Bombardier Canadair Regional Jet 200
Quick Reference Handbook (QRH) v1.00
Exclusively for *Mountain Air Virtual Airlines*

Index

PROCEDURES

ENGINE START (EXTERNAL AIR)

Ignition (A or B)	ARM
14th Bleeds	OPEN
APU LCV • APU LCV OPEN status msg out	CLOSE
Engine (L or R)	START
When N2 reaches 20% and ITT is below 120°C:	
Applicable Thrust Lever • Confirm starter disengages at 55% N_2 • IGNITION A (B) Msg goes out • L (R) ENGINE START Msg goes out • ITT is 450 to 600°C • N_1 stabilizes and does not drop below 22 to 25% • N_2 is between 62.9 to 64.0% • Fuel flow approximately 350 pounds/hour • Oil pressure normal (above 25 psi)	ADVANCE TO IDLE
Other Engine	START

ENGINE START (BATTERY/EXTERNAL AIR)

L Boost Pump	ON
Ignition B	ARM
L Engine • IGNITION B advisory msg on • L ENGINE START status msg on • 10th ISOL OPEN status msg on • L & R 10th SOV CLSD status msg out	START
When N2 reaches 20% and ITT is below 120°C:	
Left Thrust Lever • Confirm starter disengages at 55% N_2 • IGNITION B advisory msg out • L ENGINE START status msg out • ITT is 450 to 600°C • N_1 stabilizes and does not drop below 22 to 25% • Check that N_2 is between 62.9 to 64.0%	ADVANCE TO IDLE
Generator 1 • L engine oil pressure normal (above 25 psi)	ON
L & R Boost Pump	ON
R Engine	CROSS-BLEED START

REVERSE TAXI OPERATIONS

Limitations • Both engines' thrust reversers must be operational • Fan speed must not exceed 80% N_1 reverse thrust • The application of brakes while the airplane is backing-up is prohibited • Reverse taxi operation is prohibited when ice, slush, or snow is on ramp surface or during periods of heavy rain	
After Engine Start:	
Communication with ground crew	ESTABLISH
Eternal power/air connections	REMOVED
Chocks	REMOVED
Cleared-to-taxi signal	RECEIVED
Thrust levers	IDLE
Thrust reversers	DEPLOY
Reverser thrust • Gradually and smoothly until the airplane moves	INCREASE
Rearward speed	MAINTAIN
Direction of turn	CONFIRMED WITH GROUNDCREW
Nose wheel steering tiller	SET
Termination of Reverse Taxi:	
Thrust reversers	STOW & APPLY FORWARD THRUST

LIMITATIONS

SPEED LIMITATIONS

Flaps to 8°	230 KIAS
Flaps to 20°	230 KIAS
Flaps to 30°	196 KIAS
Flaps to 45°	191 KIAS
Extend landing gear	250 KIAS
Retract landing gear	200 KIAS

ENGINE ITT INDICATIONS

ITT °C	RED	AMBER	GREEN
Normal Takeoff	900 (for first 2 min) 834 (for next 3 min)	-	0 to 900 0 to 884
Go-Around or APR* Thrust	928 (for first 2 min) 900 (for next 3 min)	-	0 to 928 0 to 900
MCT	- 900** 874 to 900*** 900***	- 874 to 900** -	0 to 874

* APR = Automatic Performance Reserve (APR)
** During MCT, amber band and red tick mark appear if ITT is greater than 874 °C.
*** During MCT, amber band becomes a red band if ITT remains above 874 °C for more than 30 seconds or if ITT is greater than 900 °C. Red tick mark stays at 900 °C.

MAX FUEL LOAD

	Press Refuel	Gravity Refuel
Left Main	4,760 lb	4,488 lb
Right Main	4,760 lb	4,488 lb
Centre	4,998 lb	4,930 lb
Total	14,518 lb	13,906 lb
Takeoff with a fuel load in excess of 500 lb in the centre tank is not permitted unless each main tank is above 4,400 lb.		
The minimum fuel quantity for go-around is 450 lb per wing (with the airplane level) and assuming a max airplane climb attitude of 10° nose up.		

FUEL

Takeoff with engine fuel temperature indications below 5 °C (41 °F) is prohibited.
When using JET A type fuel with ambient temp of -30 °C (-22 °F) or below, the bulk fuel temperature, prior to flight, must be verified to be above -29 °C (-21 °F).
Powered crossflow (automatic) is prohibited when using wide cut type fuel and APU is to be operated.
Powered crossflow and gravity crossflow must be off for takeoff.

ENGINE OIL PRESS

Idle	25 psi minimum
Takeoff	45 psi minimum
Max Cont	115 psi maximum
Max Transient (Cold Start)	156 psi maximum

OPERATION IN ICING CONDITIONS

Ground Operations – Cowl

The cowl anti-ice system must be ON when the OAT is 10°C (50°F) or below and visible moisture in any form is present (such as fog with visibility of one mile or less, rain, snow, sleet, and ice crystals.

Ground Operations – Wing

The wing anti-ice system must be ON for takeoff when the OAT is 5°C (41°F) or below and visible moisture in any form is present (such as fog with visibility of one mile or less, rain, snow, sleet, and ice crystals).

The wing anti-ice system must also be ON for takeoff when the OAT is 5°C (41°F) or below and the runway is contaminated with surface snow, slush, or standing water.

When Type II or Type IV anti-icing fluids have been applied, the wing anti-ice system must only be selected ON, if required, just prior to thrust increase for takeoff.

Flight Operations – Cowl & Wing

The engine cowl anti-ice system must be ON:

- When in icing conditions, or
- When ICE is annunciated by the ice detection system.

The wing anti-ice system must be ON:

- When ICE is annunciated by the ice detection system, or
- When in icing conditions and the airspeed is less than 230 KIAS.

NOTE

Icing conditions exist in flight at a TAT of 10°C (50°F) or below and visible moisture in any form is encountered (such as clouds, rain, snow, sleet, or ice crystals), except when the SAT is -40°C (-40°F) or below.

PERFORMANCE

STABILIZER TRIM SETTING
for FLAPS 8° OR 20° TAKEOFF

CG %MAC	9	10	12	14	16	18	20	22	24	26	28	30	32	34	35
TRIM	8.2	8.0	7.7	7.4	7.1	6.7	6.4	6.1	5.8	5.4	5.1	4.8	4.5	4.2	4.0

TAKEOFF THRUST SETTINGS

Normal Takeoff Thrust Setting, $\%N_1$ (Zero Engine Bleed)								
OAT		Airport Pressure Altitude (Feet x 1000)						
°C	°F	-1	0	2	4	6	8	10
-40	-40	80.9	81.3	82.2	83.1	83.9	85.0	86.1
-35	-31	81.8	82.2	83.0	83.9	84.8	85.9	86.1
-30	-22	82.6	83.1	83.9	84.8	85.7	86.8	87.9
-25	-13	83.4	83.9	84.7	85.7	86.6	87.7	88.7
-20	-4	84.3	84.7	85.6	86.5	87.4	88.5	89.6
-15	5	85.1	85.5	86.4	87.3	88.3	89.4	90.5
-10	14	85.9	86.4	87.2	88.2	89.1	90.3	91.4
-5	23	86.7	87.2	88.0	89.0	89.9	91.1	92.2
0	32	87.5	88.0	88.8	89.8	90.8	91.9	93.0
5	41	88.3	88.8	89.6	90.6	91.6	92.8	93.9
10	50	89.1	89.5	90.4	91.4	92.4	93.6	94.7
15	59	89.8	90.3	91.2	92.2	93.2	94.1	93.8
20	68	90.6	91.1	91.9	93.0	93.4	93.0	92.7
25	77	91.3	91.6	92.5	92.7	92.3	91.9	92.0
30	86	91.2	91.9	91.7	91.5	91.2	91.1	91.1
35	95	90.4	90.5	90.6	90.5	90.5	90.3	90.2
40	104	89.5	89.6	89.7	89.6	89.5	-	-
45	113	88.6	88.7	88.7	88.6	-	-	-
50	122	87.7	87.7	87.6	-	-	-	-

MAXIMUM CONTINOUS THRUST SETTINGS

Maximum Continuous Thrust Setting, % N_1 (Pack On)										
OAT		Pressure Altitude (Feet x 1000)								
°C	°F	0	5	10	15	20	25	30	36	41
-70	-94	-	-	-	-	-	-	-	90.9	91.0
-65	-85	-	-	-	-	-	-	90.0	91.9	92.1
-60	-76	-	-	-	-	-	89.7	91.2	93.0	93.2
-55	-67	-	-	-	-	88.8	90.7	92.1	94.1	94.2
-50	-58	-	-	-	-	89.8	91.7	93.1	95.2	95.2
-45	-49	-	-	-	88.8	90.7	92.7	94.3	95.9	95.0
-40	-40	82.3	84.7	87.0	89.7	91.7	93.7	95.3	95.1	94.3
-35	-31	83.2	85.6	87.9	90.6	92.7	94.6	96.2	94.4	93.9
-30	-22	84.1	86.5	88.8	91.6	93.6	95.6	95.8	94.0	92.7
-25	-13	84.9	87.3	89.7	92.5	94.6	96.3	94.9	93.0	-
-20	-4	85.7	88.2	90.6	93.4	95.5	95.5	94.3	91.9	-
-15	5	86.6	89.1	91.5	94.3	95.9	95.0	93.4	-	-
-10	14	87.4	89.9	92.3	95.2	95.3	94.2	92.3	-	-
-5	23	88.2	90.8	93.2	95.5	94.5	93.3	91.2	-	-

TAKEOFF SPEEDS, FLAPS 8° (KIAS)

V_1 and V_R Speeds, based on a balanced field length (0° slope and 0 wind)

Corrections to V_1 and V_R:

- APR OFF = Add 1 Knot
- Wing & Cowl Anti-ice On = Add 1 Knot

Speed corrections are cumulative.
V_1 must not be less than V_{1MCG} nor greater than V_{1MBE}.

Altitude – 0 Ft								
OAT ►	-40°C/-40°F		23°C/73°F		35°C/95°F		50°C/122°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	111	111	111	113	112	114	116	116
36000	116	116	116	117	117	118	120	120
38000	120	120	120	122	121	123	125	125
40000	124	124	125	126	126	127	129	129
42000	128	128	129	130	130	131	133	133
44000	133	133	133	134	135	135	137	137
46000	137	137	137	138	139	139	141	141
48000	141	141	141	142	142	143	145	145
50000	144	144	145	145	146	146	148	148
52000	148	148	149	149	149	150	152	152
53000	150	150	150	151	151	152	153	153

Altitude – 2,000 Ft								
OAT ►	-40°C/-40°F		19°C/66°F		31°C/88°F		46°C/115°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	113	113	113	114	113	115	117	117
36000	117	117	117	118	118	119	121	121
38000	121	121	121	123	122	123	126	126
40000	126	126	126	127	127	128	130	130
42000	130	130	130	131	131	132	134	134
44000	134	134	135	135	135	136	138	138
46000	138	138	139	139	139	140	142	142
48000	142	142	142	143	143	143	145	145
50000	146	146	146	146	147	147	149	149
52000	149	149	149	150	150	151	152	152
53000	151	151	151	152	152	152	154	154

Altitude – 4,000 Ft								
OAT ▶	-40°C/-40°F		15°C/59°F		27°C/81°F		42°C/108°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	114	114	114	115	114	116	117	118
36000	118	118	118	119	119	120	122	122
38000	123	123	123	124	124	124	126	126
40000	127	127	127	128	128	129	131	131
42000	131	131	132	132	132	133	135	135
44000	135	135	136	136	136	137	138	138
46000	139	139	140	140	140	141	142	142
48000	143	143	143	144	144	144	146	146
50000	147	147	147	147	148	148	149	149
52000	150	150	150	151	151	151	153	153
53000	152	152	152	153	153	153	154	154

Altitude – 6,000 Ft								
OAT ▶	-40°C/-40°F		11°C/52°F		23°C/73°F		38°C/100°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	115	115	115	116	116	117	118	119
36000	119	119	120	120	121	121	123	123
38000	124	124	124	125	125	126	127	127
40000	128	128	129	129	129	130	131	131
42000	132	132	133	133	134	134	135	135
44000	136	136	137	137	137	138	139	139
46000	140	140	141	141	141	141	143	143
48000	144	144	144	145	145	145	146	146
50000	148	148	148	148	148	149	150	150
52000	151	151	151	152	152	152	153	153
53000	153	153	153	154	154	154	155	155

TAKEOFF SPEEDS, FLAPS 20° (KIAS)

V_1 and V_R Speeds, based on a balanced field length (0° slope and 0 wind)

Corrections to V_1 and V_R:

- APR OFF = Add 1 Knot
- Wing & Cowl Anti-ice On = Add 1 Knot

Speed corrections are cumulative.
V_1 must not be less than V_{1MCG} nor greater than V_{1MBE}.

Altitude – 0 Ft								
OAT ►	-40°C/-40°F		23°C/73°F		35°C/95°F		50°C/122°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	101	104	101	105	103	106	106	109
36000	106	108	106	110	107	111	111	113
38000	110	113	110	114	112	115	115	117
40000	115	117	115	118	116	119	119	121
42000	119	121	119	122	120	123	123	125
44000	123	125	123	126	124	127	127	128
46000	127	128	127	129	128	130	131	132
48000	131	132	130	133	131	134	135	135
50000	134	135	134	136	135	137	139	139
52000	138	139	137	139	139	140	142	142
53000	140	140	139	141	140	142	143	143

Altitude – 2,000 Ft								
OAT ►	-40°C/-40°F		19°C/66°F		31°C/88°F		46°C/115°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	103	105	103	107	104	107	107	110
36000	107	110	107	111	108	112	112	114
38000	112	114	112	115	113	116	116	118
40000	116	118	116	119	117	120	120	122
42000	120	122	120	123	121	124	124	125
44000	124	126	124	126	125	127	128	129
46000	128	129	128	130	129	131	132	132
48000	132	133	131	134	132	134	136	136
50000	135	136	135	137	136	137	139	139
52000	139	140	139	140	139	141	142	142
53000	141	141	140	142	141	142	144	144

Altitude – 4,000 Ft								
OAT ▶	-40°C/-40°F		15°C/59°F		27°C/81°F		42°C/108°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	104	107	104	108	105	108	108	110
36000	109	111	109	112	110	113	112	115
38000	113	115	113	116	114	117	117	118
40000	117	119	117	120	118	121	121	122
42000	121	123	121	124	122	124	125	126
44000	125	127	125	127	126	128	129	129
46000	129	130	129	131	130	131	133	133
48000	133	134	133	134	133	135	136	136
50000	137	137	136	138	137	138	139	139
52000	140	141	140	141	141	141	143	143
53000	143	143	143	144	144	144	145	145

Altitude – 6,000 Ft								
OAT ▶	-40°C/-40°F		11°C/52°F		23°C/73°F		38°C/100°F	
Weight (Lb)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)	V_1 (KIAS)	V_R (KIAS)
34000	105	108	105	109	106	110	109	111
36000	110	112	110	113	111	114	113	115
38000	114	116	114	117	115	118	118	119
40000	119	120	118	121	119	122	122	123
42000	123	124	122	125	123	125	126	127
44000	126	128	126	128	127	129	130	130
46000	130	131	130	132	131	132	133	133
48000	134	135	134	135	135	136	137	137
50000	139	140	139	140	141	141	142	142
52000	143	143	144	144	144	144	145	145
53000	145	145	145	145	146	146	147	147

V_2 SPEED & FINAL TAKEOFF / ENROUTE CLIMB SPEED

Weight (Lb)	V_2 (KIAS)		V_{FTO} (KIAS)*
	Up to 8,000 ft.	8,000 ft to 10,000 ft	
34000	127	127	151
36000	131	131	155
38000	134	134	159
40000	138	138	153
42000	141	141	168
44000	144	144	171
46000	148	148	175
48000	151	151	179
50000	154	155	183
52000	157	158	187
53000	158	160	188

Weight (Lb)	V_2 (KIAS)					V_{FTO} (KIAS)*
	SL to 2,000 ft	4,000 ft	6,000 ft	8,000 ft	10,000 ft	
34000	117	117	117	117	117	151
36000	120	120	120	120	120	155
38000	124	124	124	124	124	159
40000	127	127	127	127	127	163
42000	130	130	130	130	131	168
44000	133	133	133	133	135	171
46000	136	136	136	138	138	175
48000	139	139	139	141	142	179
50000	142	142	144	144	145	183
52000	145	145	147	147	148	187
53000	146	147	148	149	149	188

* Final Takeoff / Enroute Climb Speed – Flaps UP, MCT Up to 10,000 ft

MAXIMUM CLIMB THRUST SETTINGS, FLAPS UP (250 KIAS / 0.70M)

Maximum Climb Thrust Setting, %N_1 (Flaps Up, 250 KIAS, Packs On)										
OAT		Pressure Altitude (Feet x 1000)								
°C	°F	0	5	10	15	20	25	30	36	41
-70	-94	-	-	-	-	-	-	-	93.8	92.4
-65	-85	-	-	-	-	-	-	91.9	95.0	93.5
-60	-76	-	-	-	-	-	90.2	93.0	96.1	94.6
-55	-67	-	-	-	-	88.2	91.2	94.1	97.1	95.1
-50	-58	-	-	-	-	89.2	92.2	95.1	96.4	94.3
-45	-49	-	-	-	87.8	90.2	93.3	96.1	95.7	93.7
-40	-40	80.2	82.9	85.9	88.7	91.2	94.3	95.9	95.0	93.1
-35	-31	81.1	83.8	86.8	89.7	92.1	95.2	95.1	94.3	92.4
-30	-22	81.9	84.7	87.7	90.6	93.1	94.6	94.6	93.7	91.4
-25	-13	82.7	85.6	88.6	91.5	94.0	94.3	93.9	92.7	-
-20	-4	83.6	86.4	89.5	92.4	93.6	93.5	93.0	91.6	-
-15	5	84.4	87.3	90.4	93.3	92.8	92.7	91.9	-	-
-10	14	85.2	88.1	91.2	92.6	91.9	91.8	90.9	-	-
-5	23	86.0	88.9	92.1	91.8	91.0	90.8	89.9	-	-
0	32	86.8	89.8	91.3	90.8	90.1	90.0	-	-	-
5	41	87.6	90.6	90.5	90.1	89.3	89.2	-	-	-
10	50	88.4	89.9	89.7	89.3	88.5	-	-	-	-
15	59	89.1	89.1	89.0	88.5	87.7	-	-	-	-
20	68	88.4	88.4	88.2	87.7	-	-	-	-	-
25	77	87.6	87.6	87.3	86.8	-	-	-	-	-
30	86	86.7	86.7	86.4	-	-	-	-	-	-
35	95	85.9	85.9	85.6	-	-	-	-	-	-
40	104	85.1	85.1	-	-	-	-	-	-	-
45	113	84.4	84.3	-	-	-	-	-	-	-
50	122	83.6	-	-	-	-	-	-	-	-

MAXIMUM CRUISE THRUST SETTINGS, FLAPS UP

Maximum Climb Thrust Setting, $\%N_1$ (Flaps Up, Packs On)										
OAT		Pressure Altitude (Feet x 1000)								
°C	°F	0	5	10	15	20	25	30	36	41
-70	-94	-	-	-	-	-	-	-	92.9	91.0
-65	-85	-	-	-	-	-	-	91.1	94.0	92.1
-60	-76	-	-	-	-	-	89.9	92.1	95.1	93.1
-55	-67	-	-	-	-	87.9	90.9	93.2	95.7	93.7
-50	-58	-	-	-	-	88.9	91.9	94.3	94.9	93.0
-45	-49	-	-	-	87.3	89.9	92.9	95.3	94.2	92.5
-40	-40	80.3	83.9	85.5	88.3	90.9	93.9	94.8	93.8	91.6
-35	-31	81.2	83.8	86.4	89.2	91.9	94.9	94.5	92.8	90.5
-30	-22	82.0	84.7	87.3	90.1	92.8	94.4	83.6	91.7	89.5
-25	-13	82.9	85.6	88.2	91.0	93.8	93.5	92.7	90.7	-
-20	-4	83.7	86.4	89.1	92.0	93.0	92.5	91.7	89.8	-
-15	5	84.5	87.3	90.0	92.9	92.1	91.6	90.8	-	-
-10	14	85.3	88.1	90.9	92.0	91.3	90.9	90.0	-	-
-5	23	86.1	88.9	91.7	91.3	90.6	89.8	89.5	-	-
0	32	86.9	89.8	91.1	90.6	89.8	89.5	-	-	-
5	41	87.7	90.6	90.4	89.9	89.2	88.9	-	-	-
10	50	88.5	89.9	89.7	89.2	88.5	-	-	-	-
15	59	89.3	89.2	89.0	88.6	87.8	-	-	-	-
20	68	88.6	88.5	88.4	87.9	-	-	-	-	-
25	77	87.9	87.8	87.7	87.3	-	-	-	-	-
30	86	87.1	87.1	87.0	-	-	-	-	-	-
35	95	86.4	86.4	86.3	-	-	-	-	-	-
40	104	85.7	85.7	-	-	-	-	-	-	-
45	113	85.0	85.0	-	-	-	-	-	-	-
50	122	84.2	-	-	-	-	-	-	-	-

LANDING SPEED & DRY LANDING FIELD LENGTH (LANDING GEAR DOWN – FLAPS 45°)

Weight (Lb)	V_{REF}* (KIAS)	Pressure Altitude (Feet x 1000)					
		0	2	4	6	8	10
		Dry Landing Field Length (Feet)					
34000	120	3856	4013	4182	4372	4578	4807
36000	123	4010	4176	4353	4553	4770	5012
38000	127	4163	4338	4524	4734	4963	5219
40000	130	4316	4499	4695	4915	5157	5428
42000	133	4468	4660	4865	5098	5353	5640
44000	136	4620	4820	5037	5282	5552	5854
46000	140	4771	4981	5210	5468	5752	6076
48000	143	4923	5144	5384	5656	5956	6331
50000	146	5077	5312	5569	5860	6188	6614
52000	149	5247	5500	5775	6085	6469	6930
53000	151	5340	5600	5885	6206	6620	7101

* V_{REF} = Speed at 50' screen height (KIAS), Flaps 45°

ACTUAL LANDING DISTANCE FACTORS
WHEN LANDING WITH FLAPS OTHER THAN 45°

Flaps Setting	Distance (No Reversers)	Distance (W/ Reversers)
0°	Distance x 1.70 (70%)	Distance x 1.65 (65%)
8°	Distance x 1.55 (55%)	Distance x 1.50 (50%)
20°	Distance x 1.25 (25%)	Distance x 1.22 (22%)
30°	Distance x 1.20 (20%)	Distance x 1.18 (18%)

APPROACH SPEEDS WITH FLAPS OTHER THAN 45° (KIAS)

Weight	V_{REF}	Flaps 30°	Flaps 20°	Flaps 8°	Flaps 0°
(Lb)	(KIAS)	(KIAS)	(KIAS)	(KIAS)	(KIAS)
34000	120	128	132	138	150
36000	123	131	135	141	153
38000	127	135	139	145	157
40000	130	138	142	148	160
42000	133	141	145	151	163
44000	136	144	148	154	166
46000	140	148	152	158	170
48000	143	151	155	161	173
50000	146	154	158	164	176
52000	149	157	161	167	179
53000	151	159	163	169	181

WIND COMPONENT CONVERSION TABLE

Angle (DEG)	Wind Velocity (Knots)									
	5	10	15	20	25	30	35	40	50	60
0	5	10	15	20	25	30	35	40	50	60
	0	0	0	0	0	0	0	0	0	0
10	5	10	15	20	25	30	34	39	49	59
	1	2	3	3	4	5	6	7	9	10
20	5	9	14	19	23	28	33	38	47	56
	2	3	5	7	9	10	12	14	17	21
30	4	9	13	17	22	26	30	35	43	52
	2	5	7	10	12	15	17	20	25	30
40	4	8	11	15	19	23	27	31	38	46
	3	6	10	13	16	19	22	26	32	39
50	3	6	10	13	16	19	22	26	32	39
	4	8	11	15	19	23	27	31	38	46
60	3	5	8	10	13	15	18	20	25	30
	4	9	13	17	22	26	30	35	43	52
70	2	3	5	7	9	10	12	14	17	21
	5	9	14	19	23	28	33	38	47	56
80	1	2	3	3	4	5	6	7	9	10
	5	10	15	20	25	30	34	39	49	59
90	0	0	0	0	0	0	0	0	0	0
	5	10	15	20	25	30	35	40	50	60
100	-1	-2	-3	-3	-4	-5	-6	-7	-9	-10
	5	10	15	20	25	30	34	39	49	59
110	-2	-3	-5	-7	-9	-10	-12	-14	-17	-21
	5	9	14	19	23	28	33	38	47	56
120	-2	-5	-7	-10	-12	-15	-17	-20	-25	-30
	4	9	13	17	22	26	30	35	43	52
130	-3	-6	-10	-13	-16	-19	-22	-26	-32	-39
	4	8	11	15	19	23	27	31	38	46
140	-4	-8	-11	-15	-19	-23	-27	-31	-38	-46
	3	6	10	13	16	19	22	26	32	39
150	-4	-9	-13	-17	-22	-26	-30	-35	-43	-52
	3	5	8	10	13	15	18	20	25	30
160	-5	-9	-14	-19	-23	-28	-33	-38	-47	-56
	2	3	5	7	9	10	12	14	17	21
170	-5	-10	-15	-20	-25	-30	-34	-39	-49	-59
	1	2	3	3	4	5	6	7	9	10
180	-5	-10	-15	-20	-25	-30	-35	-40	-50	-60
	0	0	0	0	0	0	0	0	0	0