Appendix C

Instrumentation Summaries

Table C.1. Phase II Instrumentation Summary

Channel	ID Code	Description	Sensor Location	Measurement Type and Units	Sensor Type
000-032	**Ptt63ccc** **Ptt52ccc** **Ptt58ccc** **Ptt69ccc**	Surface pressures at 63%, 52%, 58%, and 69% span tt = transducer tap number ccc = %chord pressure tap location	Within blade 3 at approximately 63% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
033	**TP67**	Total pressure probe at 67% span	Within blade 3 at approximately 63% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
124-154	**Ptt80ccc** **Ptt74ccc** **Ptt69ccc**	Surface pressures at 80%, 74%, and 69% span tt = transducer tap number ccc = %chord pressure tap location	Within blade 3 at approximately 80% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
155	**TP86**	Total pressure probe at 86% span	Within blade 3 at approximately 80% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
200-227	**Ptt30ccc** **Ptt36ccc** **Ptt41ccc**	Surface pressures at 30%, 36%, and 41% span tt = transducer tap number ccc = % chord pressure tap location	Within blade 3 at approximately 30% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
228	**TP34**	Total pressure probe at 34% span	Within blade 3 at approximately 30% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
229-257	**Ptt47ccc** **Ptt41ccc**	Surface pressures at 47%, and 41% span tt = transducer tap number ccc = % chord pressure tap location	Within blade 3 at approximately 47% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
258	**TP51**	Total pressure probe at 51% span	Within blade 3 at approximately 47% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
034	**80LFA**	80% Local Flow Angle	Local flow angle flag at 80% span	Angular position, deg	Rotary variable differential transducer
035	**63LFA**	63% Local Flow Angle	Local flow angle flag at 63% span	Angular position, deg	Rotary variable differential transducer
037	**30LFA**	30% Local Flow Angle	Local flow angle flag at 30% span	Angular position, deg	Rotary variable differential transducer
38	**VPAWS1**	VPA Prop Vane Speed WS-1 (12:00)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
39	**VPAWS2**	VPA Prop Vane Speed WS-2 (1:30)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
40	**VPAWS3**	VPA Prop Vane Speed WS-3 (3:00)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
41	**VPAWS4**	VPA Prop Vane Speed WS-4 (4:30)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
42	**VPAWS5**	VPA Prop Vane Speed WS-5 (6:00)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
43	**VPAWS6**	VPA Prop Vane Speed WS-6 (7:30)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
44	**VPAWS7**	VPA Prop Vane Speed WS-7 (9:00)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
45	**VPAWS8**	VPA Prop Vane Speed WS-8 (10:30)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
46	**VPAWS9**	VPA Prop Vane Speed WS-9 Hub Height	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
47	**VPAWD9**	VPA Prop Vane Direction WD-9 Hub Height	Vertical Plane Array, 1 D upwind	Wind direction, deg	Prop vane
48	**VPAWS12**	VPA Bi-Vane Speed WS-12 (3:00 @100%)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Bi-vane

Table C.1. Phase II Instrumentation Summary (continued)

Channel	ID Code	Description	Sensor Location	Measurement Type and Units	Sensor Type
49	VPAWD12	VPA Bi-Vane Direction WD-12 (3:00 @100%)	Vertical Plane Array, 1 D upwind	Wind direction, deg	Bi-vane
50	VPAWE12	VPA Bi-Vane Elevation WE-12 (3:00 @100%)	Vertical Plane Array, 1 D upwind	Wind elevation, deg	Bi-vane
51	VPAWS13	VPA Bi-Vane Speed WS-13 (9:00 @100%)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Bi-vane
52	VPAWD13	VPA Bi-Vane Direction WD-13 (9:00 @100%)	Vertical Plane Array, 1 D upwind	Wind direction, deg	Bi-vane
53	VPAWE13	VPA Bi-Vane Elevation WE-13 (9:00 @100%)	Vertical Plane Array, 1 D upwind	Wind elevation, deg	Bi-vane
54	VPAWS10	VPA Prop Vane Speed WS-10 (12:00 @40%)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
55	VPAWS11	VPA Prop Vane Speed WS-11 (6:00 @40%)	Vertical Plane Array, 1 D upwind	Wind speed, m/s	Prop vane
56	B3AZI	Low Speed Shaft Azimuth Angle	Blade 3 hub/nacelle	Angular position, deg	Pulse/revolution incremental encoder
57	YAWMOM	Yaw Moment	Arm of yaw brake	Bending moment, Nm	Strain gauge
58	TBEWAX	Tower Bending about East-West Axis (X)	Tower at height of 12 m	Bending moment, Nm	Strain gauge
59	TBNSAY	Tower Bending about North-South Axis (Y)	Tower at height of 12 m	Bending moment, Nm	Strain gauge
60	YAW	Yaw Angle	Tower/nacelle attachment	Angular position, deg	Gear-driven potentiometer
61	GENPOW	Generator Power	Nacelle bed plate	Generator power, kW	AC Watt transducer
102	LMSA17M	Sonic Anemometer Channel A	Local met tower, 1 D upwind	Individual component of wind	Three-axis, sonic anemometer
103	LMSB17M	Sonic Anemometer Channel B	Local met tower, 1 D upwind	Individual component of wind	Three-axis, sonic anemometer
104	LMSC17M	Sonic Anemometer Channel C	Local met tower, 1 D upwind	Individual component of wind	Three-axis, sonic anemometer
105	B3ARFB	Strain Blade 3A, root flap bending	Blade 3 pitch shaft (8% span)	Bending moment, Nm	Strain gauge
106	B3BRFB	Strain Blade 3B, root flap bending	Blade 3 pitch shaft (8% span)	Bending moment, Nm	Strain gauge
107	B1RFB	Strain Blade 1, root flap bending	Blade 2 pitch shaft (8% span)	Bending moment, Nm	Strain gauge
108	B2RFB	Strain Blade 2, root flap bending	Blade 1 pitch shaft (8% span)	Bending moment, Nm	Strain gauge
109	B320FB	Strain Blade 3, 20% flap bending	Skin of blade 3 at 20% span	Bending moment, Nm	Strain gauge
110	B340FB	Strain Blade 3, 40% flap bending	Skin of blade 3 at 40% span	Bending moment, Nm	Strain gauge
111	B350FB	Strain Blade 3, 50% flap bending	Skin of blade 3 at 50% span	Bending moment, Nm	Strain gauge
112	B370FB	Strain Blade 3, 70% flap bending	Skin of blade 3 at 70% span	Bending moment, Nm	Strain gauge
113	B390FB	Strain Blade 3, 90% flap bending	Skin of blade 3 at 90% span	Bending moment, Nm	Strain gauge
114	B3AREB	Strain Blade 3, root edge bending	Blade 3 pitch shaft (8% span)	Bending moment, Nm	Strain gauge
115	B320EB	Strain Blade 3, 20% edge bending	Skin of blade 3 at 20% span	Bending moment, Nm	Strain gauge
116	B350EB	Strain Blade 3, 50% edge bending	Skin of blade 3 at 50% span	Bending moment, Nm	Strain gauge
117	70TQ	70% blade torque	Skin of blade 3 at 70% span	Torque, Nm	Strain gauge
118	RTTQ	Root torque (link)	Blade 3 pitch shaft (8% span)	Torque, Nm	Strain gauge
119	50TSN	Blade 3 Torsion at 50% Span	Skin of blade 3 at 50% span	Torque, Nm	Strain gauge
120	LSSXXB	Strain X-X LSS bending	Low speed shaft	Bending moment, Nm	Strain gauge - 350 Ohm
121	LSSYYB	Strain Y-Y LSS bending	Low speed shaft	Bending moment, Nm	Strain gauge - 350 Ohm
122	LSSTQA	Strain LSS torque A	Low speed shaft	Torque, Nm	Strain gauge - 350 Ohm
123	LSSTQB	Strain LSS torque B	Low speed shaft	Torque, Nm	Strain gauge - 350 Ohm

Table C.1. Phase II Instrumentation Summary (continued)

Channel	ID Code	Description	Sensor Location	Measurement Type and Units	Sensor Type
156	ABSRP	Absolute reference pressure	Rotating instrumentation package	Reference pressure, Pa	Analog pressure transducer
Not recorded		Differential reference pressure	Rotating instrumentation package	Differential pressure, Pa	Analog differential pressure transducer
157	B3PITCH	Blade 3 Pitch angle	Blade 3 blade/hub attachment	Angular position, deg	Gear-driven potentiometer
300	NMWD5M	North met WD 5 m	North met tower, 500 m upwind	Wind direction, deg	
301	NMWS5M	North met WS 5 m	North met tower, 500 m upwind	Wind speed, m/s	
302	NMWD10M	North met WD 10 m	North met tower, 500 m upwind	Wind direction, deg	
304	NMWD20M	North met WD 20 m	North met tower, 500 m upwind	Wind direction, deg	
305	NMWS20M	North met WS 20 m	North met tower, 500 m upwind	Wind speed, m/s	
306	NMWD50M	North met WD 50 m	North met tower, 500 m upwind	Wind direction, deg	
307	NMWS50M	North met WS 50 m	North met tower, 500 m upwind	Wind speed, m/s	
308	NMT5M	North met Temperature 5 m	North met tower, 500 m upwind	Ambient air temperature, degC	
309	NMDT	North met Delta Temperature T50-T05	North met tower, 500 m upwind	Delta temperature, degC	
310	BARO	Barometric Pressure	North met tower, 500 m upwind	Ambient air pressure, Pa	Ambient air pressure transducer
311	DAY	Time-day	Data shed	Time-day	Time code generator
312	HOUR	Time-hour	Data shed	Time-hour	Time code generator
313	MINUTE	Time-minute	Data shed	Time-minute	Time code generator
314	SECOND	Time-second	Data shed	Time-second	Time code generator
315	MILLISEC	Time-millisecond	Data shed	Time-millisecond	Time code generator

Table C.1. Phase II Instrumentation Summary (continued)

Channel	ID Code	Power Requirement	Sensor Range	12-bit DAS Resolution	Manufacturer and Model Number	Analog Anti-Alias Filter (Butterworth)	Calibration Methods
000-032	**Ptt63ccc** **Ptt52ccc** **Ptt58ccc** **Ptt69ccc**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 8274 Pa	4.0 Pa / bit	Pressure Systems, Inc. ESP-32		A2, A3
033	**TP67**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 8274 Pa	4.0 Pa / bit	Pressure Systems, Inc. ESP-32		A2, A3
124-154	**Ptt80ccc** **Ptt74ccc** **Ptt69ccc**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 8274 Pa	4.0 Pa / bit	Pressure Systems, Inc. ESP-32		A3, A4
155	**TP86**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 8274 Pa	4.0 Pa / bit	Pressure Systems, Inc. ESP-32		A3, A4
200-227	**Ptt30ccc** **Ptt36ccc** **Ptt41ccc**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2970 Pa	1.5 Pa / bit	Pressure Systems, Inc. ESP-32		A2, A3
228	**TP34**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2970 Pa	1.5 Pa / bit	Pressure Systems, Inc. ESP-32		A2, A3
229-257	**Ptt47ccc** **Ptt41ccc**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2970 Pa	1.5 Pa / bit	Pressure Systems, Inc. ESP-32		A2, A3
258	**TP51**	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2970 Pa	1.5 Pa / bit	Pressure Systems, Inc. ESP-32		A2, A3
034	**80LFA**	+/- 15 Vdc	+/- 10 V = -22 to 55 deg	0.02 deg / bit	Schaevitz Engineering R30D		M2
035	**63LFA**	+/- 15 Vdc	+/- 10 V = -22 to 55 deg	0.02 deg / bit	Schaevitz Engineering R30D		M2
037	**30LFA**	+/- 15 Vdc	+/- 10 V = -22 to 55 deg	0.02 deg / bit	Schaevitz Engineering R30D		M2
38	**VPAWS1**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
39	**VPAWS2**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
40	**VPAWS3**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
41	**VPAWS4**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
42	**VPAWS5**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
43	**VPAWS6**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
44	**VPAWS7**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
45	**VPAWS8**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
46	**VPAWS9**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
47	**VPAWD9**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 21003	2 Hz	A1, M6
48	**VPAWS12**		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1

Table C.1. Phase II Instrumentation Summary (continued)

Channel	ID Code	Power Requirement	Sensor Range	12-bit DAS Resolution	Manufacturer and Model Number	Analog Anti-Alias Filter (Butterworth)	Calibration Methods
49	VPAWD12		0 to 2 V = 0 to 360 deg	0.088 deg / bit	R. M. Young 21003	2 Hz	A1, M6
50	VPAWE12		0 to 2 V = +/- 50 deg	0.024 deg / bit	R. M. Young 21003	2 Hz	A1, M7
51	VPAWS13		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
52	VPAWD13		0 to 2 V = 0 to 360 deg	0.088 deg / bit	R. M. Young 21003	2 Hz	A1, M6
53	VPAWE13		0 to 2 V = +/- 50 deg	0.024 deg / bit	R. M. Young 21003	2 Hz	A1, M7
54	VPAWS10		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
55	VPAWS11		0 to 10 V = 0 to 37 m/s	0.009 m/s / bit	R. M. Young 8003	2 Hz	A1, E1
56	B3AZI		0 to 5 V = 0 to 360 deg	0.088 deg / bit	Trump Ross 512	130 Hz	A1, M5
57	YAWMOM	5 Vdc	+/- 24.75 mV = +/- 3500 Nm	1.7 Nm / bit	Measurements Group, Inc.	40 Hz	A1, M10
58	TBEWAX	5 Vdc	+/- 5.05 mV = +/- 55000 Nm	27 Nm / bit	Measurements Group, Inc.	40 Hz	A1, M9
59	TBNSAY	5 Vdc	+5.03 to -5 mV = +/- 55000 Nm	27 Nm / bit	Measurements Group, Inc.	40 Hz	A1, M9
60	YAW		0 to 10 V = 0 to 360 deg	0.088 deg / bit		10 Hz	A1, M4
61	GENPOW	240 Vac	+/- 5 V = +/- 40 kW	0.02 kW / bit	Ohio Semitronics, Inc. PC5-63C	55 Hz	A1, E6
102	LMSA17M				Kaijo-Denki	12 Hz	
103	LMSB17M				Kaijo-Denki	12 Hz	
104	LMSC17M				Kaijo-Denki	12 Hz	
105	B3ARFB	5 Vdc	+/- 6.25 mV = +/- 3200 Nm	1.6 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
106	B3BRFB	5 Vdc	+/- 5.0 mV = +/- 3200 Nm	1.6 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
107	B1RFB	5 Vdc	+/- 5.0 mV = +/- 3200 Nm	1.6 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
108	B2RFB	5 Vdc	+/- 6.25 mV = +/- 3200 Nm	1.6 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
109	B320FB	5 Vdc	+/- 5.0 mV = +/- 3000 Nm	1.5 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
110	B340FB	5 Vdc	+/- 10.0 mV = +/- 2300 Nm	1.1 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
111	B350FB	5 Vdc	+/- 7.0 mV = +/- 1400 Nm	0.7 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
112	B370FB	5 Vdc	+/- 5.0 mV = +/- 800 Nm	0.4 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
113	B390FB	5 Vdc	+/- 2.5 mV = +/- 300 Nm	0.1 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
114	B3AREB	5 Vdc	+/- 6.25 mV = +/- 3200 Nm	1.6 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
115	B320EB	5 Vdc	+/- 7.0 mV = +/- 3000 Nm	1.5 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
116	B350EB	5 Vdc	+/- 10.0 mV = +/- 1400 Nm	0.7 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
117	70TQ	5 Vdc	+/- 2.5 mV = +/- 1100 Nm	0.5 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
118	RTTQ	5 Vdc	+/- 2.5 mV = +/- 205 Nm	0.1 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
119	50TSN	5 Vdc	+/- 2.5 mV = +/- 300 Nm	0.1 Nm / bit	Measurements Group, Inc.	40 Hz	A2, M8
120	LSSXXB	10 Vdc	+/- 10.0 mV = +/- 13000 Nm	6.3 Nm / bit	Measurements Group, Inc. CEA-06-250UW-350	40 Hz	A2, M8
121	LSSYYB	10 Vdc	+/- 10.0 mV = +/- 13000 Nm	6.3 Nm / bit	Measurements Group, Inc. CEA-06-250UW-350	40 Hz	A2, M8
122	LSSTQA	10 Vdc	+/- 5.0 mV = +/- 6500 Nm	3.2 Nm / bit	Measurements Group, Inc. CEA-06-250US-350	40 Hz	A2, M8
123	LSSTQB	10 Vdc	+/- 5.0 mV = +/- 6500 Nm	3.2 Nm / bit	Measurements Group, Inc. CEA-06-250US-350	100 Hz	A2, M8

Table C.1. Phase II Instrumentation Summary (concluded)

Channel	ID Code	Power Requirement	Sensor Range	12-bit DAS Resolution	Manufacturer and Model Number	Analog Anti-Alias Filter (Butterworth)	Calibration Methods
156	ABSRP		0 to 5 V = 80000 to 110000 Pa	7.3 Pa / bit	Setra Systems, Inc. 270	1.5 kHz	E3
Not recorded			+/- 2.5 V = +/- 1866 Pa	0.9 Pa / bit	Setra Systems, Inc. 239	1.5 kHz	E4
157	B3PITCH		0 to 5 V = -106 to 71 deg	0.04 deg / bit			M3
300	NMWD5M	+/- 12 Vdc	0 to 5 V = 0 to 360 deg	0.088 deg / bit	Teledyne Geotech WS-201, 21.21	1 Hz	
301	NMWS5M	+/- 12 Vdc	0 to 5 V = 0 to 90 m/s	0.02 m/s / bit	Teledyne Geotech WS-201, 21.11	1 Hz	M1, E1
302	NMWD10M	+/- 12 Vdc	0 to 5 V = 0 to 360 deg	0.088 deg / bit	Teledyne Geotech WS-201, 21.21	1 Hz	
304	NMWD20M	+/- 12 Vdc	0 to 5 V = 0 to 360 deg	0.088 deg / bit	Teledyne Geotech WS-201, 21.21	1 Hz	
305	NMWS20M	+/- 12 Vdc	0 to 5 V = 0 to 90 m/s	0.02 m/s / bit	Teledyne Geotech WS-201, 21.11	1 Hz	M1, E1
306	NMWD50M	+/- 12 Vdc	0 to 5 V = 0 to 360 deg	0.088 deg / bit	Teledyne Geotech WS-201, 21.21	1 Hz	
307	NMWS50M	+/- 12 Vdc	0 to 5 V = 0 to 90 m/s	0.02 m/s / bit	Teledyne Geotech WS-201, 21.11	1 Hz	M1, E1
308	NMT5M	+/- 12 Vdc	0 to 5 V = +/- 50 degC	0.02 degC / bit	Teledyne Geotech WS-201, 21.32	1 Hz	M1, E5
309	NMDT	+/- 12 Vdc	0 to 5 V = -4.4 to 6.7 degC	0.003 degC / bit	Teledyne Geotech WS-201, 21.32	1 Hz	M1, E4
310	BARO		0 to 5 V = 70000 to 93000 Pa	5.6 Pa / bit	YSI 2014-21/27	1 Hz	M1, E3
311	DAY						
312	HOUR						
313	MINUTE						
314	SECOND						
315	MILLISEC						

Note: Calibration methods described in Phase I Final Report (Butterfield et al. 1992)

Table C.2. Phase III and Phase IV Instrumentation Summary

Channel	ID Code	Description	Sensor Location	Measurement Type and Units	Sensor Type
000-050 (even)	Ptt30ccc Ptt36ccc Ptt41ccc	Surface pressures at 30%, 36%, and 41% span tt = transducer tap number ccc = %chord pressure tap location	Within blade 3 at approximately 30% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
056, 057*	TP34, TP50	Total pressure probes at 34% and 51% span The header files incorrectly list a probe at 50% span	Within blade 3 at approximately 30% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
052-060 (even)**	5Hx34	5-hole probe at 34% span x = designation of hole in 5-hole probe	Within blade 3 at approximately 30% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
001-051 (odd)	Ptt47ccc Ptt52ccc Ptt58ccc	Surface pressures at 47%, 52%, and 58% span tt = transducer tap number ccc = %chord pressure tap location	Within blade 3 at approximately 47% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
053-061 (odd)**	5Hx51	5-hole probe at 51% span x = designation of hole in 5-hole probe	Within blade 3 at approximately 47% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
100-151 (even)	Ptt63ccc Ptt69ccc Ptt74ccc	Surface pressure at 63%, 69%, and 74% span tt = transducer tap number ccc = % chord pressure tap location	Within blade 3 at approximately 63% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
156*	TP67	Total pressure probe at 67% span	Within blade 3 at approximately 63% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
152-160 (even)**	5Hx67	5-hole probe at 67% span x = designation of hole in 5-hole probe	Within blade 3 at approximately 63% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
101-145 (odd)	Ptt80ccc Ptt85ccc Ptt90ccc	Surface pressures at 80%, 85%, and 90% span tt = transducer tap number ccc = % chord pressure tap location	Within blade 3 at approximately 80% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
157*	TP83	Total pressure probe at 84% span The header files incorrectly list a probe at 83% span	Within blade 3 at approximately 80% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
153-161 (odd)**	5Hx84	5-hole probe at 84% span x = designation of hole in 5-hole probe	Within blade 3 at approximately 80% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
200-250 (even)	Ptt95ccc Ptt92ccc Ptt98ccc	Surface pressures at 95%, 92%, and 98% span tt = transducer tap number ccc = % chord pressure tap location	Within blade 3 at approximately 95% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
252-260 (even)	5Hx91	5-hole probe at 91% span x = designation of hole in 5-hole probe	Within blade 3 at approximately 95% span	Differential pressure, Pa	32 channel scanning, electronic pressure transducer
201	B1ACFL	Accelerometer Blade 1-Flap	Tip of blade 1	Linear flap acceleration, mps2	Accelerometer
203	B1ACED	Accelerometer Blade 1-Edge	Tip of blade 1	Linear edge acceleration, mps2	Accelerometer
205	B2ACFL	Accelerometer Blade 2-Flap	Tip of blade 2	Linear flap acceleration, mps2	Accelerometer
207	B2ACED	Accelerometer Blade 2-Edge	Tip of blade 2	Linear edge acceleration, mps2	Accelerometer
209	B3ACFL	Accelerometer Blade 3-Flap	Tip of blade 3	Linear flap acceleration, mps2	Accelerometer
211	B3ACED	Accelerometer Blade 3-Edge	Tip of blade 3	Linear edge acceleration, mps2	Accelerometer
213	Not recorded	Analog Nitrogen tank pressure	Rotating instrumentation package	Pressure inside Ni tank, Pa	Pressure transducer
215*	B325FB	Strain Blade 3 25% flap bending	Skin of blade 3 at 25% span	Bending moment, Nm	Strain gauge
217*	B325EB	Strain Blade 3 25% edge bending	Skin of blade 3 at 25% span	Bending moment, Nm	Strain gauge
219*	B360FB	Strain Blade 3 60% flap bending	Skin of blade 3 at 60% span	Bending moment, Nm	Strain gauge
221*	B360EB	Strain Blade 3 60% edge bending	Skin of blade 3 at 60% span	Bending moment, Nm	Strain gauge
225	B1RFB	Strain Blade 1 root flap bending	Blade 1 pitch shaft (8% span)	Bending moment, Nm	Strain gauge - 350 Ohm
227	B1REB	Strain Blade 1 root edge bending	Blade 1 pitch shaft (8% span)	Bending moment, Nm	Strain gauge - 350 Ohm

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Description	Sensor Location	Measurement Type and Units	Sensor Type	Power Requirement
229	B2RFB	Strain Blade 2 root flap bending	Blade 2 pitch shaft (8% span)	Bending moment, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
231	B2REB	Strain Blade 2 root edge bending	Blade 2 pitch shaft (8% span)	Bending moment, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
233	B3RFB	Strain Blade 3 root flap bending	Blade 3 pitch shaft (8% span)	Bending moment, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
235	B3REB	Strain Blade 3 root edge bending	Blade 3 pitch shaft (8% span)	Bending moment, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
237	LSSXXB	Strain X-X LSS bending	Low speed shaft	Bending moment, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
239	LSSYYB	Strain Y-Y LSS bending	Low speed shaft	Bending moment, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
241	LSSTQ	Strain LSS torque	Low speed shaft	Torque, Nm	Strain gauge - 350 Ohm	+/- 10 Vdc
243*	30LFA	Digital 30% LFA	Local flow angle flag at 30% span	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
245*	47LFA	Digital 47% LFA	Local flow angle flag at 47% span	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
247*	63LFA	Digital 63% LFA	Local flow angle flag at 63% span	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
249*	80LFA	Digital 80% LFA	Local flow angle flag at 80% span	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
253	B1PITCH	Digital Blade 1 pitch	Blade 1 root/hub attachment	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
255	B2PITCH	Digital Blade 2 pitch	Blade 2 root/hub attachment	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
257	B3PITCH	Digital Blade 3 pitch	Blade 3 root/hub attachment	Angular position, deg	Digital position encoder	+/- 15 Vdc, 5V
259, 261	Not recorded	Digital first 12 bits from Delta pressure, Digital last 12 bits from Delta pressure	Rotating instrumentation package	Reference pressure, 16 bit binary	Digital reference pressure	12 Vdc
300	LMWS24M	Local met WS 24.38 m	Central MET Tower	Wind speed, m/s	Cup anemometer	+/- 12 Vdc
302	LMWS17M	Local met WS 17.02 m (hub height)	Central MET Tower	Wind speed, m/s	Cup anemometer	+/- 12 Vdc
304	LMWS10M	Local met WS 10.06 m	Central MET Tower	Wind speed, m/s	Cup anemometer	+/- 12 Vdc
306	LMWS2M	Local met WS 2.4 m	Central MET Tower	Wind speed, m/s	Cup anemometer	+/- 12 Vdc
308	NLMWS17M	N local met WS 17.02 m (hub height)	North MET Tower	Wind speed, m/s	Cup anemometer	+/- 12 Vdc
310	NLMWD17M	N local met WD 17.02 m (hub height)	North MET Tower	Wind Direction, deg	Bi-Vane anemometer	+/- 12 Vdc
312	NLMWE17M	N local met WE 17.02 m (hub height)	North MET Tower	Wind Elevation, deg	Bi-Vane anemometer	+/- 12 Vdc
314	SLMWS17M	S local met WS 17.02 m (hub height)	South MET Tower	Wind speed, m/s	Cup anemometer	+/- 12 Vdc
316	SLMWD17M	S local met WD 17.02 m (hub height)	South MET Tower	Wind Direction, deg	Bi-Vane anemometer	+/- 12 Vdc
318	SLMWE17M	S local met WE 17.02 m (hub height)	South MET Tower	Wind Elevation, deg	Bi-Vane anemometer	+/- 12 Vdc
320	LMT2M	Local met temperature 2.4m	Central MET Tower	Ambient air temperature, degC	Platinum resistance element (100 Ohm)	+/- 12 Vdc
322***	LMT24M	Local met temperature 24.38m	Central MET Tower	Ambient air temperature, degC	Platinum resistance element (100 Ohm)	+/- 12 Vdc
322	LMDT	Local met Delta Temperature	Central MET Tower	Delta temperature, degC	Platinum resistance element (100 Ohm)	+/- 12 Vdc
324	LMDP2M	Local met dewpoint 2.4m	Central MET Tower	Dewpoint temperature, degC	Dewpoint temperature sensor	+/- 12 Vdc
326	LMSU17M	Local met sonic channel U 17.02 m	Central MET Tower	Horizontal wind speed perpendicular to rotor plane, m/s	Sonic Anemometer	120 Vac
328	LMSV17M	Local met sonic channel V 17.02 m	Central MET Tower	Horizontal wind speed parallel to rotor plane, m/s	Sonic Anemometer	120 Vac
330	LMSW17M	Local met sonic channel W 17.02 m	Central MET Tower	Vertical wind speed, m/s	Sonic Anemometer	120 Vac

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Description	Sensor Location	Measurement Type and Units	Sensor Type	Power Requirement
332	GENPOW	Generator power	Nacelle bed plate	Generator power, kW	AC Watt transducer	240 Vac
334	BARO	Barometric pressure	Data shed	Ambient air pressure, Pa	Ambient air pressure transducer	15Vdc
336	NAACYW	Nacelle Accelerometer Yaw	Nacelle bed plate	Linear yaw acceleration, m/s2	Accelerometer	15Vdc
338	NAACFA	Nacelle Accelerometer Fore-Aft	Nacelle bed plate	Linear fore-aft acceleration, m/s2	Accelerometer	15Vdc
340	NAACPI	Nacelle Accelerometer Pitch	Nacelle bed plate	Linear pitch acceleration, m/s2	Accelerometer	15Vdc
342**	NAYM	Nacelle Yaw Moment	Arm of yaw brake	Bending moment, Nm	Strain gauge	+/- 10 Vdc
349	B3AZI	Blade azimuth angle	Blade 3 hub/nacelle attachment	Angular position, deg	Digital position encoder	15Vdc
351	YAW	Yaw angle	Tower/nacelle attachment	Angular position, deg	Digital position encoder	15Vdc
353	DAY	Clock - day	Data shed	Time, day	Time code generator	120 Vac
355	HOUR	Clock - hour	Data shed	Time, hour		
357	MINUTE	Clock - minute	Data shed	Time, minute		
359	SECOND	Clock - second	Data shed	Time, second		
361	MILLISEC	Clock - millisecond	Data shed	Time, millisecond		

* Phase III Only

** Phase IV Only

*** Data1-data6 only

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Power Requirement	Sensor Range	12-bit DAS Resolution	Sensor Accuracy	Manufacturer and Model Number
000-050 (even)	Ptt30ccc Ptt36ccc Ptt41ccc	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2500 Pa	1.2 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
056, 057*	TP34, TP50	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2500 Pa	1.2 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
052-060 (even)**	5Hx34	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2500 Pa	1.2 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
001-051 (odd)	Ptt47ccc Ptt52ccc Ptt58ccc	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2500 Pa	1.2 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
053-061 (odd)**	5Hx51	5Vdc, +/- 12Vdc	+/- 5 V = +/- 2500 Pa	1.2 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
100-151 (even)	Ptt63ccc Ptt69ccc Ptt74ccc	5Vdc, +/- 12Vdc	+/- 5 V = +/- 5000 Pa	2.4 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
156*	TP67	5Vdc, +/- 12Vdc	+/- 5 V = +/- 5000 Pa	2.4 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
152-160 (even)**	5Hx67	5Vdc, +/- 12Vdc	+/- 5 V = +/- 5000 Pa	2.4 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
101-145 (odd)	Ptt80ccc Ptt85ccc Ptt90ccc	5Vdc, +/- 12Vdc	+/- 5 V = +/- 10342 Pa	5.0 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
157*	TP83	5Vdc, +/- 12Vdc	+/- 5 V = +/- 10342 Pa	5.0 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
153-161 (odd)**	5Hx84	5Vdc, +/- 12Vdc	+/- 5 V = +/- 10342 Pa	5.0 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
200-250 (even)	Ptt95ccc Ptt92ccc Ptt98ccc	5Vdc, +/- 12Vdc	+/- 5 V = +/- 10342 Pa	5.0 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
252-260 (even)	5Hx91	5Vdc, +/- 12Vdc	+/- 5 V = +/- 10342 Pa	5.0 Pa / bit	+/- 0.1 % full scale (static)	Pressure Systems, Inc. ESP-32
201	B1ACFL	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
203	B1ACED	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
205	B2ACFL	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
207	B2ACED	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
209	B3ACFL	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
211	B3ACED	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
213	Not recorded		0 to 13.8 MPa	3.3 kPa / bit		IMO 303H2-12CG-10-P
215*	B325FB	+/- 10 Vdc	0-4096 counts=+/- 9500 Nm	4.6 Nm / bit		Measurements Group, Inc.
217*	B325EB	+/- 10 Vdc	0-4096 counts=+/- 18000 Nm	9.0 Nm / bit		Measurements Group, Inc.
219*	B360FB	+/- 10 Vdc	0-4096 counts=+/- 7000 Nm	3.3 Nm / bit		Measurements Group, Inc.
221*	B360EB	+/- 10 Vdc	0-4096 counts=+/- 9000 Nm	4.4 Nm / bit		Measurements Group, Inc.
225	B1RFB	+/- 10 Vdc	0-4096 counts=+/- 16000 Nm	8 Nm / bit		Measurements Group, Inc. LWK-09-W250B-350
227	B1REB	+/- 10 Vdc	0-4096 counts=+/- 16000 Nm	8 Nm / bit		Measurements Group, Inc. LWK-09-W250B-350

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Power Requirement	Sensor Range	12-bit DAS Resolution	Sensor Accuracy	Manufacturer and Model Number
229	B2RFB	+/- 10 Vdc	0-4096 counts=+/- 16000 Nm	8 Nm / bit		Measurements Group, Inc. LWK-09-W250B-350
231	B2REB	+/- 10 Vdc	0-4096 counts=+/- 16000 Nm	8 Nm / bit		Measurements Group, Inc. LWK-09-W250B-350
233	B3RFB	+/- 10 Vdc	0-4096 counts=+/- 16000 Nm	8 Nm / bit		Measurements Group, Inc. LWK-09-W250B-350
235	B3REB	+/- 10 Vdc	0-4096 counts=+/- 16000 Nm	8 Nm / bit		Measurements Group, Inc. LWK-09-W250B-350
237	LSSXXB	+/- 10 Vdc	0-4096 counts=+/-33000 Nm	16.5 Nm / bit		Measurements Group, Inc. CEA-06-250UW-350
239	LSSYYB	+/- 10 Vdc	0-4096 counts=+/-33000 Nm	16.5 Nm / bit		Measurements Group, Inc. CEA-06-250UW-350
241	LSSTQ	+/- 10 Vdc	0-4096 counts=+/-39000 Nm	19.5 Nm / bit		Measurements Group, Inc. CEA-06-250US-350
243*	30LFA	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	12 bit +/- 0.1 deg +/- 1 LSB	Computer Conversions Corporation TDS12-F-1PC, TDS36-F-1PC
245*	47LFA	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	12 bit +/- 0.1 deg +/- 1 LSB	Computer Conversions Corporation TDS12-F-1PC, TDS36-F-1PC
247*	63LFA	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	12 bit +/- 0.1 deg +/- 1 LSB	Computer Conversions Corporation TDS12-F-1PC, TDS36-F-1PC
249*	80LFA	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	12 bit +/- 0.1 deg +/- 1 LSB	Computer Conversions Corporation TDS12-F-1PC, TDS36-F-1PC
253	B1PITCH	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	+/- 0.5 count (worst case)	BEI Motion Systems Company, R25-4096-24
255	B2PITCH	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	+/- 0.5 count (worst case)	BEI Motion Systems Company, R25-4096-24
257	B3PITCH	+/- 15 Vdc, 5V	0-4096 counts = 0-360 deg	0.088 deg / bit	+/- 0.5 count (worst case)	BEI Motion Systems Company, R25-4096-24
259, 261	Not recorded	12 Vdc	+/- 13,790 Pa	0.42 Pa/bit	0.01% full scale (standard)	Mensor Corporation 4010
300	LMWS24M	+/- 12 Vdc	0-5 V = 0-50 m/s	0.01 m/s / bit	+/- 1% of true	Met One Instruments 1564B, 170-41, 21.11
302	LMWS17M	+/- 12 Vdc	0-5 V = 0-50 m/s	0.01 m/s / bit	+/- 1% of true	Met One Instruments 1564B, 170-41, 21.11
304	LMWS10M	+/- 12 Vdc	0-5 V = 0-50 m/s	0.01 m/s / bit	+/- 1% of true	Met One Instruments 1564B, 170-41, 21.11
306	LMWS2M	+/- 12 Vdc	0-5 V = 0-50 m/s	0.01 m/s / bit	+/- 1% of true	Met One Instruments 1564B, 170-41, 21.11
308	NLMWS17M	+/- 12 Vdc	0-5 V = 0-50 m/s	0.01 m/s / bit	+/- 1% of true	Met One Instruments 1564B, 170-41, 21.11
310	NLMWD17M	+/- 12 Vdc	0-5 V = 0-360 deg	0.088 deg / bit	+/- 2 deg	Met One Instruments 1585, 21.21
312	NLMWE17M	+/- 12 Vdc	0-5 V = -60 to 60 deg	0.03 deg / bit	+/- 2 deg	Met One Instruments 1585, 21.21
314	SLMWS17M	+/- 12 Vdc	0-5 V = 0-50 m/s	0.01 m/s / bit	+/- 1% of true	Met One Instruments 1564B, 170-41, 21.11
316	SLMWD17M	+/- 12 Vdc	0-5 V = 0-360 deg	0.088 deg / bit	+/- 2 deg	Met One Instruments 1585, 21.21
318	SLMWE17M	+/- 12 Vdc	0-5 V = -60 to 60 deg	0.03 deg / bit	+/- 2 deg	Met One Instruments 1585, 21.21
320	LMT2M	+/- 12 Vdc	0-5 V = -50 to 50 degC	0.02 deg / bit	+/- 0.1 degC to+/- 0.3 degC	Met One Instruments T200, 21.32A4
322***	LMT24M	+/- 12 Vdc	0-5 V = -50 to 50 degC	0.02 deg / bit	+/- 0.1 degC to+/- 0.3 degC	Met One Instruments T200, 21.32A4
322	LMDT	+/- 12 Vdc	0-5 V = -8 to 12 degF	0.005 degC / bit	+/- 0.2 degC to +/- 0.6 degC	Met One Instruments T200, Teledyne ModS22 rev. E
324	LMDP2M	+/- 12 Vdc	0-5 V = -50 to 50 degC	0.02 deg / bit	+/- 0.1 degC to+/- 0.3 degC	Met One Instruemnts DP200B, 21.43D2
326	LMSU17M	120 Vac	+/- 5 V = +/- 50 m/s	0.02 m/s / bit	+/- 1 % or +/- 0.05 m/s	Applied Technologies, Inc. SWS-211/3K
328	LMSV17M	120 Vac	+/- 5 V = +/- 50 m/s	0.02 m/s / bit	+/- 1 % or +/- 0.05 m/s	Applied Technologies, Inc. SWS-211/3K
330	LMSW17M	120 Vac	+/- 5 V = +/- 15 m/s	0.01 m/s / bit	+/- 1 % or +/- 0.05 m/s	Applied Technologies, Inc. SWS-211/3K

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Power Requirement	Sensor Range	12-bit DAS Resolution	Sensor Accuracy	Manufacturer and Model Number
332	GENPOW	240 Vac	+/- 5V = +/- 40 kW	0.02 kW / bit	+/- 0.5% at rated power	Ohio Semitronics, Inc. PC5-63C
334	BARO	15Vdc	0-5 V = 74000 - 100000 Pa	6.3 Pa / bit		Atmospheric Instrumentation Research, Inc. AIR-AB-2AX
336	NAACYW	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
338	NAACFA	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
340	NAACPI	15Vdc	+/- 2 V = +/- 10g	0.024 mps2 / bit	200 mV/g	Endevco Corporation 7290A-10
342**	NAYM	+/- 10 Vdc	0-4096 counts=+/- 5500 Nm	2.7 Nm / bit		Measurements Group, Inc.
349	B3AZI	15Vdc	0-4096 counts = 0-360 deg	0.088 deg / bit	+/- 0.5 count (worst case)	BEI Motion Systems Company, R25-4096-24
351	YAW	15Vdc	0-4096 counts = 0-360 deg	0.088 deg / bit	+/- 0.5 count (worst case)	BEI Motion Systems Company, R25-4096-25
353	DAY	120 Vac	0-4096 counts=binary coded	0.1 ms	Frequency stability +/- 5ppm	9310-804
355	HOUR		decimal digital			
357	MINUTE					
359	SECOND					
361	MILLISEC					

* Phase III Only

** Phase IV Only

*** Data1-data6 only

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Signal Conditioning	Analog Anti-Alias Filters	Calibration Methods	Page Number
000-050 (even)	Ptt30ccc Ptt36ccc Ptt41ccc	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-39
056, 057*	TP34, TP50	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-39
052-060 (even)**	5Hx34	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-39
001-051 (odd)	Ptt47ccc Ptt52ccc Ptt58ccc	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-39
053-061 (odd)**	5Hx51	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-39
100-151 (even)	Ptt63ccc Ptt69ccc Ptt74ccc	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-41
156*	TP67	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-41
152-160 (even)**	5Hx67	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-41
101-145 (odd)	Ptt80ccc Ptt85ccc Ptt90ccc	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-42
157*	TP83	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-42
153-161 (odd)**	5Hx84	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-42
200-250 (even)	Ptt95ccc Ptt92ccc Ptt98ccc	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-42
252-260 (even)	5Hx91	+/- 5 Vdc multiplexed (Pressure Systems, Inc. ESP-32)		A2	B-42
201	B1ACFL	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
203	B1ACED	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
205	B2ACFL	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
207	B2ACED	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
209	B3ACFL	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
211	B3ACED	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
213	Not recorded	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter		B-44
215*	B325FB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-25
217*	B325EB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-25
219*	B360FB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-25
221*	B360EB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-25
225	B1RFB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-21
227	B1REB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-21

Table C.2. Phase III and Phase IV Instrumentation Summary (continued)

Channel	ID Code	Signal Conditioning	Analog Anti-Alias Filters	Calibration Methods	Page Number
229	B2RFB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-21
231	B2REB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-21
233	B3RFB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-21
235	B3REB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-21
237	LSSXXB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-26
239	LSSYYB	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-26
241	LSSTQ	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Bessel Filter	A1	B-26
243*	30LFA			M10, S4	B-37
245*	47LFA			M10, S4	B-37
247*	63LFA			M10, S4	B-37
249*	80LFA			M10, S4	B-37
253	B1PITCH			M9, S3	B-34
255	B2PITCH			M9, S3	B-34
257	B3PITCH			M9, S3	B-34
259, 261	Not recorded		Built into module	M11	B-45
300	LMWS24M	Wind speed processor (Met One Instruments, 21.11)	Butterworth Filter	M1, E1	B-2
302	LMWS17M	Wind speed processor (Met One Instruments, 21.11)	Butterworth Filter	M1, E1	B-2
304	LMWS10M	Wind speed processor (Met One Instruments, 21.11)	Butterworth Filter	M1, E1	B-2
306	LMWS2M	Wind speed processor (Met One Instruments, 21.11)	Butterworth Filter	M1, E1	B-2
308	NLMWS17M	Wind speed processor (Met One Instruments, 21.11)	Butterworth Filter	M1, E1	B-2
310	NLMWD17M	Wind direction processor (Met One Inst., 21.21)	Butterworth Filter	M2, S1, E1	B-5
312	NLMWE17M	Wind direction processor (Met One Inst., 21.21)	Butterworth Filter	M3, S2, E1	B-5
314	SLMWS17M	Wind speed processor (Met One Instruments, 21.11)	Butterworth Filter	M1, E1	B-2
316	SLMWD17M	Wind direction processor (Met One Inst., 21.21)	Butterworth Filter	M2, S1, E1	B-5
318	SLMWE17M	Wind direction processor (Met One Inst., 21.21)	Butterworth Filter	M3, S2, E1	B-5
320	LMT2M	Temperature processor (Met One Instruments, 21.32A4)	Butterworth Filter	M5, E1	B-14
322***	LMT24M	Temperature processor (Met One Instruments, 21.32A4)	Butterworth Filter	M5, E1	B-14
322	LMDT	Delta temperature processor (Teledyne ModS22 rev. E)	Butterworth Filter	M5, E1	B-14
324	LMDP2M	Dewpoint temperature processor (Met One Inst., 21.43D2)	Butterworth Filter	M5, E1	B-15
326	LMSU17M	RS232C to +/- 5 Vdc (Applied Technologies, Inc., SA-4)	Butterworth Filter	M4, E1	B-11
328	LMSV17M	RS232C to +/- 5 Vdc (Applied Technologies, Inc., SA-4)	Butterworth Filter	M4, E1	B-11
330	LMSW17M	RS232C to +/- 5 Vdc (Applied Technologies, Inc., SA-4)	Butterworth Filter	M4, E1	B-11

Table C.2. Phase III and Phase IV Instrumentation Summary (concluded)

Channel	ID Code	Signal Conditioning	Analog Anti-Alias Filters	Calibration Methods	Page Number
332	GENPOW	+/- 5 Vdc to +/- 5 Vdc (Analog Devices, Inc. 5B41-02)	Butterworth Filter	M7, E1	B-32
334	BARO	+/- 5 Vdc to +/- 5 Vdc (Analog Devices, Inc. 5B41-02)	Butterworth Filter	M6, E1	B-19
336	NAACYW	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
338	NAACFA	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
340	NAACPI	+/- 1 Vdc to +/- 5 V dc (Analog Devices, Inc. 5B41-01)	Bessel Filter	M8, E1	B-29
342**	NAYM	+/- 30 mV to +/- 5V dc (Analog Devices, Inc. 5B38-01)	Butterworth Filter	A1	B-28
349	B3AZI			M9, S3	B-34
351	YAW			M9, S3	B-34
353	DAY			M12	B-47
355	HOUR			M12	B-47
357	MINUTE			M12	B-47
359	SECOND			M12	B-47
361	MILLISEC			M12	B-47

* Phase III Only

** Phase IV Only

*** Data1-data6 only