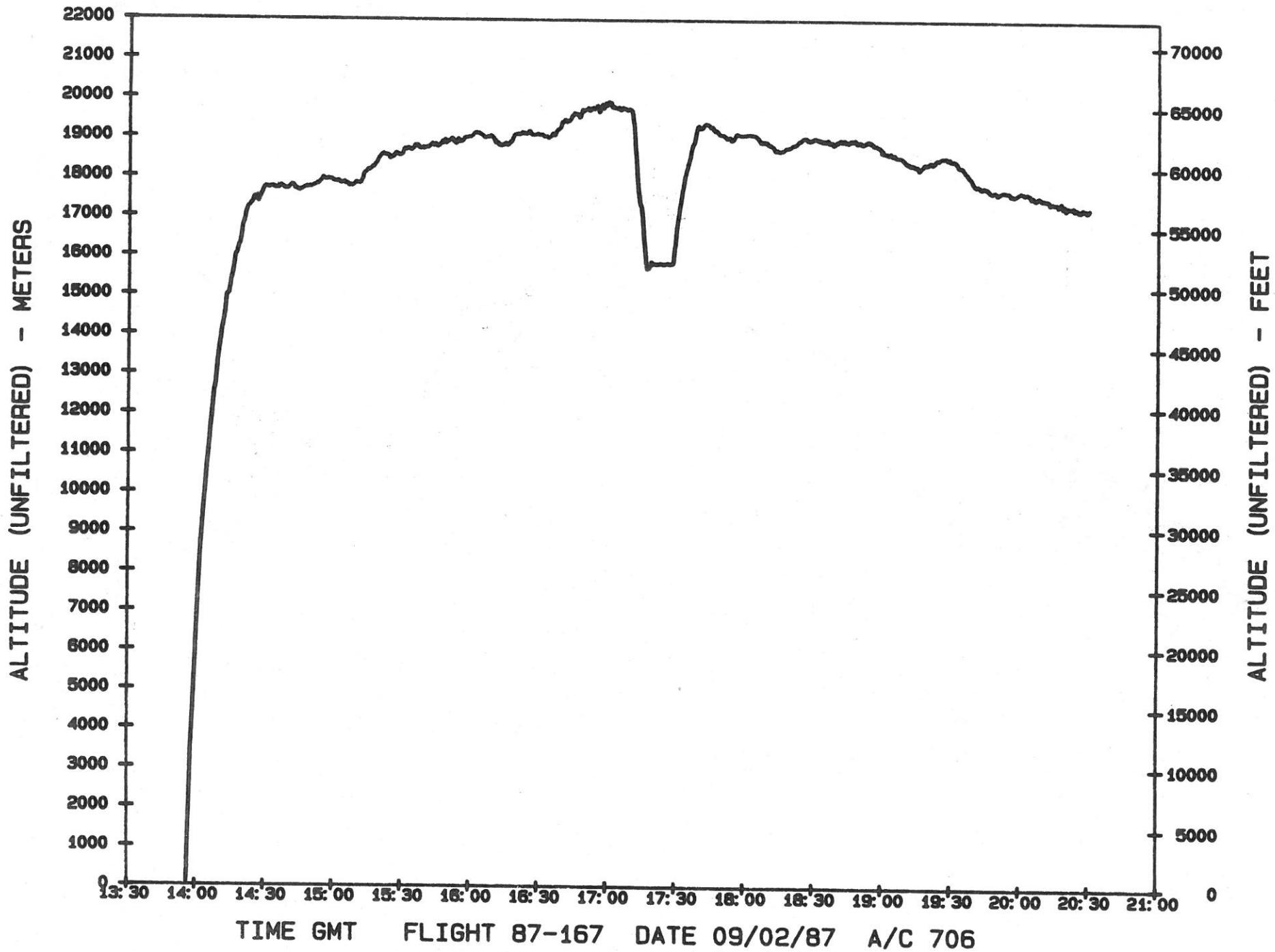
TIME TICS EVERY 20.00 MINUTES



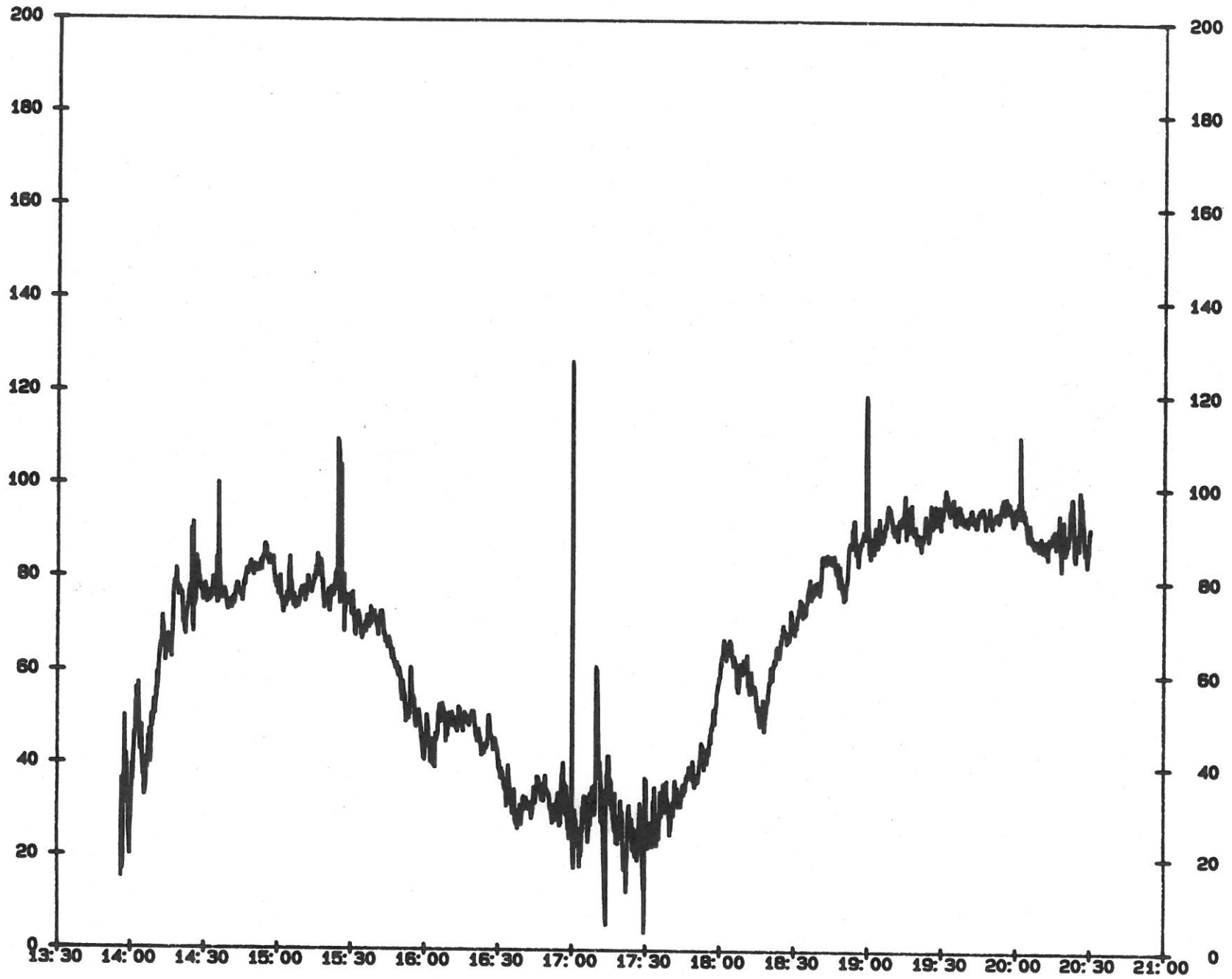




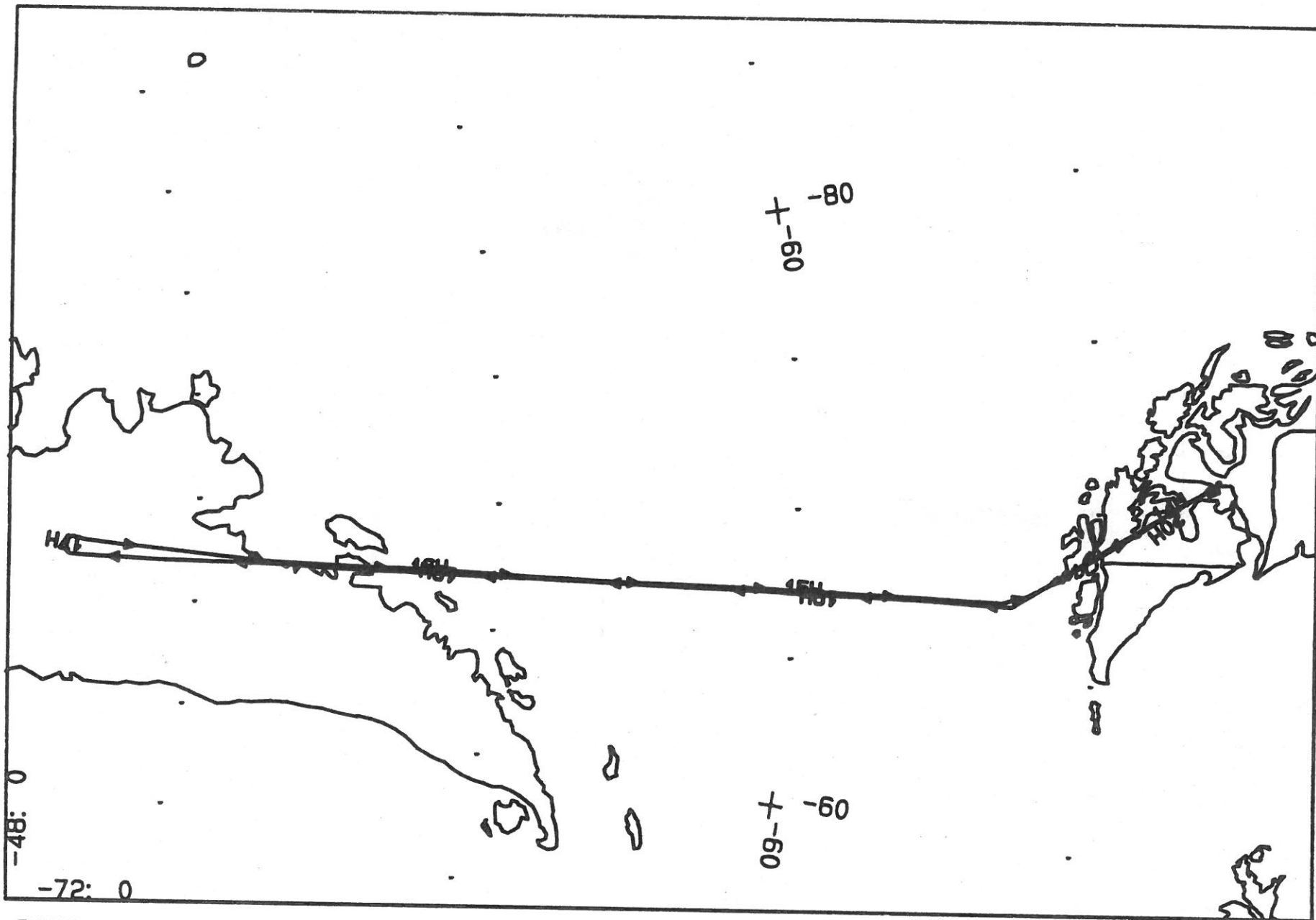
FLIGHT 87-167 2 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 6 OVER ANTARCTICA
 OVERLAY FOR %CRLD LAMBERT CONFORMAL PROJECTION: SP1 = -70.0 SP2 = -55.0 CM = -70.0 ROTATED BY -90.0
 13: 56: 00 TO 20: 30: 00 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES



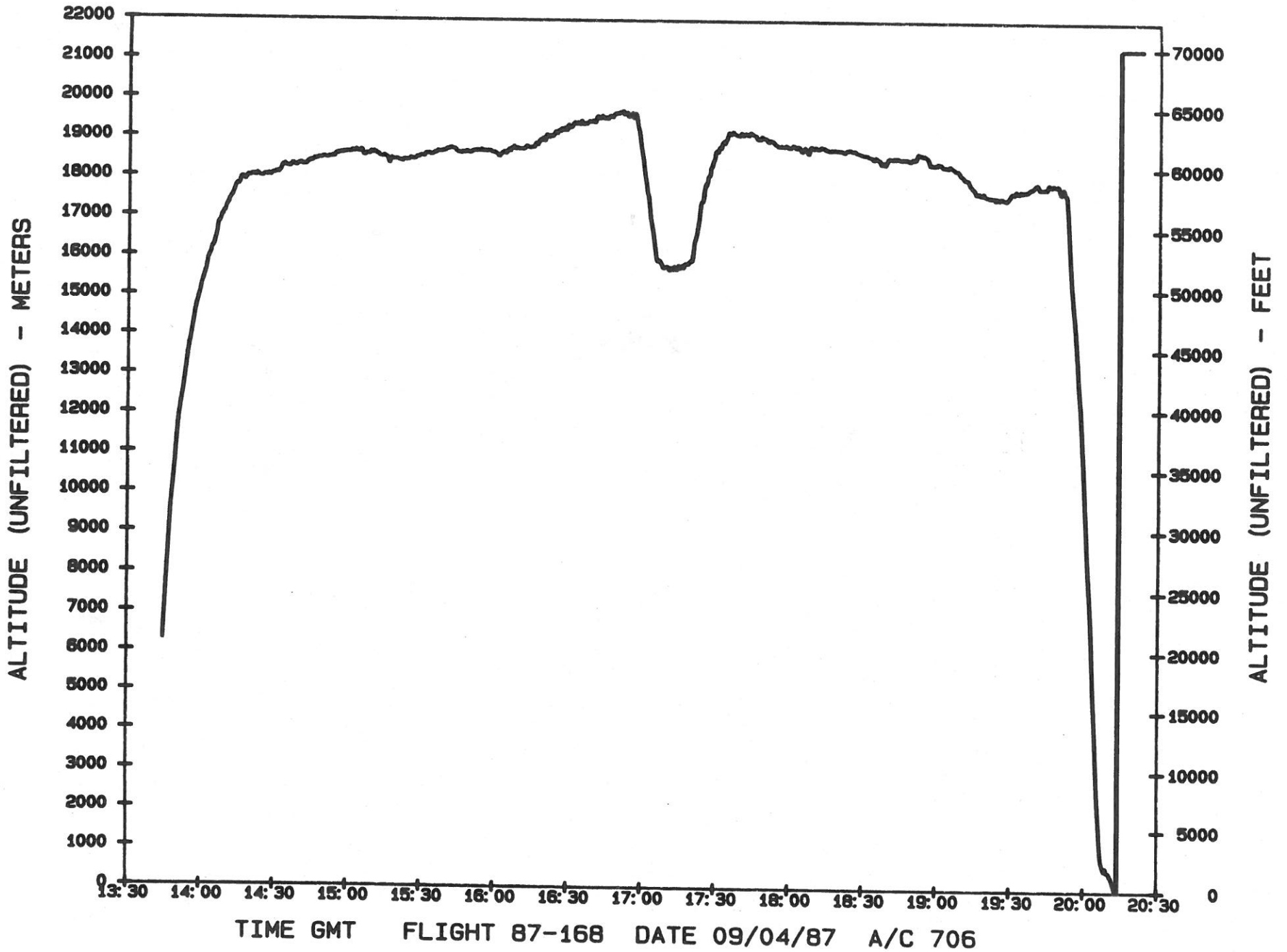
WIND SPEED - KNOTS



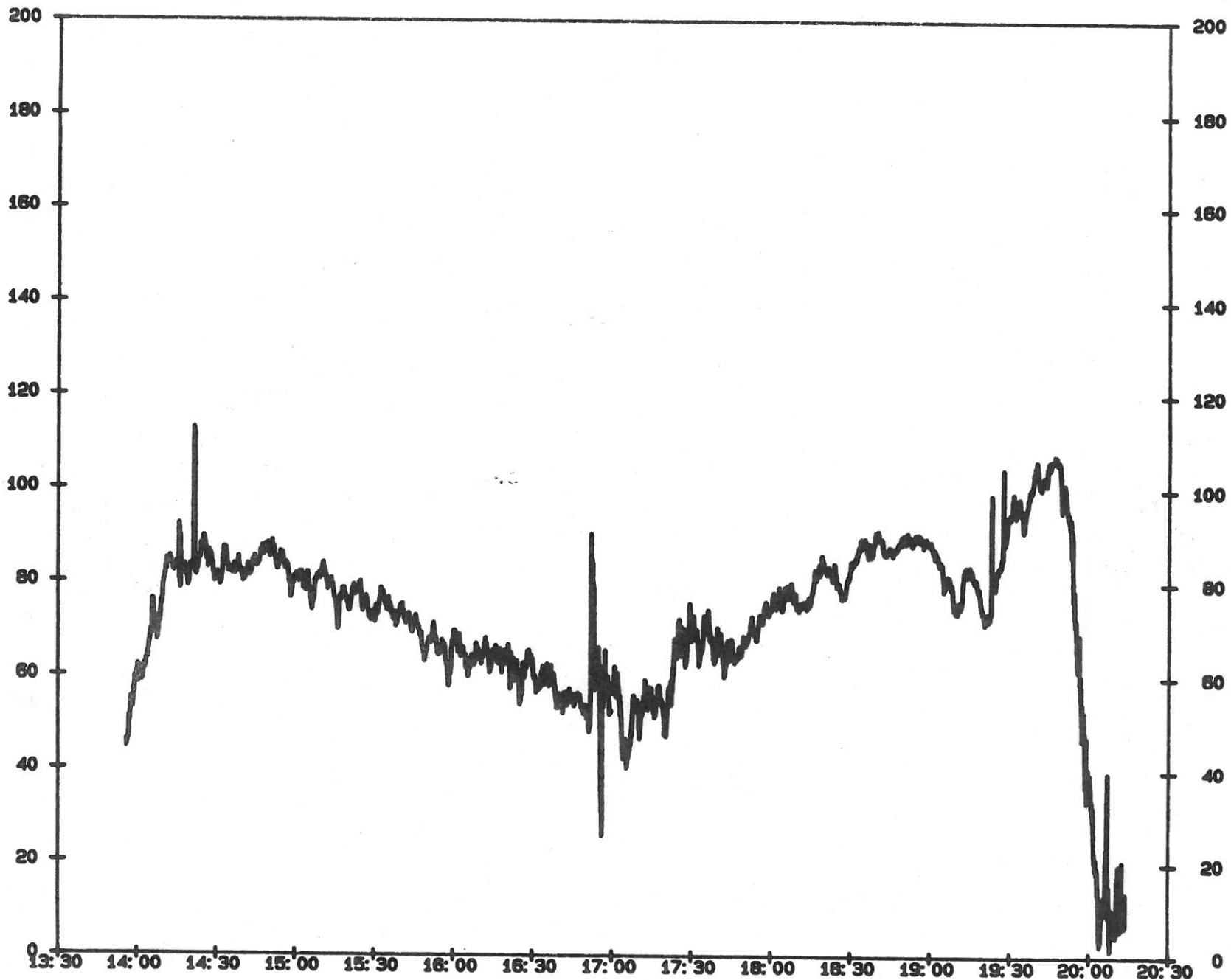
TIME GMT FLIGHT 87-167 DATE 09/02/87 A/C 706



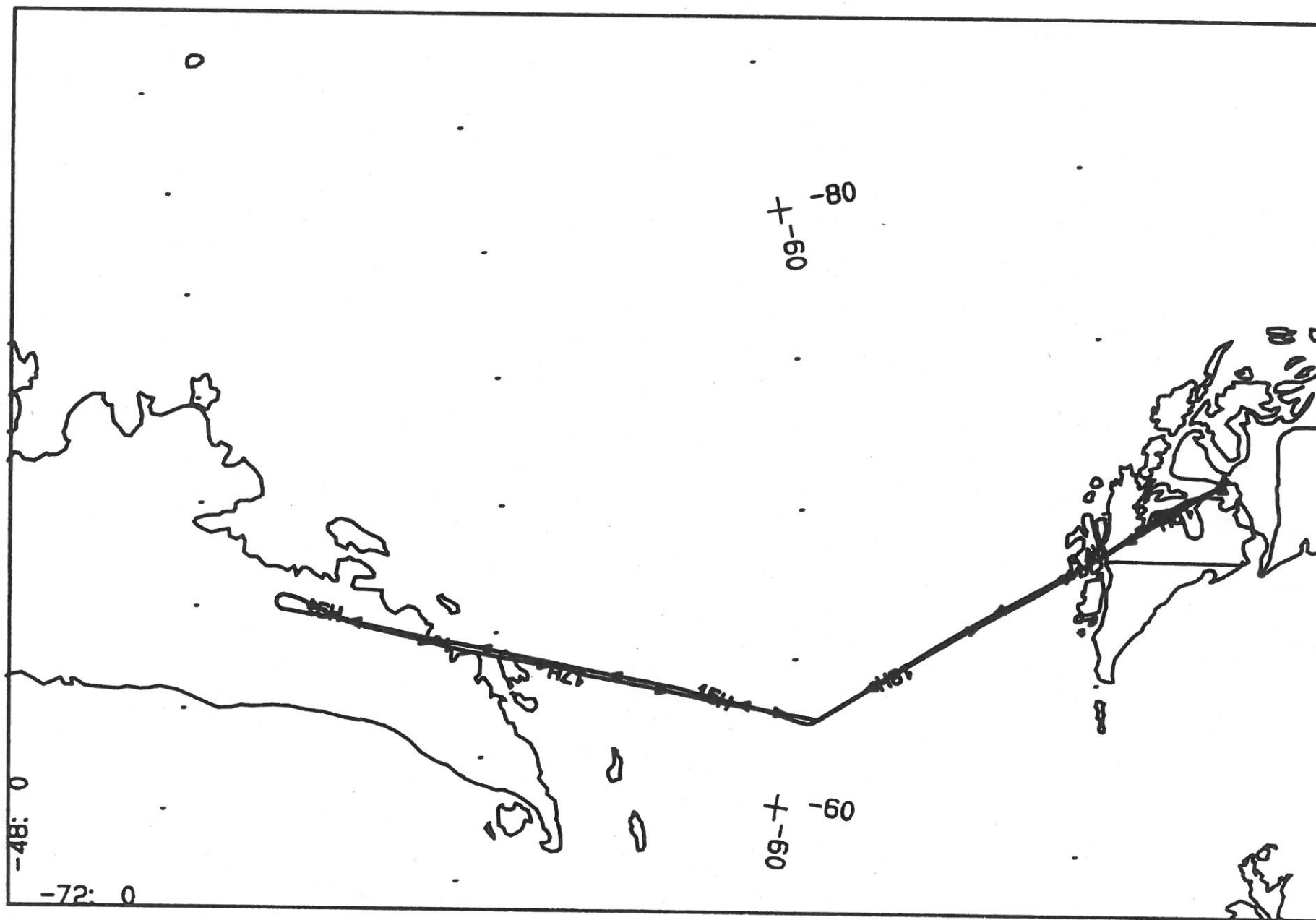
FLIGHT 87-168 4 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 7 OVER ANTARCTICA
 OVERLAY FOR %CWRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
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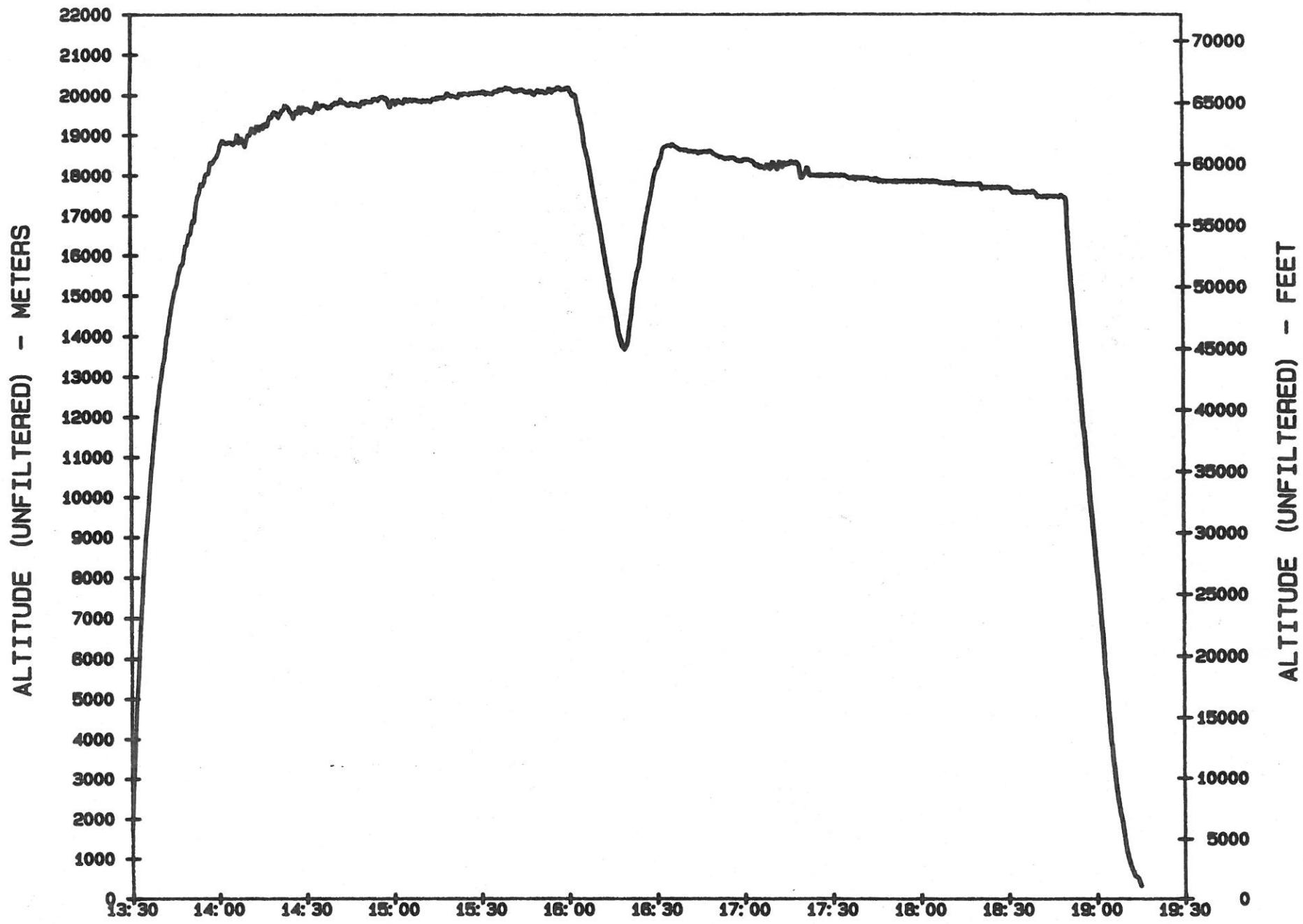
WIND SPEED - KNOTS



TIME GMT FLIGHT 87-168 DATE 09/04/87 A/C 706

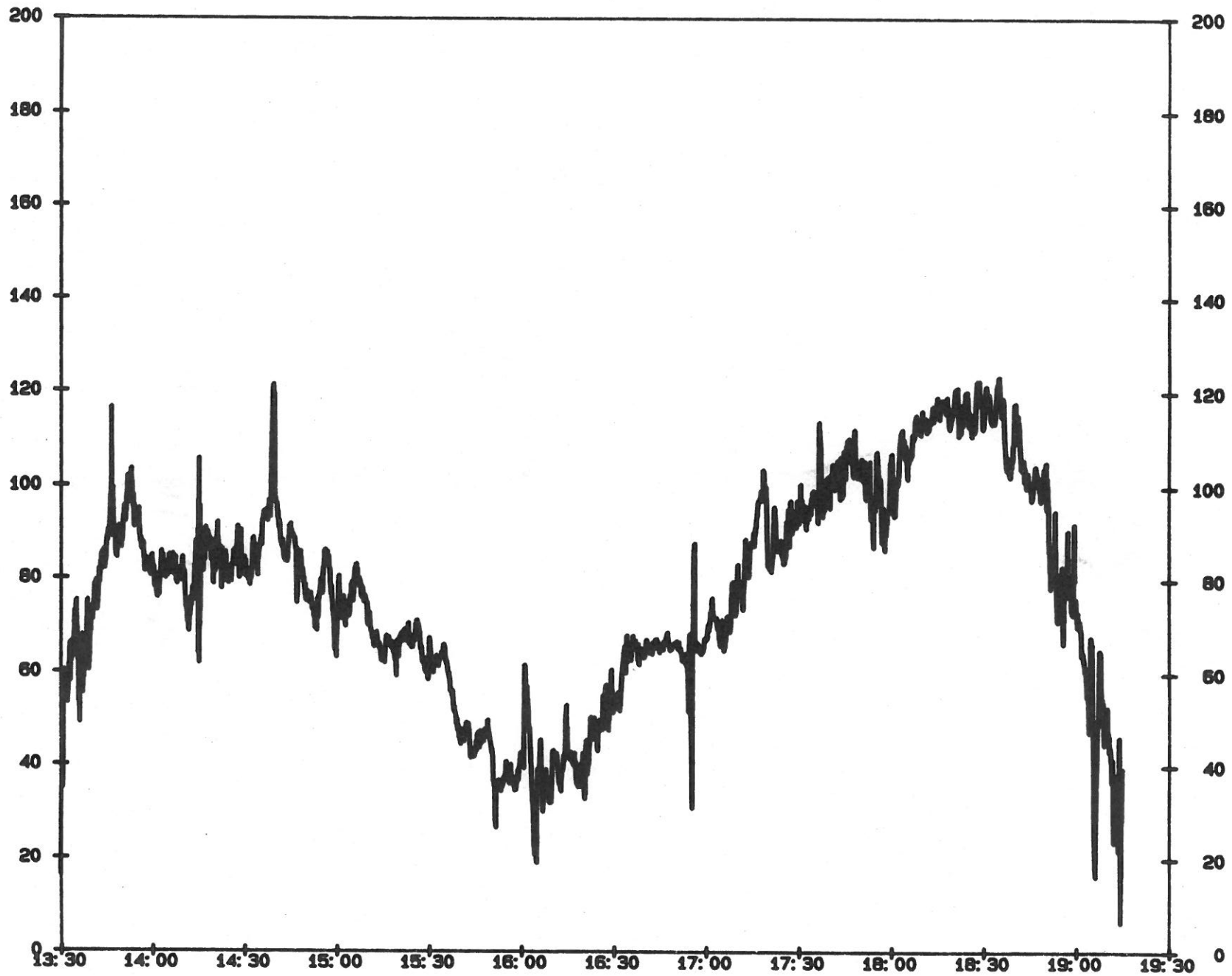


FLIGHT 87-169 9 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 8 OVER ANTARCTICA
 OVERLAY FOR %CHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 13: 30: 00 TO 19: 15: 05 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES

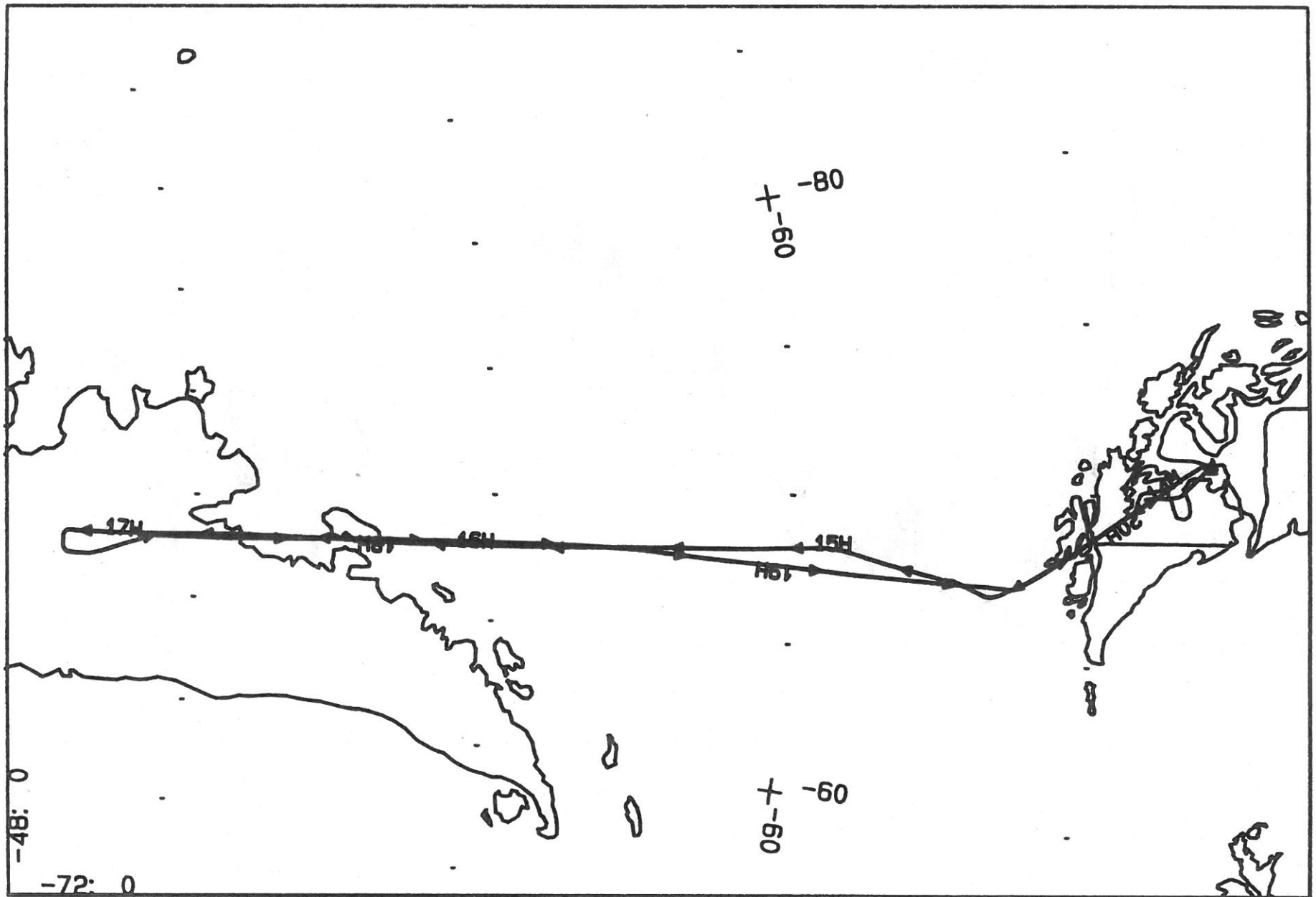


TIME GMT FLIGHT 87-169 DATE 09/09/87 A/C 706

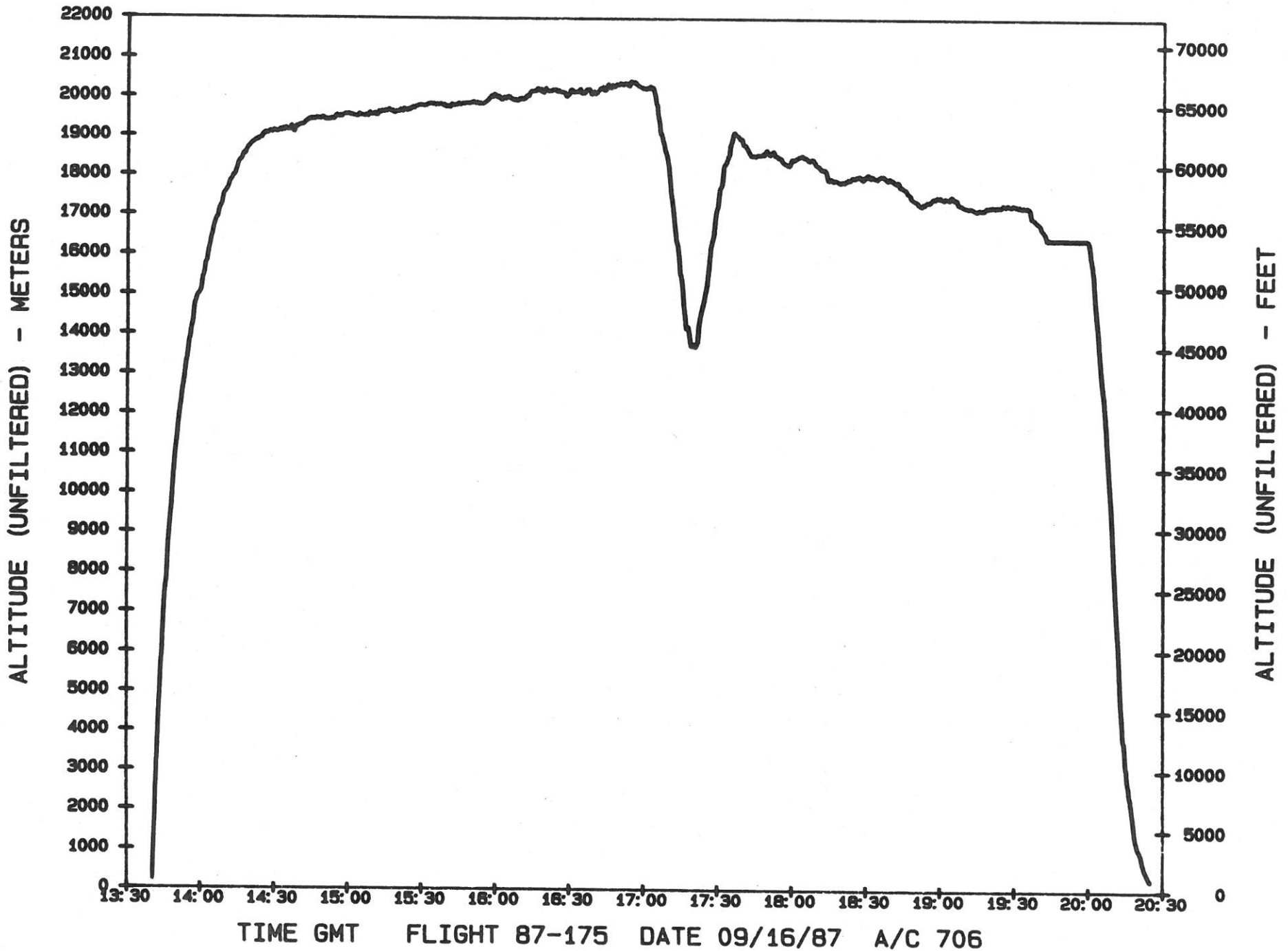
WIND SPEED - KNOTS



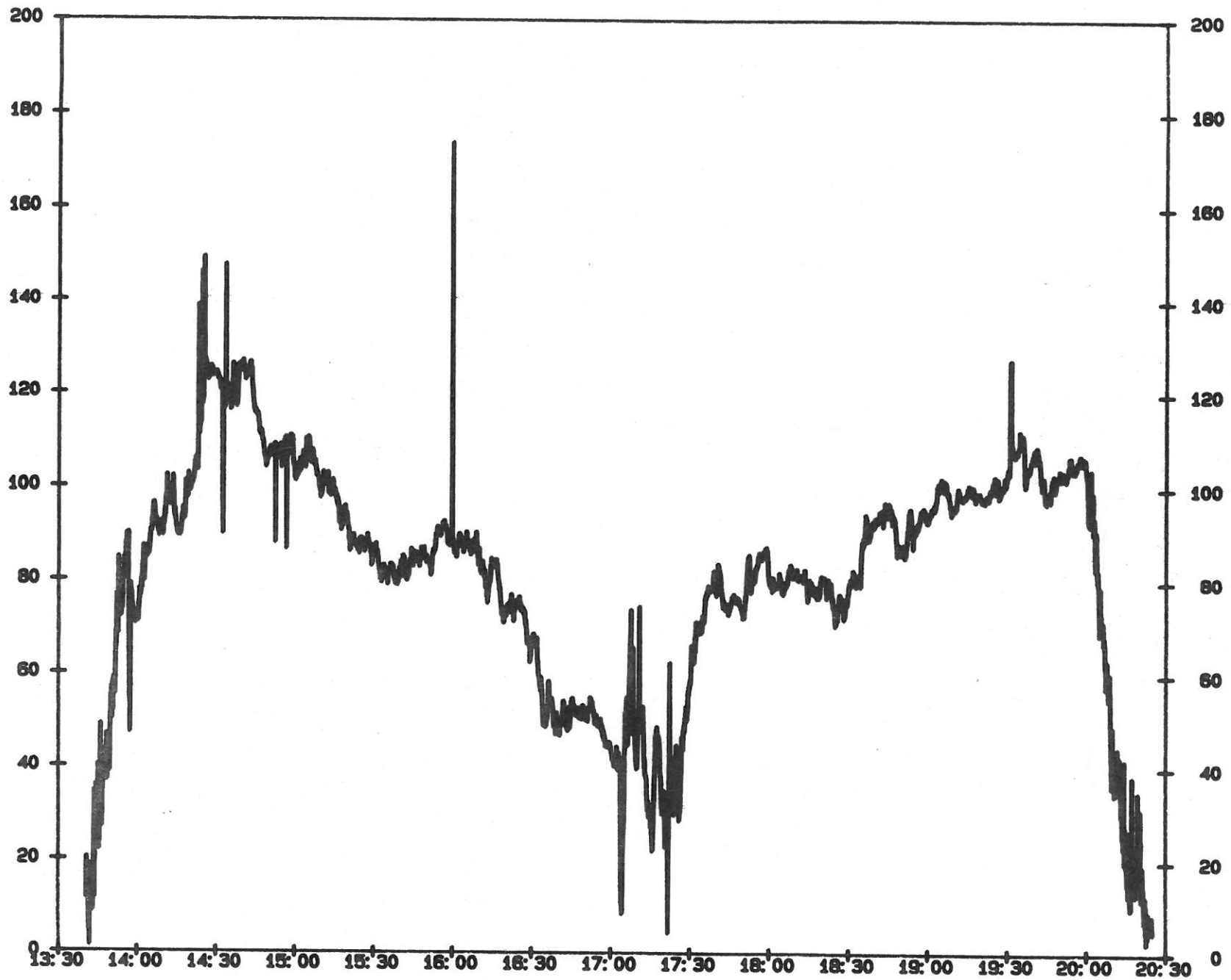
TIME GMT FLIGHT 87-169 DATE 09/09/87 A/C 706



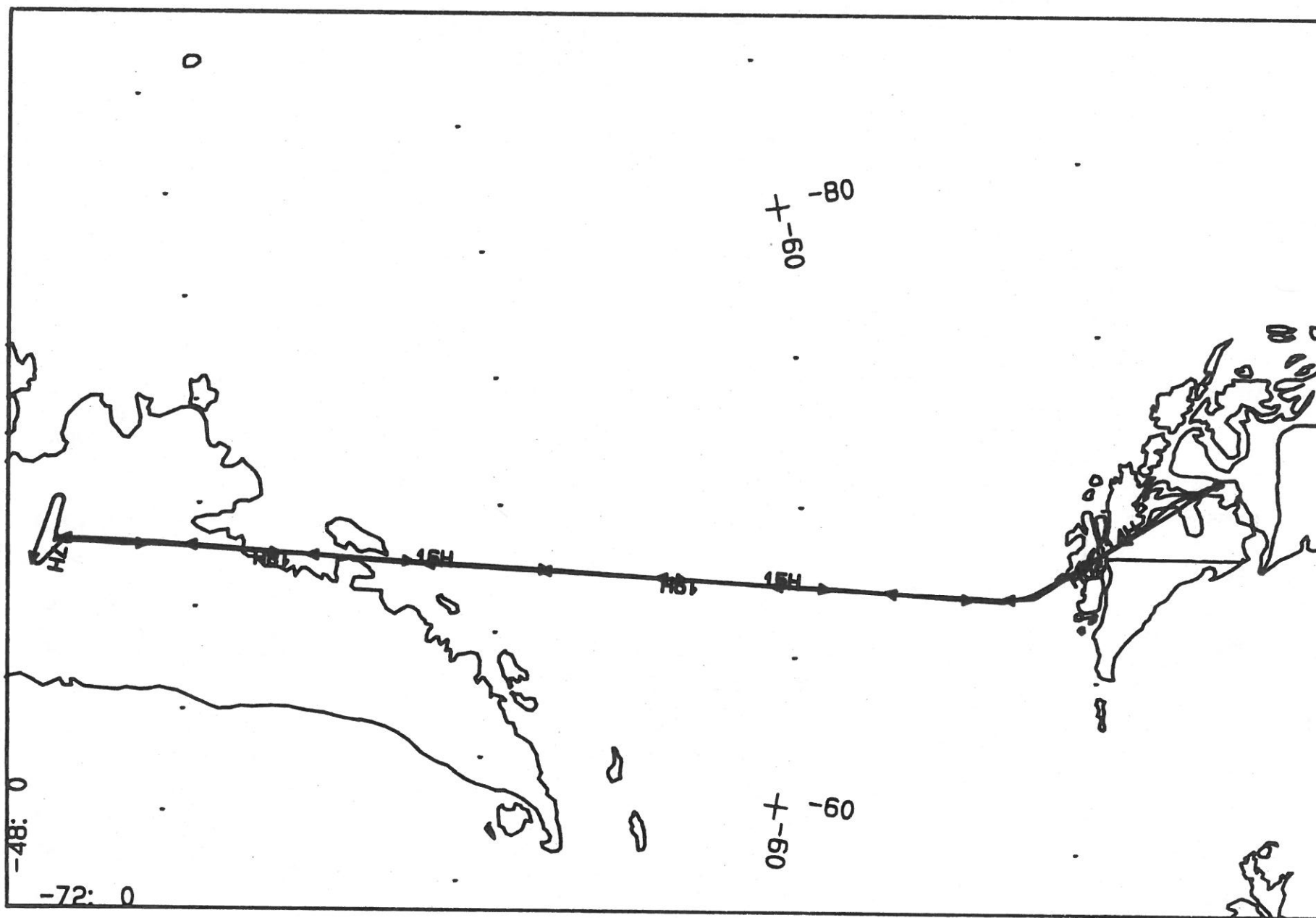
FLIGHT 87-175 16 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 9 OVER ANTARCTICA
 OVERLAY FOR %CHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 13: 40: 30 TO 20: 25: 05 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES



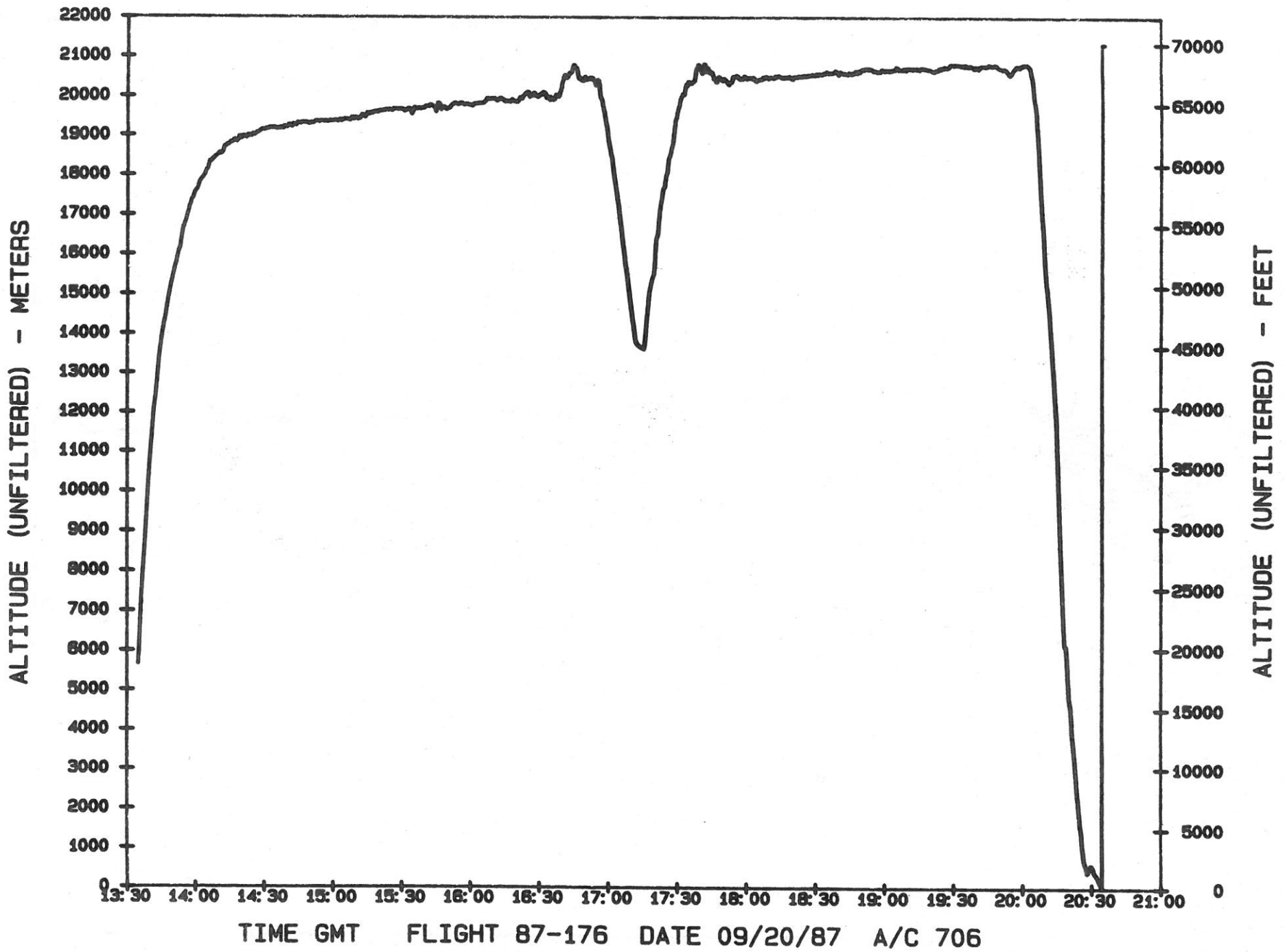
WIND SPEED - KNOTS



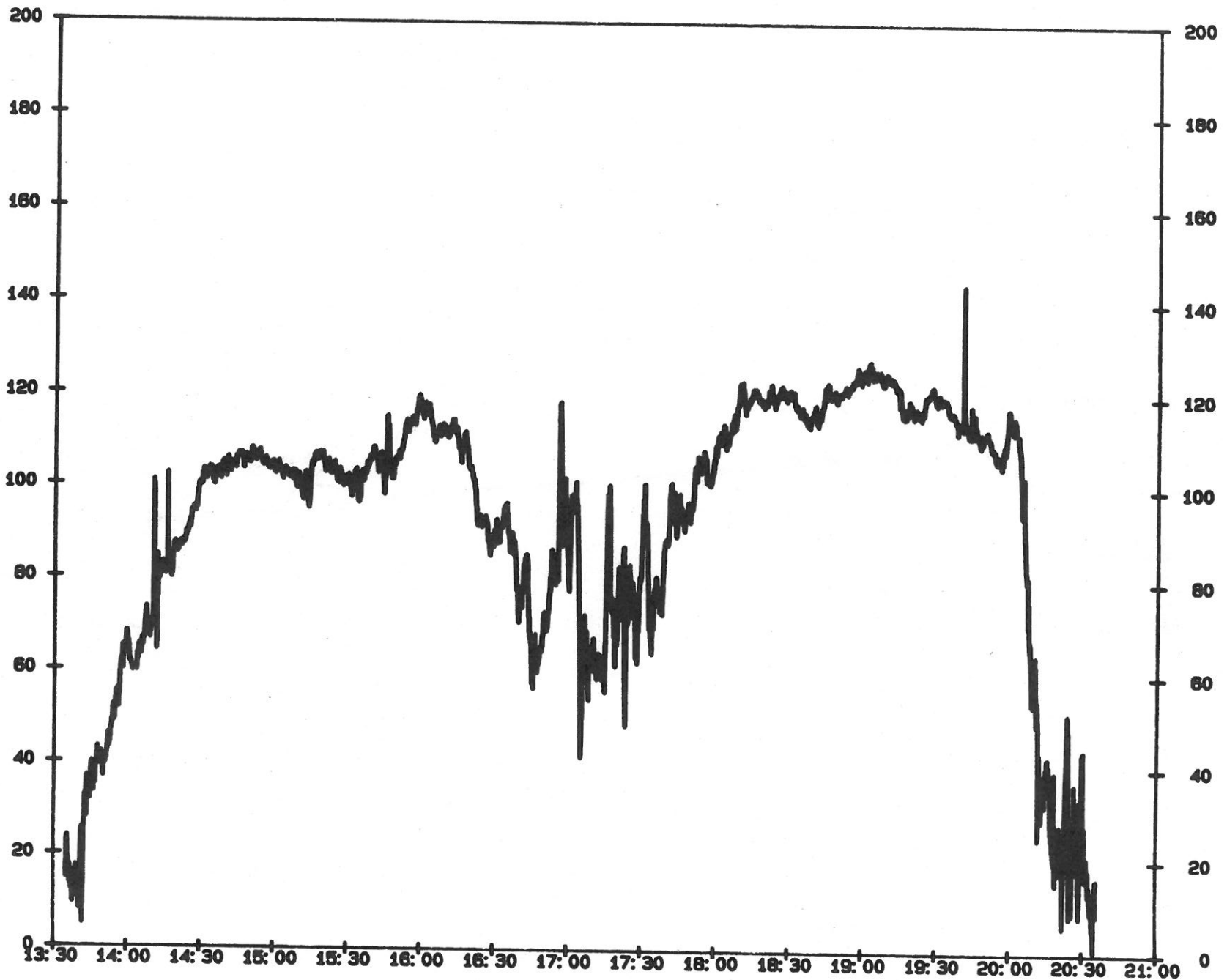
TIME GMT FLIGHT 87-175 DATE 09/16/87 A/C 706



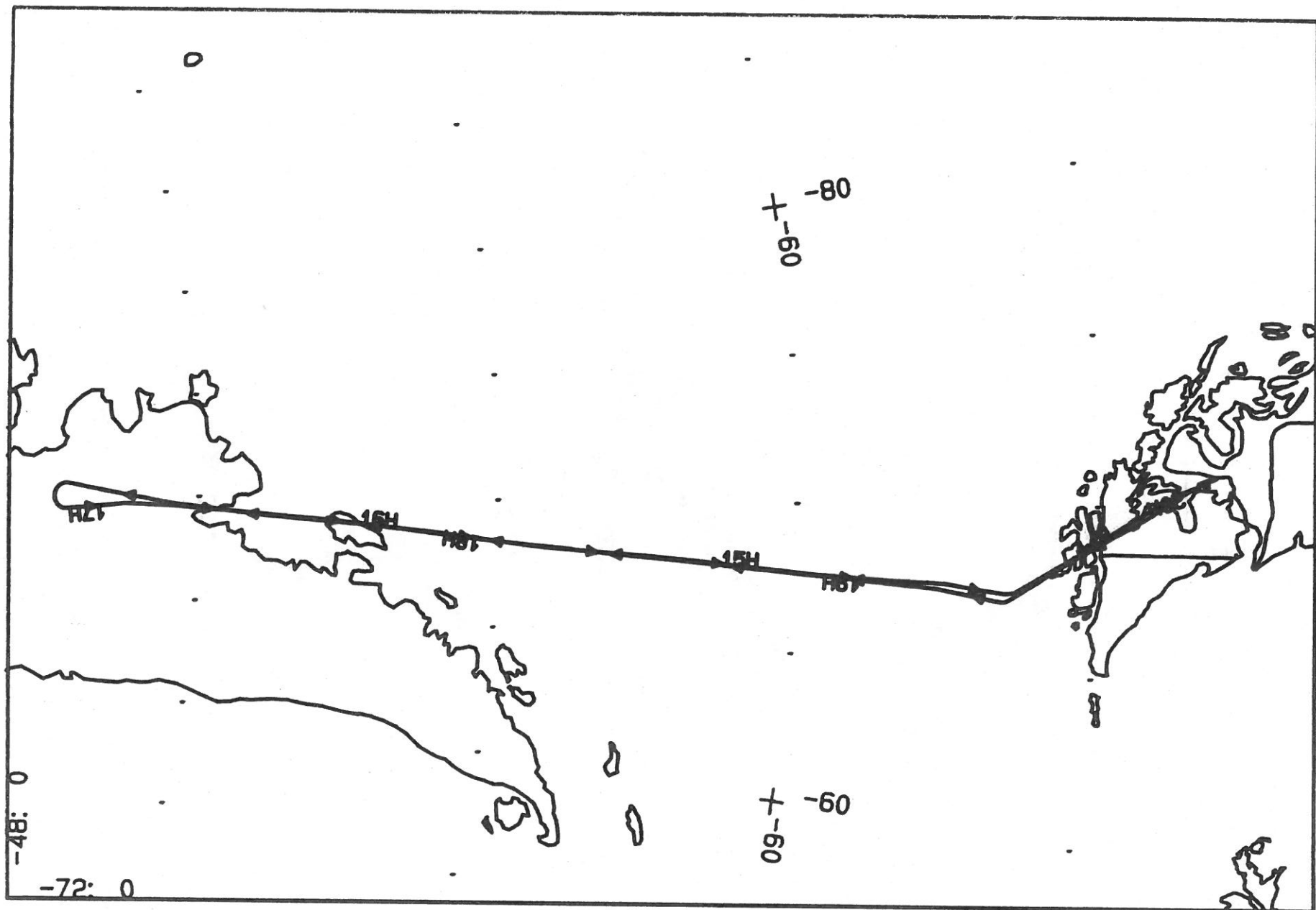
FLIGHT 87-176 20 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 10 OVER ANTARCTICA
 OVERLAY FOR %CHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 13: 35: 00 TO 20: 30: 05 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES



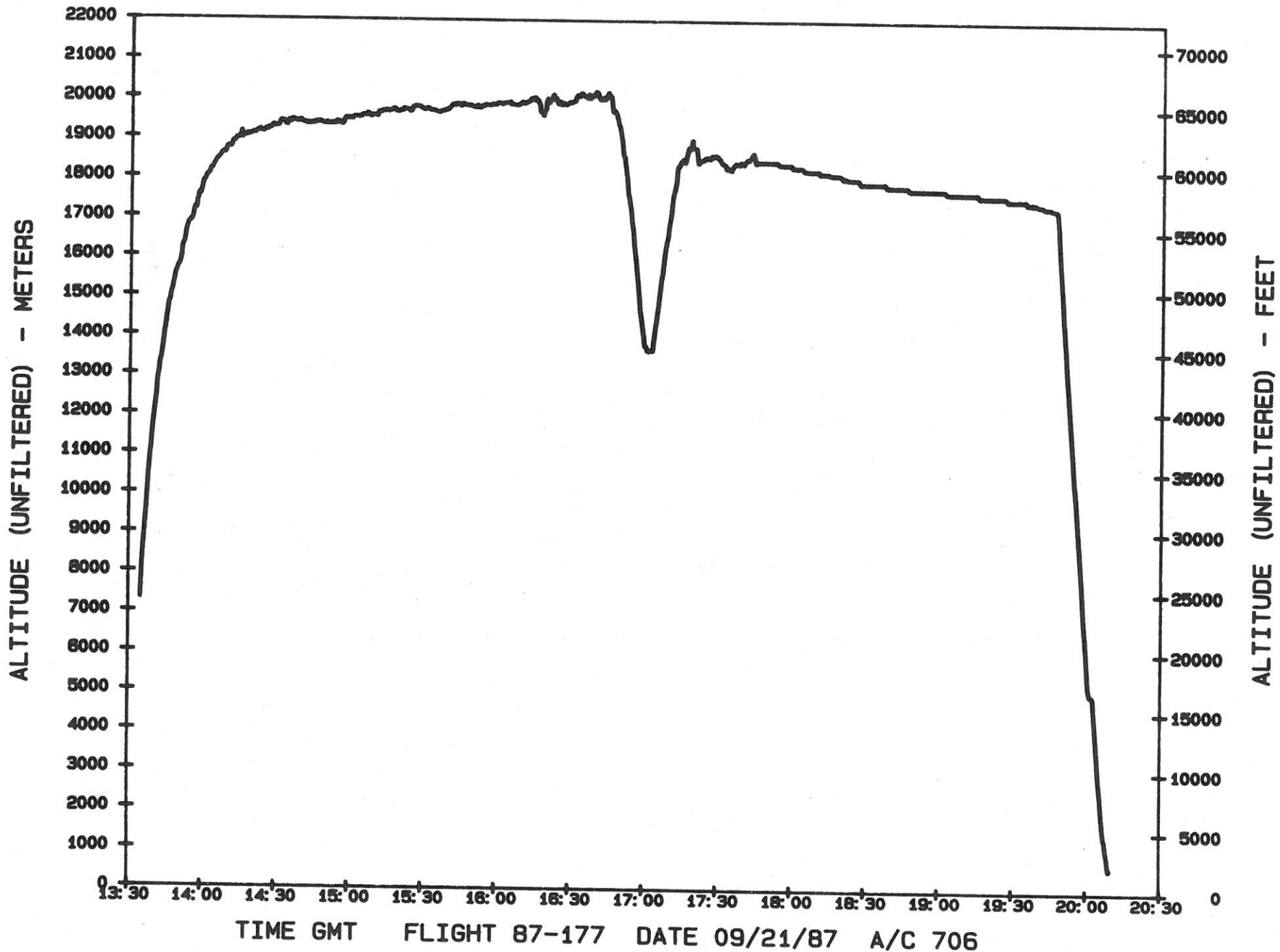
WIND SPEED - KNOTS



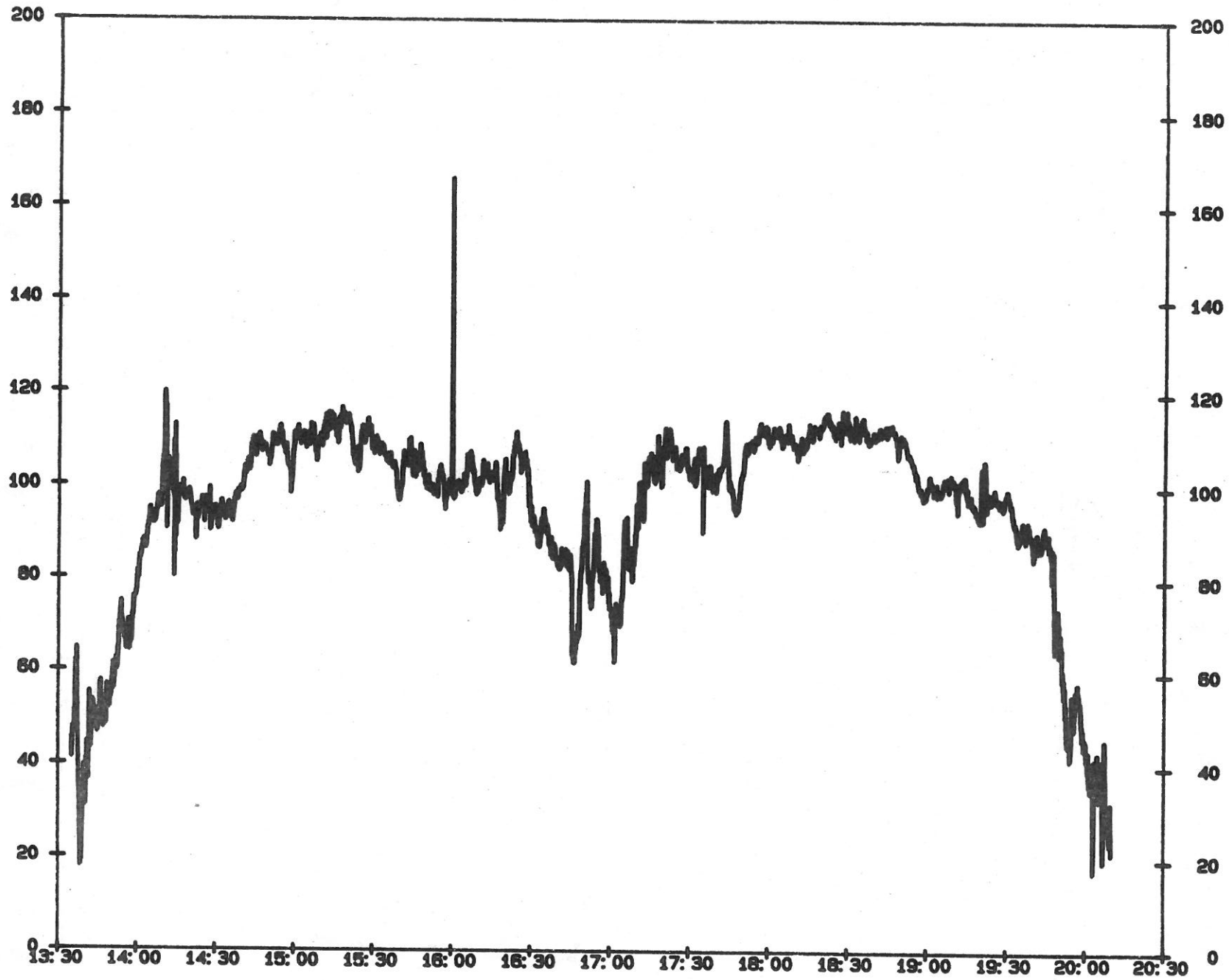
TIME GMT FLIGHT 87-176 DATE 09/20/87 A/C 706



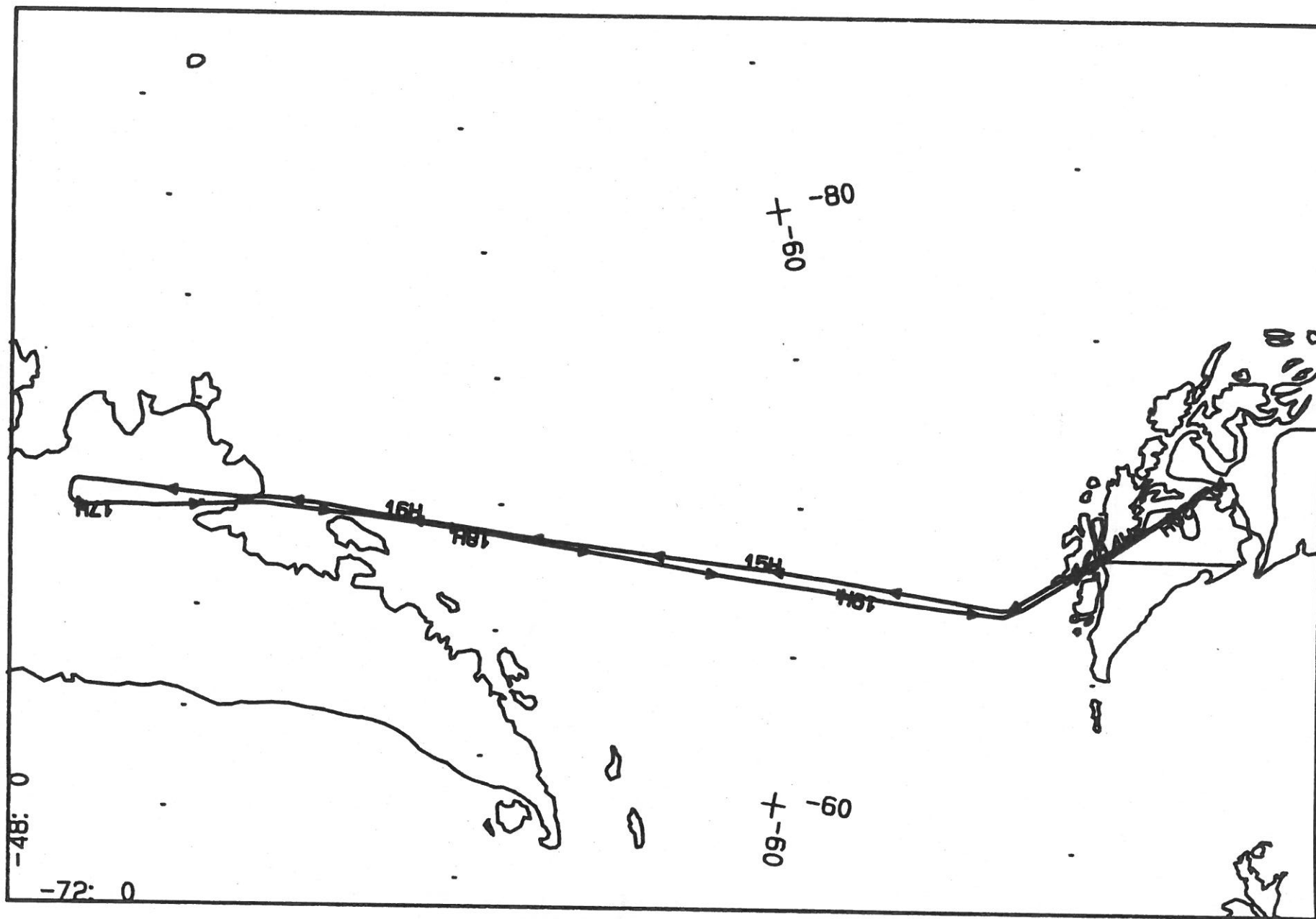
FLIGHT 87-177 21 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 11 OVER ANTARCTICA
 OVERLAY FOR XCRWLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
 13: 35: 00 TO 20: 10: 05 UT SCALE = 1: 1.00E+07 TIME TICS EVERY 20.00 MINUTES



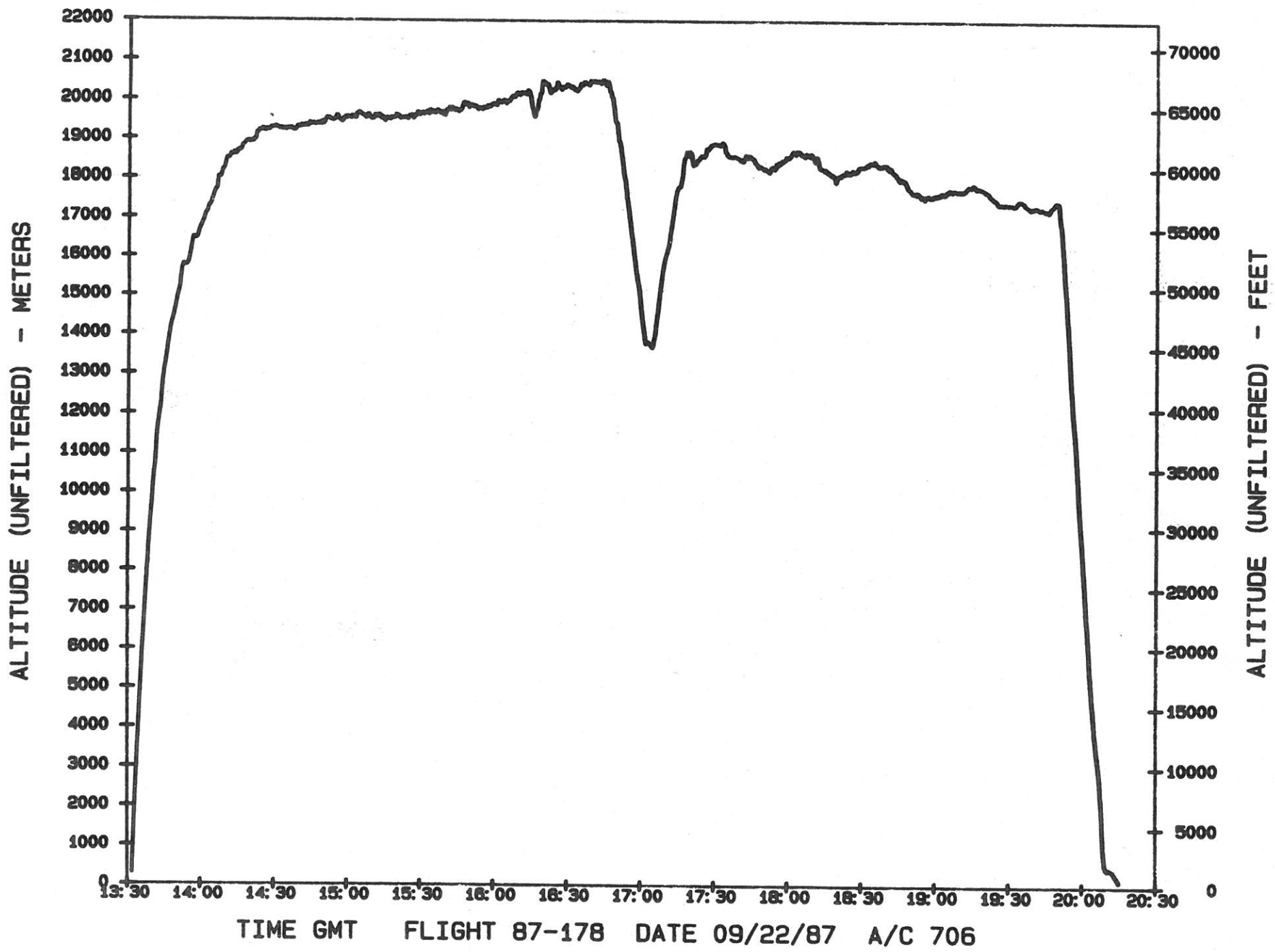
WIND SPEED - KNOTS



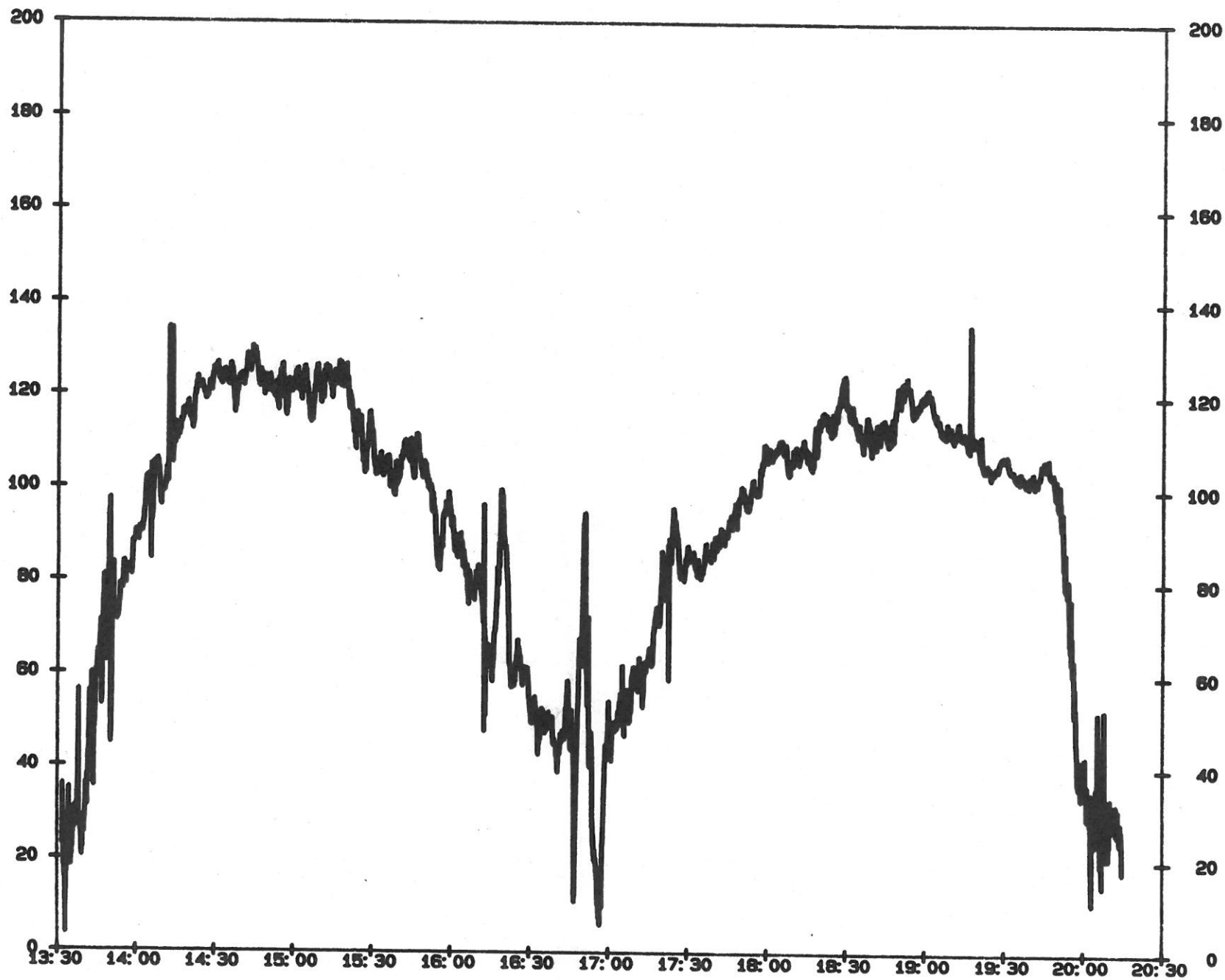
TIME GMT FLIGHT 87-177 DATE 09/21/87 A/C 706



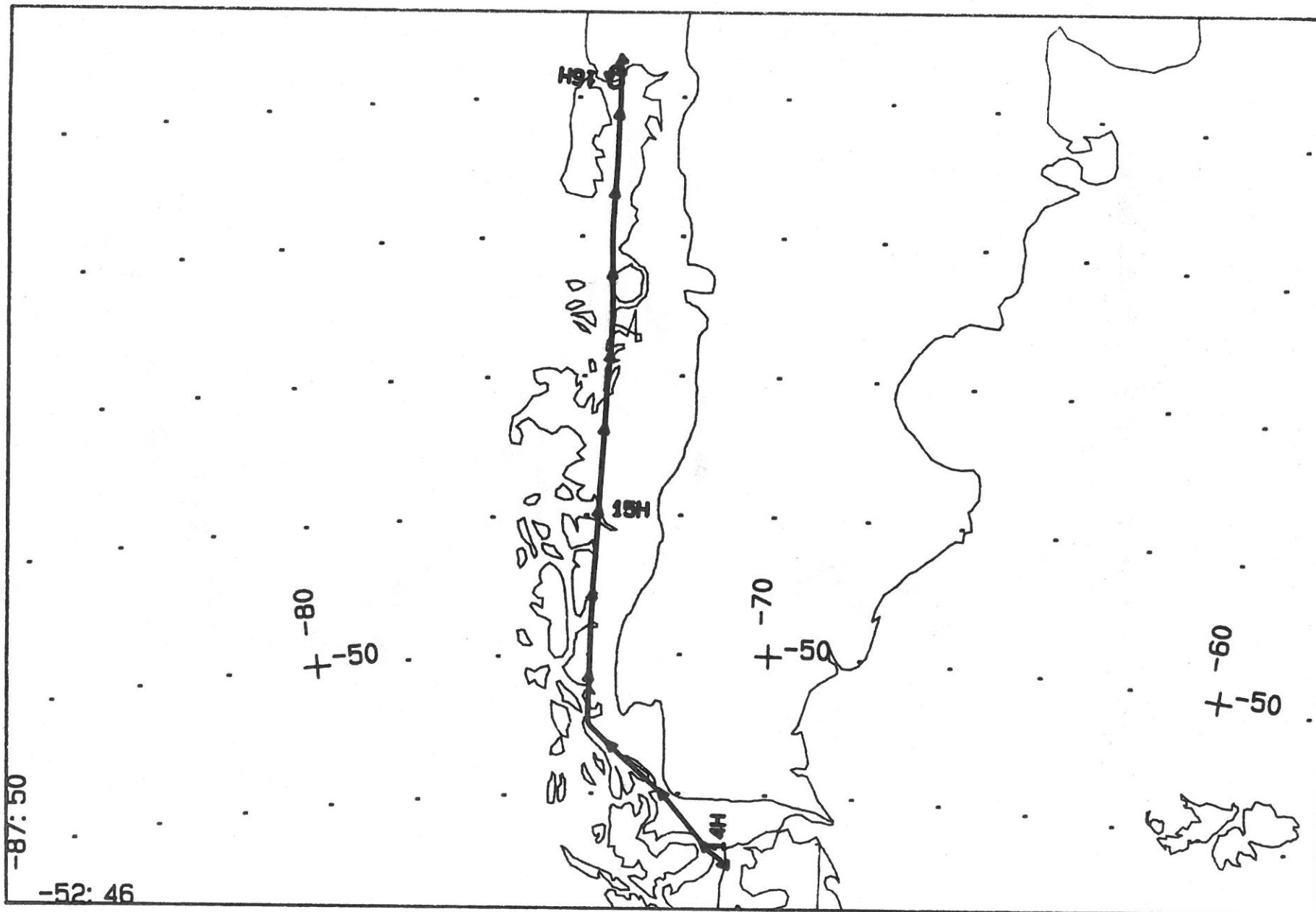
FLIGHT 87-178 22 SEPTEMBER 1987 A/C 706 PUNTA ARENAS, CHILE FLIGHT 12 OVER ANTARCTICA
 OVERLAY FOR XCHRLD LAMBERT CONFORMAL PROJECTION: SP1 = -55.0 SP2 = -70.0 CM = -70.0 ROTATED BY -90.0
~~18:31:55 TO 20:15:05 UT~~ SCALE = 1:1.00E+07 TIME TICS EVERY 20.00 MINUTES



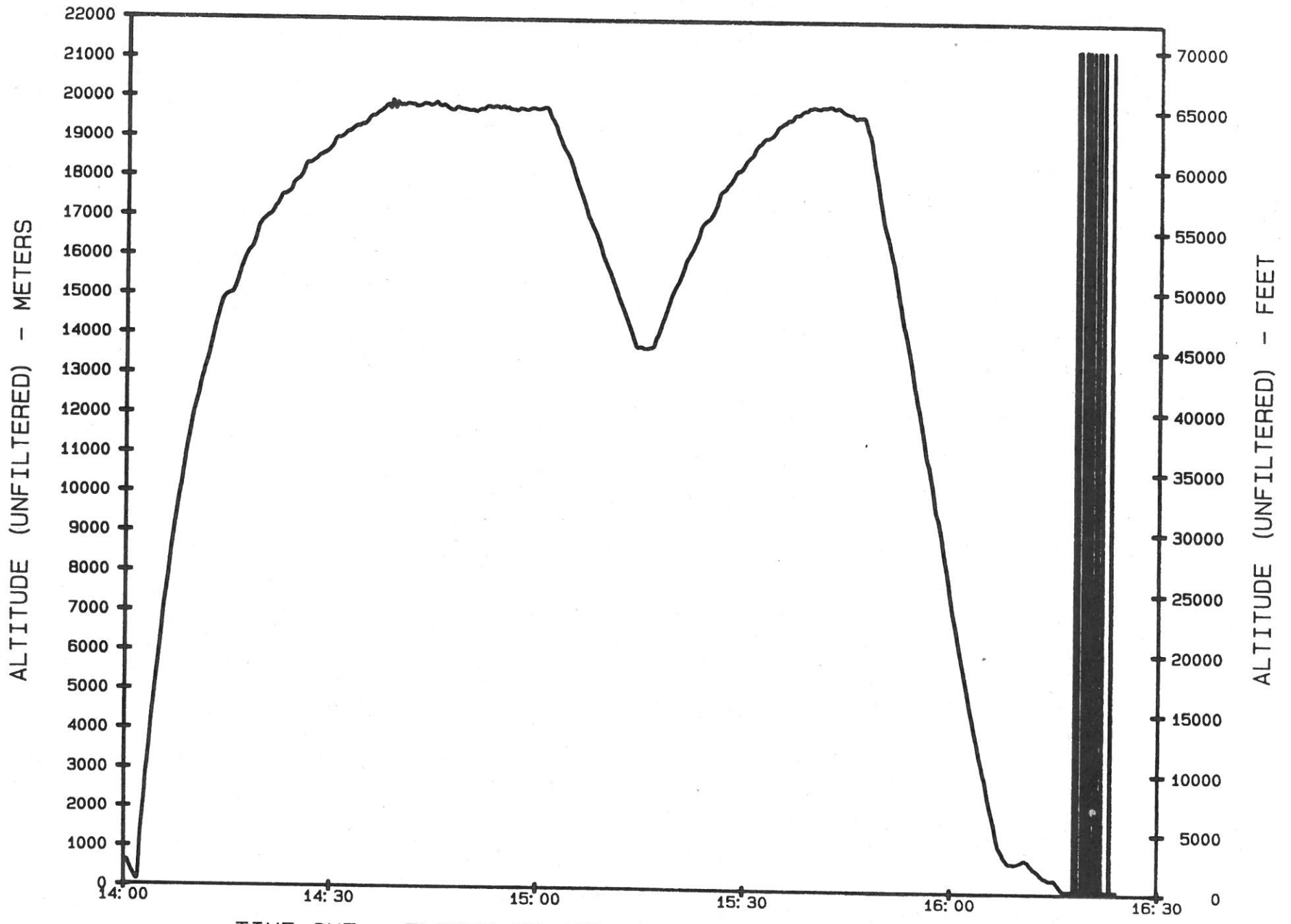
WIND SPEED - KNOTS



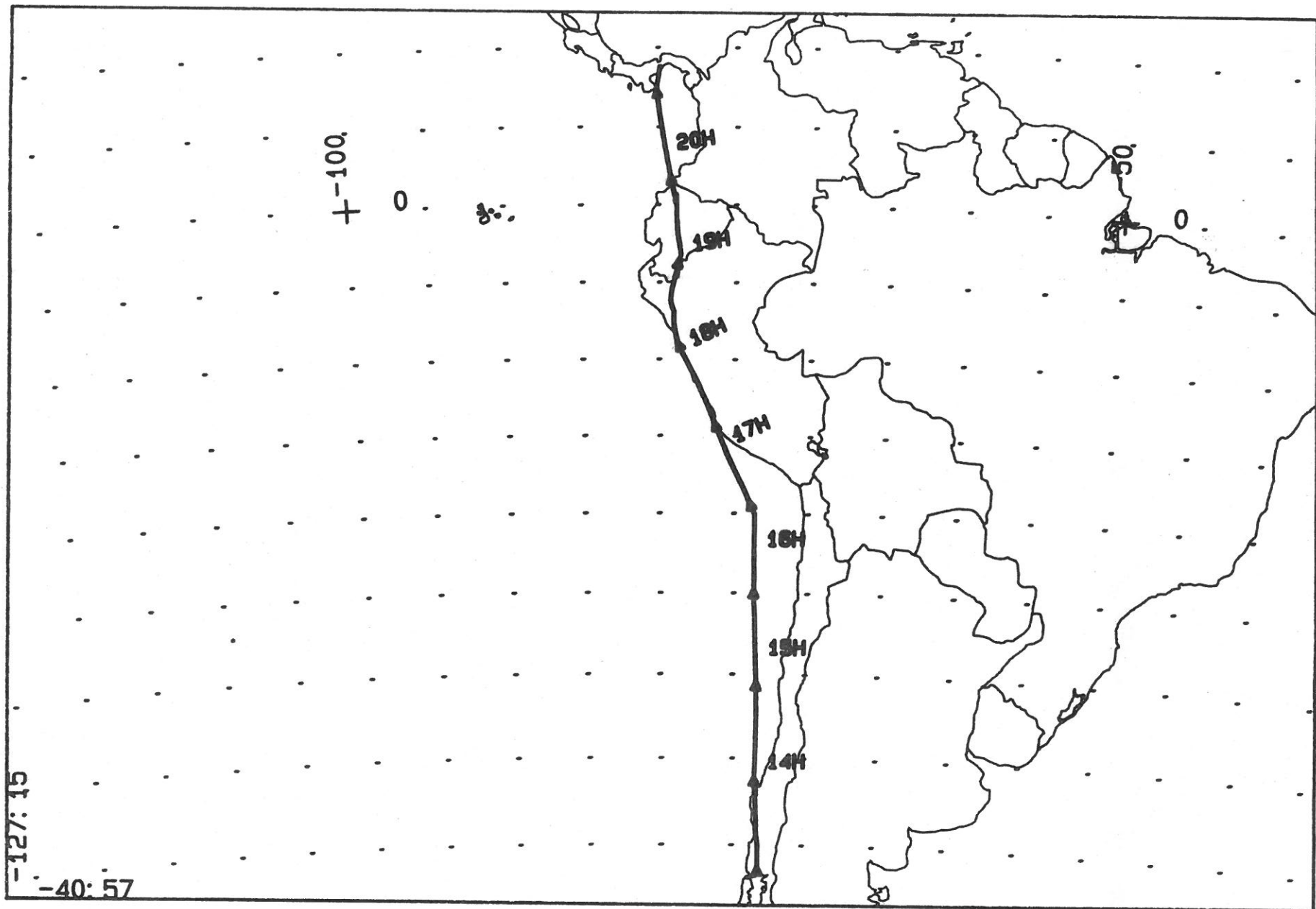
TIME GMT FLIGHT 87-178 DATE 09/22/87 A/C 706



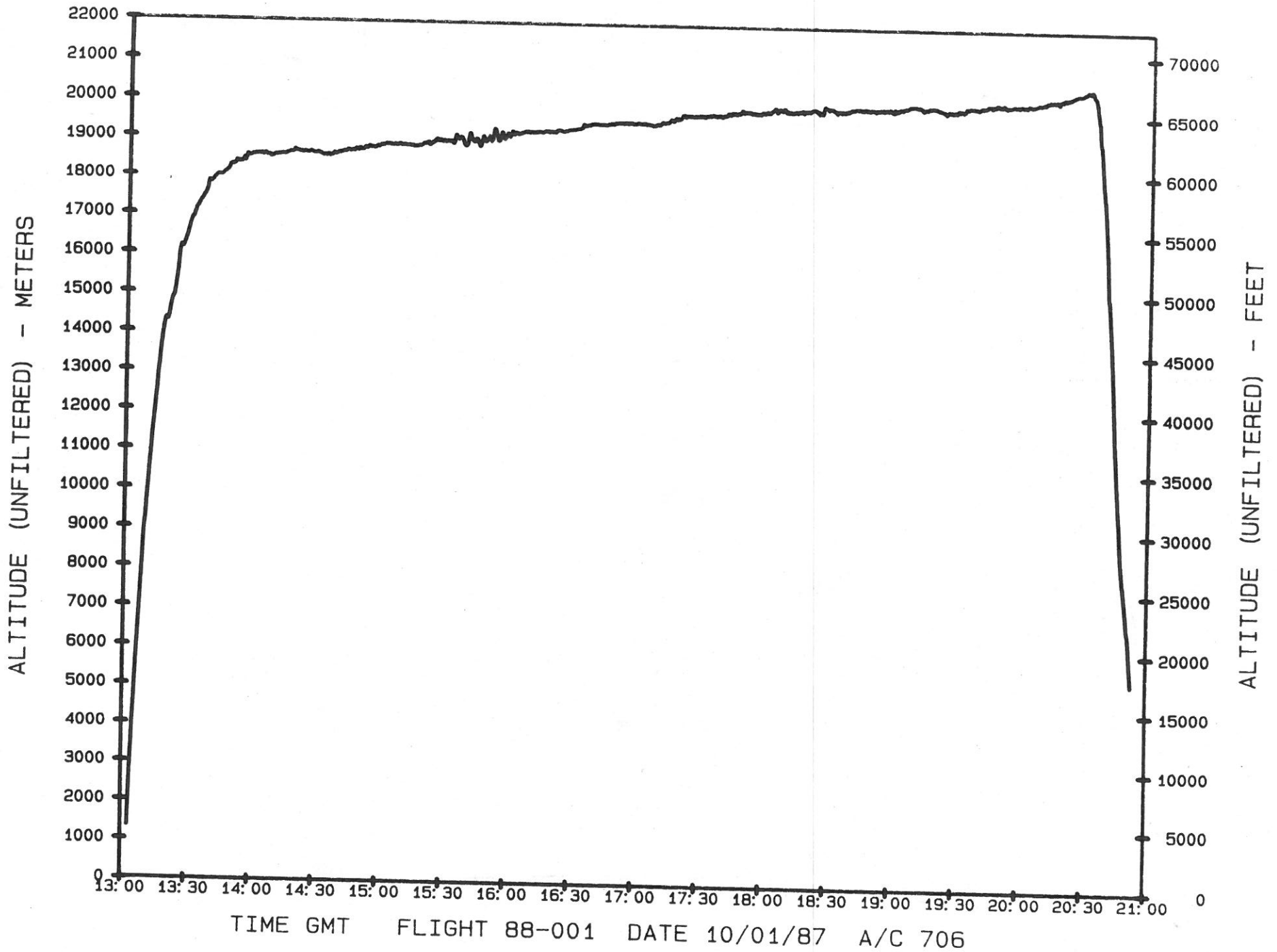
FLIGHT 87-179 29 SEPTEMBER 1987 A/C 706 FERRY FROM PUNTA ARENAS, CHILE TO PUERTO MONTT, CHILE
 OVERLAY FOR %WRLD LAMBERT CONFORMAL PROJECTION: SP1 = -39.5 SP2 = -51.1 CM = -72.4 ROTATED BY 0.0
 14: 00: 00 TO 16: 24: 05 UT SCALE = 1: 8.62E+06 TIME TICS EVERY 10.00 MINUTES

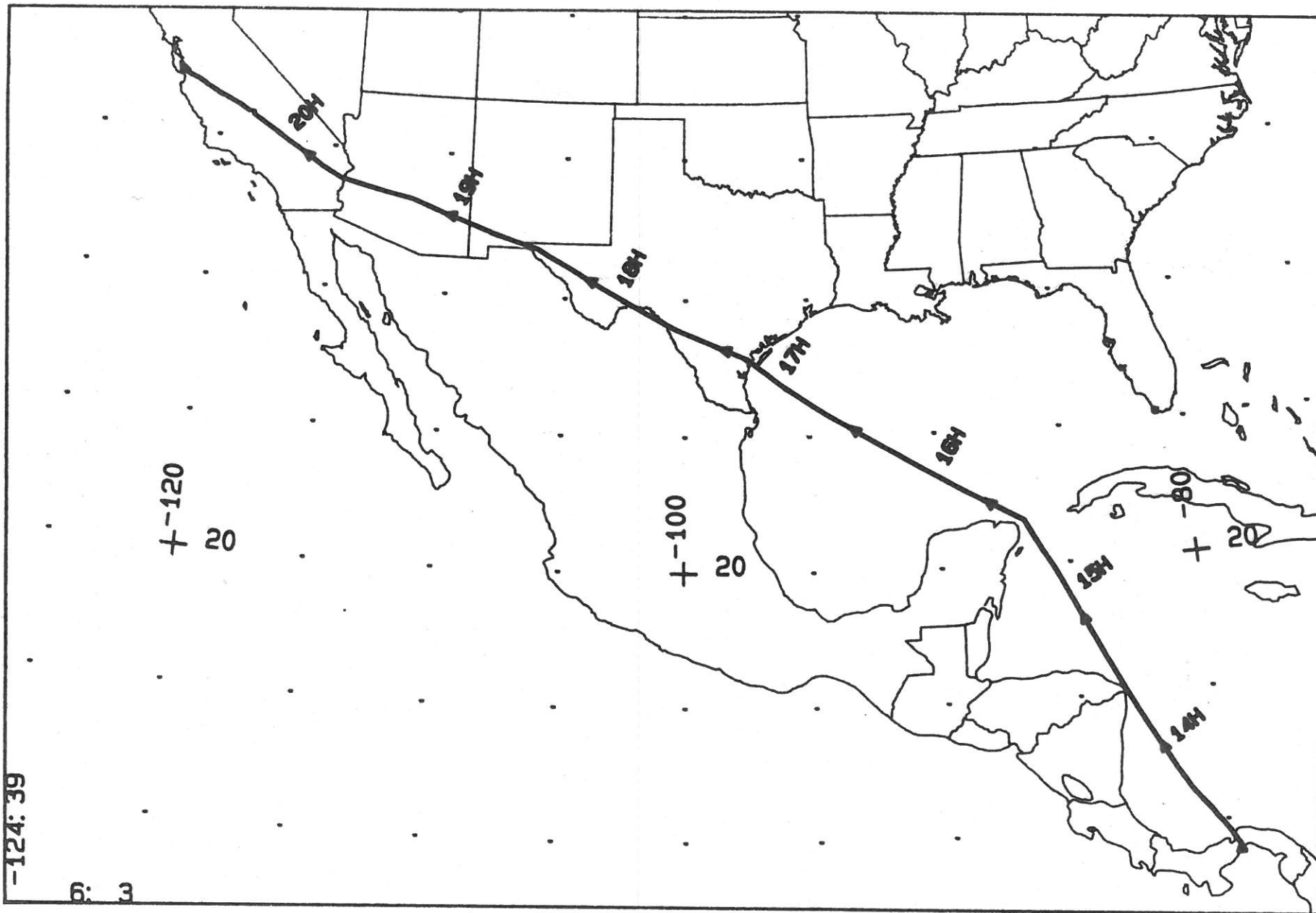


TIME GMT FLIGHT 87-179 DATE 09/29/87 A/C 706

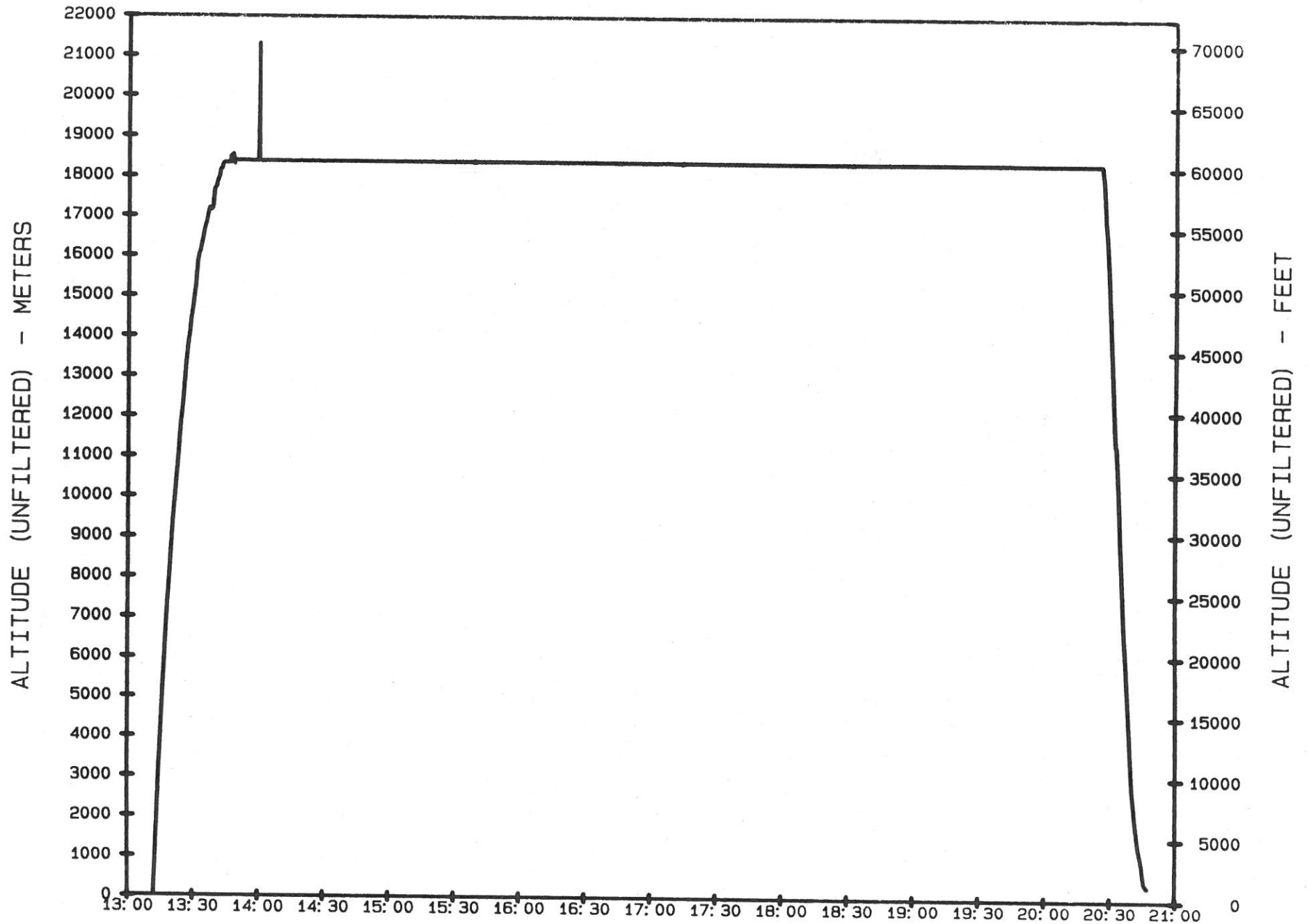


FLIGHT 88-001 1 OCTOBER 1987 A/C 706 FERRY FROM PUERTO MONTT, CHILE TO HOWARD AFB, CANAL ZONE
 OVERLAY FOR %CHRLD LAMBERT CONFORMAL PROJECTION: SP1 = 17.2 SP2 = -33.0 CM = -76.6 ROTATED BY 0.0
 13:03:00 TO 20:53:00 UT SCALE = 1:3.55E+07 TIME TICS EVERY 50.00 MINUTES

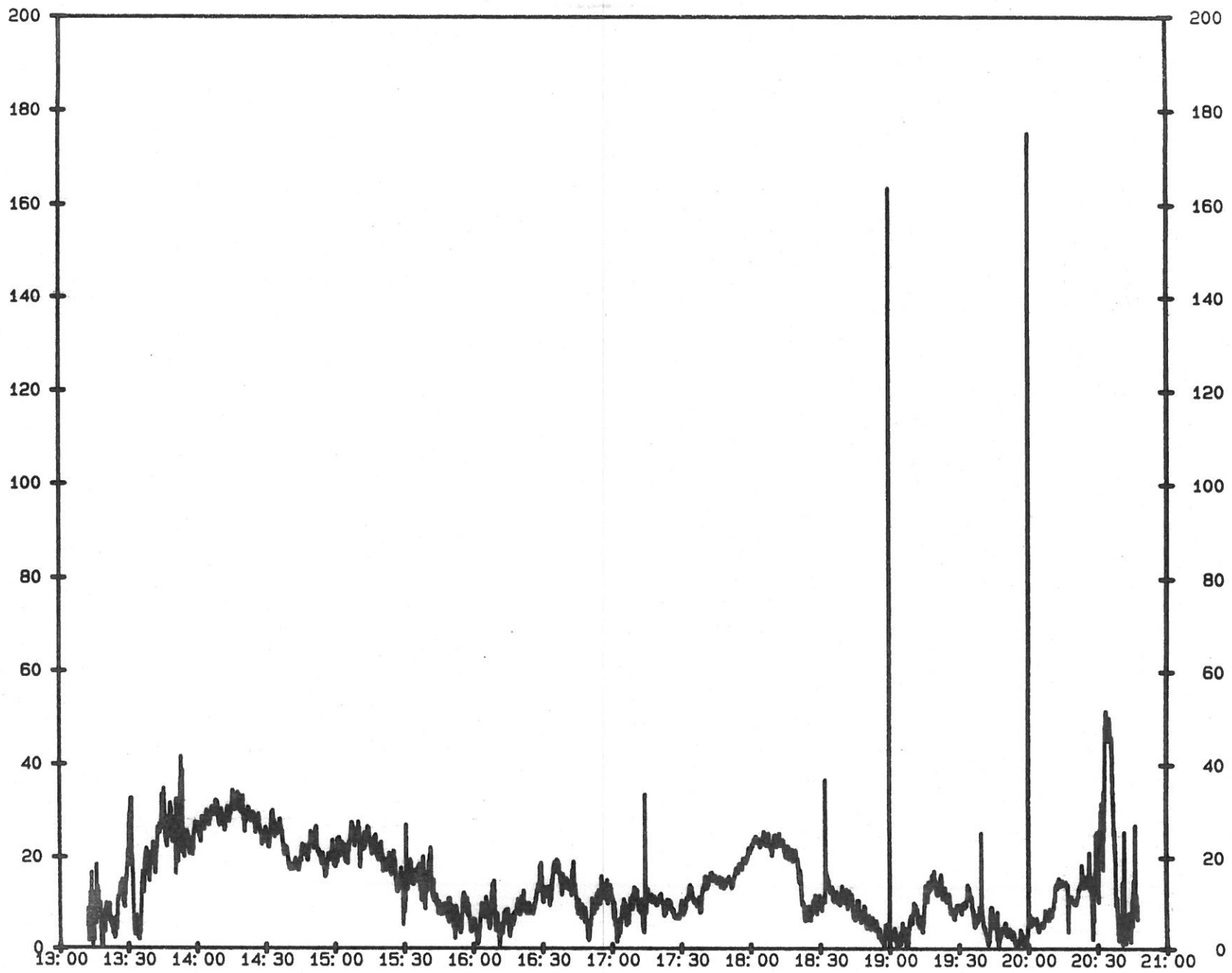




FLIGHT 88-002 3 OCTOBER 1987 A/C 706 FERRY FROM HOWARD AFB, CANAL ZONE TO MOFFETT FIELD, CA
 OVERLAY FOR %CWRLD LAMBERT CONFORMAL PROJECTION: SP1 = 4.2 SP2 = 32.6 CM = -100.8 ROTATED BY 0.0
 13: 12: 00 TO 20: 47: 05 UT SCALE = 1: 2.16E+07 TIME TICS EVERY 50.00 MINUTES



TIME GMT FLIGHT 88-002 DATE 10/03/87 A/C 706



TIME GMT FLIGHT 88-002 DATE 10/03/87 A/C 706