

Appendix B

RUNWAY LENGTH REQUIREMENTS

*Airport Master Plan
Telluride Regional Airport*

The determination of runway length needs at Telluride Regional Airport considers both takeoff and landing requirements. The requirements of seven models of business jets and three models of regional jets have been examined. The business jets include: Cessna Citation V, Beechjet 400A, Learjet 31A, Learjet 35A/36A, Canadair CL-600, Learjet 60, and Gulfstream IV. As shown at the end of this appendix, these aircraft were among the top business jet users (defined by operations) at Telluride Regional Airport in 2000 and 2001. These aircraft are within ARC's B-II to D-II and have takeoff weights ranging from 16,000 pounds to 74,000 pounds. They are considered to represent an appropriate cross-section of business jets operating at the airport.

The regional jets selected for this analysis include the Fairchild-Dornier 328Jet, Canadair CRJ200, BAe Avro RJ85. They are currently operating regional jets certificated to use high altitude airports that have adequate operational data to determine operational requirements at Telluride Regional Airport. The planned regional jets listed in **Table A** can only provide preliminary data which could be subject to change. This data was not considered sufficient for this analysis.

Presently, the Embraer family of aircraft are certificated only for operations at airports below 8,000 feet mean sea level (MSL). Therefore, they have been excluded from the analysis. Embraer is currently pursuing certification to 10,000 feet for the Embraer 145. If approved, this aircraft could also operate at Telluride Regional Airport.

TABLE A				
Existing and Planned Regional Jets				
Model/Type	ARC	Passengers	Maximum Takeoff Weight (pounds)	Production Status
<i>BAe SYSTEMS</i>				
BAe 146-100	C-III	70-85	84,000	Production Terminated
BAe 146-200	C-III	80-100	93,000	Production Terminated
BAe 146-300	C-III	95-112	97,500	Production Terminated
Avro RJ 70	C-III	70-85	95,000	Production Terminated in 2001
Avro RJ 85	C-III	80-100	97,000	Production Terminated in 2001
Avro RJ 100	C-III	95-112	101,500	Production Terminated in 2001
Avro RJ X70	C-III	70-85	95,000	Production Terminated in 2001
Avro RJ X85	C-III	80-100	97,000	Production Terminated in 2001
Avro RJ X100	C-III	95-112	101,500	Production Terminated in 2001
<i>BOMBARDIER AEROSPACE</i>				
CRJ 100	C-II	50	47,450	Production Terminated
CRJ 200	C-II	44-50	47,450	In Production
CRJ 700	C-II	60	72,750	In Production
CRJ 900	C-II	86	80,500	First Delivery 2002
<i>EMBRAER</i>				
ERJ 135	C-II	37	41,888	In Production
ERJ 145	C-II	50	43,415	In Production
ERJ 170	C-III	70	78,153	In Development, First Flight 2001
ERJ 190-100	C-III	98	106,922	In Development, First Flight 2004
ERJ 190-200	C-III	108	108,003	In Development, First Flight 2003
<i>FAIRCHILD-DORNIER</i>				
328Jet	B-II	32-34	34,524	In Production
728	C-III	70-85	77,602	First Flight 2002

LANDING REQUIREMENTS

The landing length of the seven models of business jets and three models of regional jets have been determined. **Table B** summarizes the certificated landing weight, allowable landing weight, and landing lengths for the aircraft in this analysis. This analysis examines landings in the summer and winter, and with dry and wet/contaminated runway conditions. For determining both landing and takeoff requirements, the summer temperature is 77 degrees Fahrenheit (July), while the winter temperature is 44 degrees Fahrenheit (March). A contaminated runway is assumed to include wet runway conditions due to rain or contaminated conditions such as slush, compacted snow, or ice.

TABLE B Landing Length Summary				Landing Length ⁴					
				Actual Length (feet)		85% Rule Length (feet)		60% Rule Length (feet)	
				Dry	Wet	Dry	Wet	Dry	Wet
Season ^{1,2}	Aircraft	Certificated Landing Weight (pounds)	Allowable Landing Weight (pounds)						
GENERAL AVIATION AIRCRAFT									
Summer	Cessna Citation V	15,200	14,500	4,800	5,500	5,600	6,500	8,000	9,200
Winter	Cessna Citation V	15,200	15,200	4,100	4,700	4,800	5,500	6,800	7,800
Summer	Beechjet 400A	15,700	14,000	4,700	5,400	5,500	6,400	7,800	9,000
Winter	Beechjet 400A	15,700	15,700	4,500	5,200	5,300	6,100	7,500	8,700
Summer	Bombardier Learjet 31A	15,300	15,300	3,900	4,500	4,600	5,300	6,500	7,500
Winter	Bombardier Learjet 31A	15,300	15,300	3,700	4,300	4,400	5,100	6,200	7,200
Summer	Bombardier Learjet 35A/36A	15,300	15,300	4,100	4,700	4,800	5,500	6,800	7,800
Winter	Bombardier Learjet 35A/36A	15,300	15,300	3,900	4,500	4,600	5,300	6,500	7,500
Summer	Canadair CL-600	45,000	44,000	4,200	4,800	4,900	5,600	7,000	8,000
Winter	Canadair CL-600	45,000	45,000	4,200	4,800	4,900	5,600	7,000	8,000
Summer	Bombardier Learjet 60	19,500	19,500	4,900	5,600	5,800	6,600	8,200	9,300
Winter	Bombardier Learjet 60	19,500	19,500	4,700	5,400	5,500	6,400	7,800	9,000
Summer	Gulfstream IV	66,000	64,000	3,900	4,500	4,600	5,300	6,500	7,500
Winter	Gulfstream IV	66,000	66,000	3,900	4,500	4,600	5,300	6,500	7,500
REGIONAL JET AIRCRAFT									
Summer	Fairchild Dornier 328J	31,724	31,724	5,100 ⁵	5,900	N/A	N/A	N/A	N/A
Winter	Fairchild Dornier 328J	31,724	31,724	5,100 ⁵	5,900	N/A	N/A	N/A	N/A
Summer ³	Canadair CRJ 200LR	47,000	41,400	5,700 ⁵	6,600	N/A	N/A	N/A	N/A
Winter	Canadair CRJ 200LR	47,000	47,000	6,300 ⁵	7,200	N/A	N/A	N/A	N/A
Summer	AVRO RJ85	85,000	75,500	4,900 ⁵	5,600	N/A	N/A	N/A	N/A
Winter	AVRO RJ85	85,000	85,000	5,600 ⁵	6,400	N/A	N/A	N/A	N/A
¹ 77 Degrees Fahrenheit (July) ² 43 Degrees Fahrenheit (March) ³ ISA+30 Degrees Celsius ⁴ Maximum Allowed Landed Weight (where applicable) ⁵ 60 percent regulatory requirement factored in All distances determined at 9,000 feet elevation, zero wind, zero runway gradient Source: Aircraft Flight Planning Manuals (selected manufacturer)									

When considering business jet landing length needs, both the actual landing length required and regulatory requirements for landing must be considered. Current regulatory requirements mandate that aircraft operated under F.A.R. Part 135, *Operating Requirements: Commuter And On-Demand Operations And Rules Governing Persons On Board Such Aircraft*, can only land at the destination airport if the available runway length at the destination airport exceeds the actual landing length by a certain margin. Section 135.385, *Large transport category airplanes: Turbine engine powered: Landing limitations: Destination airports*, specifies that aircraft must be able to land within 60 percent of the effective runway length.

Business jets not operating under F.A.R. Part 135 do not have a similar regulatory requirement. Aircraft operating under F.A.R. Part 91, *General Operating And Flight Rules* are only required to be able to land within the effective runway length and can use the entire effective runway length as needed. Aircraft operating in fractional ownership programs are currently covered by F.A.R. Part 91 rules. Therefore, there is no requirement for these aircraft to land within 60 percent of the effective runway length as required for aircraft operated under F.A.R. Part 135.

On July 18, 2001, the FAA issued a Notice of Proposed Rulemaking to update and revise the regulations governing the operations of aircraft by fractional ownership programs. Of the many changes proposed by this rulemaking, this rulemaking proposes new landing requirements for aircraft operated in fractional ownership programs and reduces the existing landing requirements on F.A.R. Part 135 operators. Specifically, the proposed rulemaking stipulates that a full-stop landing would need to be made within 85 percent of the effective runway length for the destination airport. This rulemaking essentially increases the actual landing lengths for aircraft in fractional ownership programs by 15 percent. Aircraft operated under F.A.R. Part 135 realize a 25 percent reduction in landing length requirements.

Since business jets can be operated under a variety of regulatory requirements, the landing lengths derived from the various planning manuals is the actual landing length. Therefore, an adjustment must be made to determine the effective runway length required to meet regulatory requirements. **Table B** adjusts the actual landing length requirement upward to illustrate the current regulatory requirements for F.A.R. Part 135 operators and proposed requirements for Part 135 operators and fractional jet operators.

As shown in **Table B**, the actual landing lengths for the business jets on dry runways varies from 3,900 feet to 4,900 feet. This increases from 4,500 feet to 5,600 feet when a wet/contaminated runway is considered. When considering the proposed regulatory requirement for aircraft operated by fractional ownership programs and F.A.R. Part 135 operators, the dry runway length requirements increase from 4,600 feet to 5,800 feet, while the wet/contaminated requirements increase from 5,300 feet to 6,600 feet. Considering the current F.A.R. Part 135 regulatory requirement to land within 60

percent of the effective runway length, the landing lengths vary from 6,500 feet to 8,200 feet for dry runways and from 7,500 feet to 9,300 feet for wet/contaminated runways.

The existing runway provides 6,870 feet for landing. As evident in the table, business jets operating under F.A.R. Part 91 can land in most conditions at the airport throughout the year as the dry and wet/contaminated landing lengths are less than the available runway length. These aircraft would be able to land at the airport should the proposed rulemaking for fractional jet aircraft be implemented.

The current regulatory requirement requiring F.A.R. Part 135 operators to land within 60 percent of the effective runway length should be reduced in the near term. This rule has not been reviewed by the FAA for over 40 years and there is considerable consensus within the industry that this rule be relaxed considering the improvements in aircraft braking and design developed in the past 40 years. There is a similar consensus that aircraft operated in fractional ownership programs have similar regulatory requirements to F.A.R. Part 135 operators. Therefore, the critical landing lengths for business jets should consider the requirements of the proposed rulemaking, which proposes that a full-stop landing must be made within 85 percent of the effective runway length. As shown in the table, a minimum runway length of 6,600 feet is needed to allow for landing by all these aircraft with wet/contaminated runway conditions.

Similar to aircraft operated under F.A.R. Part 135, scheduled air carriers operating under F.A.R. Part 121, *Operating Requirements: Domestic, Flag, And Supplemental Operations*, must be able to complete a full-stop landing within a designated portion of the effective runway length. F.A.R. Part 121.195, *Airplanes: Turbine Engine Powered: Landing Limitations: Destination Airports*, specifies that aircraft must be able to land within 60 percent of the effective runway length.

As shown in **Table B**, the dry runway landing lengths for the regional jet aircraft vary from 4,900 feet to 6,300 feet. When wet/contaminated runway conditions are considered, the landing lengths vary from 5,600 feet to 7,200 feet. At the existing runway length of 6,870 feet, all the regional jets presented would be able to land with a wet/contaminated runway except for the Canadair CRJ200, which would require an additional 330 feet to land at the maximum allowable landing weight of 47,000 pounds in winter. To land within the available 6,870 feet, the Canadair CRJ200 would need to reduce its landing weight by approximately 3,000 pounds to 44,000 pounds. This would still allow for landing with 50 passengers and 3,500 pounds of fuel, which would meet fuel reserve requirements.

Landing Length Summary

Considering the proposed regulatory requirements for aircraft operated by fractional ownership programs and for F.A.R. Part 135 operators, a runway length of more than 6,600 feet is needed to fully serve the landing requirements of business jets included in this analysis. A landing length of 6,800 feet is needed to fully the serve the regional jet aircraft which may operate at the airport.

It should be noted that these landing lengths do not consider requirements for runway gradient. Runway gradients increase landing lengths by as much as 45 percent, especially if the gradient is -1 percent or below. For example, the Cessna Citation V requires an adjustment factor of 1.15 percent when the runway gradient is -1 percent or below. This increases to 1.45 percent when the gradient reaches -2 percent. Therefore, it can be assumed that a longer landing length may be required once Runway 9-27 is reconstructed and final grades established.

DEPARTURE REQUIREMENTS

Table C compares certificated takeoff weight of the seven business jets and three regional jets to the allowable takeoff weight at Telluride Regional Airport. In most cases, the takeoff weight allowed for aircraft operating from Telluride Regional Airport is below the aircraft's certificated takeoff weight due to the airport's elevation of 9,078 feet. **Table C** also summarizes the required runway length for these aircraft to depart Telluride Regional Airport at the maximum allowable takeoff weight. As shown in the table, takeoff lengths vary from 5,300 feet to 11,000 feet for these aircraft to operate from Telluride Regional Airport at the maximum allowable takeoff weight.

With only 6,870 feet of runway currently available for takeoff, it is evident that aircraft operating from Telluride Regional Airport cannot operate at the maximum allowable takeoff weight. Only the Cessna Citation V and Learjet 31A have takeoff requirements less than 6,870 feet. The remaining business jets and all regional jets must operate with a reduced payload (passengers or fuel).

Table D summarizes the available payload for the business jets and regional jets considering the existing runway length of 6,870 feet. This payload is shown in the far right column under the header 6,900 feet. For example, the payload in the summer for the Beechjet 400A at a runway length of 6,870 feet (read 6,900 feet) is 3,177 pounds. This is 200 pounds less than the payload that could be carried if sufficient runway length was provided to allow the Beechjet 400A to depart at its allowable takeoff weight of 14,000 pounds in the summer. A similar comparison can be made for each of the remaining business jets and regional jets.

TABLE C Takeoff Length and Takeoff Weight Summary					Takeoff Weight (pounds)				
Season ^{1,2}	Aircraft	Certificated Takeoff Weight (pounds)	Allowable Takeoff Weight (pounds)	Takeoff Distance (feet) ³	7,800' ASDA	7,600' ASDA	7,200' ASDA	7,000' ASDA	6,900' ASDA
GENERAL AVIATION AIRCRAFT									
Summer	Cessna Citation V	15,900	15,500	6,600	15,500	15,500	15,500	15,500	15,500
Winter	Cessna Citation V	15,900	15,900	5,600	15,900	15,900	15,900	15,900	15,900
Summer	Beechjet 400A	16,100	14,000	7,200	14,000	14,000	14,000	13,900	13,800
Winter	Beechjet 400A	16,100	16,100	7,300	16,100	16,100	16,000	16,000	15,900
Summer	Bombardier Learjet 31A	17,000	15,700	8,400	15,300	15,100	14,700	14,300	14,100
Winter	Bombardier Learjet 31A	17,000	16,500	5,300	16,500	16,500	16,500	16,500	16,500
Summer	Bombardier Learjet 35A/36A	18,300	15,800	10,300	14,900	14,800	14,600	14,500	14,400
Winter	Bombardier Learjet 35A/36A	18,300	17,800	11,000	16,100	16,000	15,700	15,600	15,500
Summer	Canadair CL-600	53,000	44,000	10,700	36,200	35,800	34,400	33,800	33,500
Winter	Canadair CL-600	53,000	46,000	10,600	39,400	38,900	38,000	37,400	37,000
Summer	Bombardier Learjet 60	23,500	20,200	9,800	18,000	17,800	17,200	17,000	16,700
Winter	Bombardier Learjet 60	23,500	21,400	8,300	20,900	20,600	20,100	19,900	19,700
Summer	Gulfstream IV	74,600	64,000	9,800	58,000	57,000	56,000	55,500	55,000
Winter	Gulfstream IV	74,600	71,000	9,800	64,000	63,000	61,500	61,000	60,500
REGIONAL JET AIRCRAFT									
Summer	Fairchild Dornier 328J	34,524	31,700	7,700	31,500	31,500	30,900	30,400	30,200
Winter	Fairchild Dornier 328J	34,524	34,524	7,900	34,300	34,200	33,300	33,000	32,900
Summer ⁴	Canadair CRJ 200LR	53,000	41,400	8,500	40,000	39,500	38,500	38,250	38,000
Winter	Canadair CRJ 200LR	53,000	47,600	9,200	45,000	44,500	43,500	43,000	42,500
Summer	AVRO RJ85	93,000	88,500	14,000	75,000	74,000	72,000	71,000	70,000
Winter	AVRO RJ85	93,000	93,000	10,100	84,000	83,000	81,000	80,000	79,000
¹ 77 Degrees Fahrenheit (July) ² 43 Degrees Fahrenheit (March) ³ At Allowable Takeoff Weight ⁴ ISA+30 Degrees Celsius All distances and weights determined at 9,000 feet elevation, zero wind, zero runway gradient Source: Aircraft Flight Planning Manuals (selected manufacturers)									

TABLE D Payload Summary											
					Payload ¹						
					ASDA Length						
Season ^{1,2}	Aircraft	Certificated Takeoff Weight (pounds)	Allowable Takeoff Weight (pounds)	Operating Empty Weight (pounds)	Certificated Takeoff Weight	Allowable Takeoff Weight	7,800'	7,600'	7,200'	7,000'	6,900'
GENERAL AVIATION AIRCRAFT											
Summer	Cessna Citation V	15,900	15,500	9,400	6,500	6,100	6,100	6,100	6,100	6,100	6,100
Winter	Cessna Citation V	15,900	15,900	9,400	6,500	6,500	6,500	6,500	6,500	6,500	6,500
Summer	Beechjet 400A	16,100	14,000	10,623	5,477	3,377	3,377	3,377	3,377	3,277	3,177
Winter	Beechjet 400A	16,100	16,100	10,623	5,477	5,477	5,477	5,477	5,377	5,377	5,277
Summer	Bombardier Learjet 31A	17,000	15,700	11,203	5,797	4,497	4,097	3,897	3,497	3,097	2,897
Winter	Bombardier Learjet 31A	17,000	16,500	11,203	5,797	5,297	5,297	5,297	5,297	5,297	5,297
Summer	Bombardier Learjet 35A/36A	18,300	15,800	10,238	8,062	5,562	4,662	4,562	4,362	4,262	4,162
Winter	Bombardier Learjet 35A/36A	18,300	17,800	10,238	8,062	7,562	5,862	5,762	5,462	5,362	5,262
Summer	Canada ir CL-600	53,000	44,000	27,950	25,050	16,050	8,250	7,850	6,450	5,850	5,550
Winter	Canada ir CL-600	53,000	46,000	27,950	25,050	18,050	11,450	10,950	10,050	9,450	9,050
Summer	Bombardier Learjet 60	23,500	20,200	14,700	8,800	5,500	3,300	3,100	2,500	2,300	2,000
Winter	Bombardier Learjet 60	23,500	21,400	14,700	8,800	6,700	6,200	5,900	5,400	5,200	5,000
Summer	Gulfstream IV	74,600	64,000	42,500	32,100	21,500	15,500	14,500	13,500	13,000	12,500
Winter	Gulfstream IV	74,600	71,000	42,500	32,100	28,500	21,500	20,500	19,000	18,500	18,000
REGIONAL JET AIRCRAFT											
Summer	Fairchild Dornier 328J	34,524	31,700	20,767	13,757	10,933	10,733	10,733	10,133	9,633	9,433
Winter	Fairchild Dornier 328J	34,524	34,524	20,767	13,757	13,757	13,533	13,433	12,533	12,233	12,133
Summer	Canada ir CRJ 200LR	53,000	41,400	30,500	22,500	10,900	9,500	9,000	8,000	7,750	7,500
Winter	Canada ir CRJ 200LR	53,000	47,600	30,500	22,500	17,100	14,500	14,000	13,000	12,500	12,000
Summer	AVRO RJ85	93,000	88,500	54,719	38,281	33,781	20,281	19,281	17,281	16,281	15,281
Winter	AVRO RJ85	93,000	93,000	54,719	38,281	38,281	29,281	28,281	26,281	25,281	24,281
¹ 77 Degrees Fahrenheit (July) ² 43 Degrees Fahrenheit (March) ³ Difference between takeoff weight and Operating Empty Weight											
Source: Aircraft Flight Planning Manuals (selected manufacturers)											

The differences in the payload that can be carried at the maximum allowable takeoff weight and the takeoff weight allowed with a runway length of 6,870 feet vary considerably across this range of business jets and regional jets. The Beechjet 400A is affected the least, with only a 200 pound difference in the payload between the maximum allowable takeoff weight and takeoff weight allowed with a 6,870-foot runway. The Avro RJ85 is impacted the greatest. The payload difference is 18,500 pounds in the summer and 14,000 pounds in the winter. **Table E** summarizes the differences between the maximum allowable takeoff weight and takeoff weight allowed

at the existing runway length for each business jet and regional jet. Comparisons are also made for accelerate-stop distances to 7,800 feet.

TABLE E						
Difference Between Allowable Takeoff Weight and Takeoff Weight at Designated ASDA Length						
		ASDA Length				
Season^{1,2}	Aircraft	7,800'	7,600'	7,200'	7,000'	6,900'
GENERAL AVIATION AIRCRAFT						
Summer	Cessna Citation V	-	-	-	-	-
Winter	Cessna Citation V	-	-	-	-	-
Summer	Beechjet 400A	-	-	-	(100)	(200)
Winter	Beechjet 400A	-	-	(100)	(100)	(200)
Summer	Bombardier Learjet 31A	(400)	(600)	(1,000)	(1,400)	(1,600)
Winter	Bombardier Learjet 31A	-	-	-	-	-
Summer	Bombardier Learjet 35A/36A	(900)	(1,000)	(1,200)	(1,300)	(1,400)
Winter	Bombardier Learjet 35A/36A	(1,700)	(1,800)	(2,100)	(2,200)	(2,300)
Summer	Canadair CL-600	(7,800)	(8,200)	(9,600)	(10,200)	(10,500)
Winter	Canadair CL-600	(6,600)	(7,100)	(8,000)	(8,600)	(9,000)
Summer	Bombardier Learjet 60	(2,200)	(2,400)	(3,000)	(3,200)	(3,500)
Winter	Bombardier Learjet 60	(500)	(800)	(1,300)	(1,500)	(1,700)
Summer	Gulfstream IV	(6,000)	(7,000)	(8,000)	(8,500)	(9,000)
Winter	Gulfstream IV	(7,000)	(8,000)	(9,500)	(10,000)	(10,500)
REGIONAL JET AIRCRAFT						
Summer	Fairchild Dornier 328J	N/A	N/A	(800)	(1,300)	(1,500)
Winter	Fairchild Dornier 328J	(224)	(324)	(1,224)	(1,524)	(1,624)
Summer	Canadair CRJ 200LR	(1,400)	(1,900)	(2,900)	(3,150)	(3,400)
Winter	Canadair CRJ 200LR	(2,600)	(3,100)	(4,100)	(4,600)	(5,100)
Summer	AVRO RJ85	(13,500)	(14,500)	(16,500)	(17,500)	(18,500)
Winter	AVRO RJ85	(9,000)	(10,000)	(12,000)	(13,000)	(14,000)
¹ 77 Degrees Fahrenheit (July)						
² 43 Degrees Fahrenheit (March)						
Source: Aircraft Flight Planning Manuals (selected manufacturers)						

Fuel requirements (in pounds) for stage lengths between 200 nautical mile (nm) and 1,400 nm are summarized in **Table F**. By comparing the fuel loading requirements and available payload, a reasonable estimate of range can be made for these business jets. Distances to major metropolitan areas are summarized at the end of this appendix.

TABLE F								
Fuel Requirements								
Aircraft	Fuel Requirements (pounds)¹							
	200 nm	300 nm	400 nm	500 nm	700 nm	1,000 nm	1,200 nm	1,400 nm
GENERAL AVIATION AIRCRAFT								
Cessna Citation V	1,681	1,931	2,331	2,431	3,131	3,731	4,231	4,731
Beechjet 400A	1,587	1,837	2,037	2,237	2,737	3,387	3,837	4,237
Bombardier Learjet 31A	747	953	1,162	1,362	1,781	2,390	2,818	3,241
Bombardier Learjet 35A/36A	1,465	1,682	1,890	2,099	2,639	3,183	3,713	4,061
Bombardier Learjet 60	930	1,200	1,473	1,723	2,264	3,148	3,331	3,867
¹ Long range cruise, IFR reserves								
Source: Aircraft Flight Planning Manuals (selected manufacturers)								

Table G summarizes various passenger and fuel loading scenarios for the Cessna Citation V at stage lengths between 200 nm and 1,400 nm. As shown in the table, the Cessna Citation V is generally unaffected by the airport's elevation. The Cessna Citation V is able to carry a full load of passengers at 1,200 nm distances with the existing runway length. A longer runway does not provide any additional loading benefits for this aircraft.

Table H summarizes various passenger and fuel loading scenarios for the Beechjet 400A at stage lengths between 200 nm and 1,400 nm. In the summer, at the existing runway length, the Beechjet 400A is able to carry eight passengers on a 200 nm flight. A 7,200-foot departure length would allow this aircraft to carry a full nine passengers in the summer.

Table J summarizes various passenger and fuel loading scenarios for the Learjet 31A at stage lengths between 200 nm and 1,400 nm. At the existing runway length, the Learjet 31A has the ability to carry a full load of passengers on flights below 300 nm. For longer summertime stage lengths, the number of passengers must be reduced from nine for 400 nm stage length to three for a 1,000 nm flight. An increase of the takeoff distance to 7,000 feet allows for a full passenger load at 400 nm and one additional passenger at stage lengths between 500 nm and 1,000 nm. A 7,200-foot departure length would provide for an additional two passengers at a 500 nm stage length, and three passengers at 700 nm and 1,000 nm stage lengths.

TABLE G
Cessna Citation V Passenger Loading vs. Range

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	15,500	15,500	15,500	15,500	15,500
Takeoff Weight (Winter)	15,900	15,900	15,900	15,900	15,900
Operating Empty Weight	9,400	9,400	9,400	9,400	9,400
Payload (Summer)	6,100	6,100	6,100	6,100	6,100
Payload (Winter)	6,500	6,500	6,500	6,500	6,500
200 NM Fuel Loading	1,681	1,681	1,681	1,681	1,681
Passengers and Baggage (lbs.) - Summer	4,419	4,419	4,419	4,419	4,419
Passengers and Baggage (lbs.) - Winter	4,819	4,819	4,819	4,819	4,819
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
300 NM Fuel Loading	1,931	1,931	1,931	1,931	1,931
Passengers and Baggage (lbs.) - Summer	4,169	4,169	4,169	4,169	4,169
Passengers and Baggage (lbs.) - Winter	4,569	4,569	4,569	4,569	4,569
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
400 NM Fuel Loading	2,331	2,331	2,331	2,331	2,331
Passengers and Baggage (lbs.) - Summer	3,769	3,769	3,769	3,769	3,769
Passengers and Baggage (lbs.) - Winter	4,169	4,169	4,169	4,169	4,169
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
500 NM Fuel Loading	2,431	2,431	2,431	2,431	2,431
Passengers and Baggage (lbs.) - Summer	3,669	3,669	3,669	3,669	3,669
Passengers and Baggage (lbs.) - Winter	4,069	4,069	4,069	4,069	4,069
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
700 NM Fuel Loading	3,131	3,131	3,131	3,131	3,131
Passengers and Baggage (lbs.) - Summer	2,969	2,969	2,969	2,969	2,969
Passengers and Baggage (lbs.) - Winter	3,369	3,369	3,369	3,369	3,369
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
1,000 NM Fuel Loading	3,731	3,731	3,731	3,731	3,731
Passengers and Baggage (lbs.) - Summer	2,369	2,369	2,369	2,369	2,369
Passengers and Baggage (lbs.) - Winter	2,769	2,769	2,769	2,769	2,769
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
1,200 NM Fuel Loading	4,231	4,231	4,231	4,231	4,231
Passengers and Baggage (lbs.) - Summer	1,869	1,869	1,869	1,869	1,869
Passengers and Baggage (lbs.) - Winter	2,269	2,269	2,269	2,269	2,269
No. of Passengers - Summer	9	9	9	9	9
No. of Passengers - Winter	9	9	9	9	9
1,400 NM Fuel Loading	4,731	4,731	4,731	4,731	4,731
Passengers and Baggage (lbs.) - Summer	1,369	1,369	1,369	1,369	1,369
Passengers and Baggage (lbs.) - Winter	1,769	1,769	1,769	1,769	1,769
No. of Passengers - Summer	7	7	7	7	7
No. of Passengers - Winter	9	9	9	9	9

Passengers and Baggage = 200 pounds
Maximum Passengers Payload - 1,800 pounds or 9 passengers

Source: Aircraft Flight Planning Manuals (selected manufacturers)

TABLE H
Beechjet 400A Passenger Loading vs. Range

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	14,000	14,000	14,000	13,900	13,800
Takeoff Weight (Winter)	16,100	16,100	16,000	16,000	15,900
Operating Empty Weight	10,623	10,623	10,623	10,623	10,623
Payload (Summer)	3,377	3,377	3,377	3,277	3,177
Payload (Winter)	5,477	5,477	5,377	5,377	5,277
200 NM Fuel Loading	1,587	1,587	1,587	1,587	1,587
Passengers and Baggage (lbs.) - Summer	1,790	1,790	1,790	1,690	1,590
Passengers and Baggage (lbs.) - Winter	3,890	3,890	3,790	3,790	3,690
No. of Passengers - Summer	9	9	9	8	8
No. of Passengers - Winter	9	9	9	9	9
300 NM Fuel Loading	1,837	1,837	1,837	1,837	1,837
Passengers and Baggage (lbs.) - Summer	1,540	1,540	1,540	1,440	1,340
Passengers and Baggage (lbs.) - Winter	3,640	3,640	3,540	3,540	3,440
No. of Passengers - Summer	8	8	8	7	7
No. of Passengers - Winter	9	9	9	9	9
400 NM Fuel Loading	2,037	2,037	2,037	2,037	2,037
Passengers and Baggage (lbs.) - Summer	1,340	1,340	1,340	1,240	1,140
Passengers and Baggage (lbs.) - Winter	3,440	3,440	3,340	3,340	3,240
No. of Passengers - Summer	7	7	7	6	6
No. of Passengers - Winter	9	9	9	9	9
500 NM Fuel Loading	2,237	2,237	2,237	2,237	2,237
Passengers and Baggage (lbs.) - Summer	1,140	1,140	1,140	1,040	940
Passengers and Baggage (lbs.) - Winter	3,240	3,240	3,140	3,140	3,040
No. of Passengers - Summer	6	6	6	5	5
No. of Passengers - Winter	9	9	9	9	9
700 NM Fuel Loading	2,737	2,737	2,737	2,737	2,737
Passengers and Baggage (lbs.) - Summer	640	640	640	540	440
Passengers and Baggage (lbs.) - Winter	2,740	2,740	2,640	2,640	2,540
No. of Passengers - Summer	3	3	3	3	2
No. of Passengers - Winter	9	9	9	9	9
1,000 NM Fuel Loading	3,387	3,387	3,387	3,387	3,387
Passengers and Baggage (lbs.) - Summer	-10	-10	-10	-110	-210
Passengers and Baggage (lbs.) - Winter	2,090	2,090	1,990	1,990	1,890
No. of Passengers - Summer	0	0	0	0	0
No. of Passengers - Winter	9	9	9	9	9
1,200 NM Fuel Loading	3,837	3,837	3,837	3,837	3,837
Passengers and Baggage (lbs.) - Summer	-460	-460	-460	-560	-660
Passengers and Baggage (lbs.) - Winter	1,640	1,640	1,540	1,540	1,440
No. of Passengers - Summer	0	0	0	0	0
No. of Passengers - Winter	8	8	8	8	7
1,400 NM Fuel Loading	4,237	4,237	4,237	4,237	4,237
Passengers and Baggage (lbs.) - Summer	-860	-860	-860	-960	-1,060
Passengers and Baggage (lbs.) - Winter	1,240	1,240	1,140	1,140	1,040
No. of Passengers - Summer	0	0	0	0	0
No. of Passengers - Winter	6	6	6	6	5

Passengers and Baggage = 200 pounds
Maximum Passengers Payload - 1,800 pounds or 9 passengers

Source: Aircraft Flight Planning Manuals (selected manufacturers)

TABLE J
Bombardier Learjet 31A Passenger Loading vs. Range

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	15,300	15,100	14,700	14,300	14,100
Takeoff Weight (Winter)	16,500	16,500	16,500	16,500	16,500
Operating Empty Weight	11,203	11,203	11,203	11,203	11,203
Payload (Summer)	4,097	3,897	3,497	3,097	2,897
Payload (Winter)	5,297	5,297	5,297	5,297	5,297
200 NM Fuel Loading	747	747	747	747	747
Passengers and Baggage (lbs.) - Summer	3,350	3,150	2,750	2,350	2,150
Passengers and Baggage (lbs.) - Winter	4,550	4,550	4,550	4,550	4,550
No. of Passengers - Summer	10	10	10	10	10
No. of Passengers - Winter	10	10	10	10	10
300 NM Fuel Loading	953	953	953	953	953
Passengers and Baggage (lbs.) - Summer	3,144	2,944	2,544	2,144	1,944
Passengers and Baggage (lbs.) - Winter	4,344	4,344	4,344	4,344	4,344
No. of Passengers - Summer	10	10	10	10	10
No. of Passengers - Winter	10	10	10	10	10
400 NM Fuel Loading	1,162	1,162	1,162	1,162	1,162
Passengers and Baggage (lbs.) - Summer	2,935	2,735	2,335	1,935	1,735
Passengers and Baggage (lbs.) - Winter	4,135	4,135	4,135	4,135	4,135
No. of Passengers - Summer	10	10	10	10	9
No. of Passengers - Winter	10	10	10	10	10
500 NM Fuel Loading	1,362	1,362	1,362	1,362	1,362
Passengers and Baggage (lbs.) - Summer	2,735	2,535	2,135	1,735	1,535
Passengers and Baggage (lbs.) - Winter	3,935	3,935	3,935	3,935	3,935
No. of Passengers - Summer	10	10	10	9	8
No. of Passengers - Winter	10	10	10	10	10
700 NM Fuel Loading	1,781	1,781	1,781	1,781	1,781
Passengers and Baggage (lbs.) - Summer	2,316	2,116	1,716	1,316	1,116
Passengers and Baggage (lbs.) - Winter	3,516	3,516	3,516	3,516	3,516
No. of Passengers - Summer	10	10	9	7	6
No. of Passengers - Winter	10	10	10	10	10
1,000 NM Fuel Loading	2,390	2,390	2,390	2,390	2,390
Passengers and Baggage (lbs.) - Summer	1,707	1,507	1,107	707	507
Passengers and Baggage (lbs.) - Winter	2,907	2,907	2,907	2,907	2,907
No. of Passengers - Summer	9	8	6	4	3
No. of Passengers - Winter	10	10	10	10	10
1,200 NM Fuel Loading	2,818	2,818	2,818	2,818	2,818
Passengers and Baggage (lbs.) - Summer	1,279	1,079	679	279	79
Passengers and Baggage (lbs.) - Winter	2,479	2,479	2,479	2,479	2,479
No. of Passengers - Summer	6	5	3	1	0
No. of Passengers - Winter	10	10	10	10	10
1,400 NM Fuel Loading	3,241	3,241	3,241	3,241	3,241
Passengers and Baggage (lbs.) - Summer	856	656	256	-144	-344
Passengers and Baggage (lbs.) - Winter	2,056	2,056	2,056	2,056	2,056
No. of Passengers - Summer	4	3	1	0	0
No. of Passengers - Winter	10	10	10	10	10

Passengers and Baggage = 200 pounds
Maximum Passengers Payload - 2,000 pounds or 10 passengers

Source: Aircraft Flight Planning Manuals (selected manufacturers)

Table K summarizes various passenger and fuel loading scenarios for the Learjet 35A/36A at stage lengths between 200 nm and 1,400 nm. At the existing runway length, the Learjet 35A/36A is able to carry a full passenger load on a 700 nm flight in the summer. A 7,200-foot departure length would allow for a full passenger load on a 1,000 nm flight.

Table L summarizes various passenger and fuel loading scenarios for the Learjet 60 at stage lengths between 200 nm and 1,400 nm. At the existing runway length, the Learjet 60 is able to carry only six passengers on a 200 nm stage length flight in the summer, although it has a capacity of 10 passengers. With a 7,200-foot departure length, the Learjet 60 is able to carry eight passengers on a 200 nm flight. For longer summertime stage lengths, the number of passengers must be reduced from five for a 300 nm stage length, to three for a 400 nm stage length, and to two for a 500 nm flight. A 7,200-foot departure length would allow for seven passengers on a 300 nm stage length flight, six passengers on a 400 nm stage length flight, and five passengers on a 500 nm stage length flight.

For regional jets, any reduction in payload is often made by reducing the number of passengers as fuel loading requirements are fixed by the need for the regional jet aircraft to fly to a specified hub airport without making an intermediate fuel stop.

Table M summarizes passenger loading for the Canadair CRJ200. As shown in the table, at the existing departure length of nearly 6,900 feet (far right column), the CRJ200 would have an available payload of 7,500 pounds in the summer and 12,000 pounds in the winter. To make a 200 nm flight (Denver, Colorado), the CRJ requires approximately 3,900 pounds of fuel. This leaves approximately 3,500 pounds for passengers and baggage in the summer and 8,070 pounds in the winter. This equates to approximately 18 passengers in the summer and 40 passengers in the winter. For a 300 nm flight (Salt Lake City, Utah), the number of passengers is reduced to 15 in the summer and 38 in the winter. The Canadair CRJ200 has the capability to carry 50 passengers. Increasing the takeoff distance to 7,200 feet allows for two more passengers in the summer and five more passengers in the winter. An additional seven passengers is provided with a departure length of 7,600 feet, while an additional 10 passengers can be carried if the departure length is 7,800 feet. Similar loading comparisons are made for the Avro RJ85 and Fairchild Dornier 328Jet and are provided in **Table N** and **Table P**, respectively.

TABLE K
Bombardier Learjet 35A/36A Passenger Loading vs. Range

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	14,900	14,800	14,600	14,500	14,400
Takeoff Weight (Winter)	16,100	16,000	15,700	15,600	15,500
Operating Empty Weight	10,238	10,238	10,238	10,238	10,238
Payload (Summer)	4,662	4,562	4,362	4,262	4,162
Payload (Winter)	5,862	5,762	5,462	5,362	5,262
200 NM Fuel Loading	1,465	1,465	1,465	1,465	1,465
Passengers and Baggage (lbs.) - Summer	3,197	3,097	2,897	2,797	2,697
Passengers and Baggage (lbs.) - Winter	4,397	4,297	3,997	3,897	3,797
No. of Passengers - Summer	6	6	6	6	6
No. of Passengers - Winter	6	6	6	6	6
300 NM Fuel Loading	1,682	1,682	1,682	1,682	1,682
Passengers and Baggage (lbs.) - Summer	2,980	2,880	2,680	2,580	2,480
Passengers and Baggage (lbs.) - Winter	4,180	4,080	3,780	3,680	3,580
No. of Passengers - Summer	6	6	6	6	6
No. of Passengers - Winter	6	6	6	6	6
400 NM Fuel Loading	1,890	1,890	1,890	1,890	1,890
Passengers and Baggage (lbs.) - Summer	2,772	2,672	2,472	2,372	2,272
Passengers and Baggage (lbs.) - Winter	3,972	3,872	3,572	3,472	3,372
No. of Passengers - Summer	6	6	6	6	6
No. of Passengers - Winter	6	6	6	6	6
500 NM Fuel Loading	2,099	2,099	2,099	2,099	2,099
Passengers and Baggage (lbs.) - Summer	2,563	2,463	2,263	2,163	2,063
Passengers and Baggage (lbs.) - Winter	3,763	3,663	3,363	3,263	3,163
No. of Passengers - Summer	6	6	6	6	6
No. of Passengers - Winter	6	6	6	6	6
700 NM Fuel Loading	2,639	2,639	2,639	2,639	2,639
Passengers and Baggage (lbs.) - Summer	2,023	1,923	1,723	1,623	1,523
Passengers and Baggage (lbs.) - Winter	3,223	3,123	2,823	2,723	2,623
No. of Passengers - Summer	6	6	6	6	6
No. of Passengers - Winter	6	6	6	6	6
1,000 NM Fuel Loading	3,183	3,183	3,183	3,183	3,183
Passengers and Baggage (lbs.) - Summer	1,479	1,379	1,179	1,079	979
Passengers and Baggage (lbs.) - Winter	2,679	2,579	2,279	2,179	2,079
No. of Passengers - Summer	6	6	6	5	5
No. of Passengers - Winter	6	6	6	6	6
1,200 NM Fuel Loading	3,713	3,713	3,713	3,713	3,713
Passengers and Baggage (lbs.) - Summer	949	849	649	549	449
Passengers and Baggage (lbs.) - Winter	2,149	2,049	1,749	1,649	1,549
No. of Passengers - Summer	5	4	3	3	2
No. of Passengers - Winter	6	6	6	6	6
1,400 NM Fuel Loading	4,061	4,061	4,061	4,061	4,061
Passengers and Baggage (lbs.) - Summer	601	501	301	201	101
Passengers and Baggage (lbs.) - Winter	1,801	1,701	1,401	1,301	1,201
No. of Passengers - Summer	3	3	2	1	1
No. of Passengers - Winter	6	6	6	6	6

Passengers and Baggage = 200 pounds
Maximum Passengers Payload - 1,200 pounds or 6 passengers

Source: Aircraft Flight Planning Manuals (selected manufacturers)

TABLE L
Bombardier Learjet 60 Passenger Loading vs. Range

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	18,000	17,800	17,200	17,000	16,700
Takeoff Weight (Winter)	20,900	20,600	20,100	19,900	19,700
Operating Empty Weight	14,700	14,700	14,700	14,700	14,700
Payload (Summer)	3,300	3,100	2,500	2,300	2,000
Payload (Winter)	6,200	5,900	5,400	5,200	5,000
200 NM Fuel Loading	827	827	827	827	827
Passengers and Baggage (lbs.) - Summer	2,473	2,273	1,673	1,473	1,173
Passengers and Baggage (lbs.) - Winter	5,373	5,073	4,573	4,373	4,173
No. of Passengers - Summer	10	10	8	7	6
No. of Passengers - Winter	10	10	10	10	10
300 NM Fuel Loading	1,068	1,068	1,068	1,068	1,068
Passengers and Baggage (lbs.) - Summer	2,232	2,032	1,432	1,232	932
Passengers and Baggage (lbs.) - Winter	5,132	4,832	4,332	4,132	3,932
No. of Passengers - Summer	10	10	7	6	5
No. of Passengers - Winter	10	10	10	10	10
400 NM Fuel Loading	1,310	1,310	1,310	1,310	1,310
Passengers and Baggage (lbs.) - Summer	1,990	1,790	1,190	990	690
Passengers and Baggage (lbs.) - Winter	4,890	4,590	4,090	3,890	3,690
No. of Passengers - Summer	10	9	6	5	3
No. of Passengers - Winter	10	10	10	10	10
500 NM Fuel Loading	1,550	1,550	1,550	1,550	1,550
Passengers and Baggage (lbs.) - Summer	1,750	1,550	950	750	450
Passengers and Baggage (lbs.) - Winter	4,650	4,350	3,850	3,650	3,450
No. of Passengers - Summer	9	8	5	4	2
No. of Passengers - Winter	10	10	10	10	10
700 NM Fuel Loading	2,041	2,041	2,041	2,041	2,041
Passengers and Baggage (lbs.) - Summer	1,259	1,059	459	259	-41
Passengers and Baggage (lbs.) - Winter	4,159	3,859	3,359	3,159	2,959
No. of Passengers - Summer	6	5	2	1	0
No. of Passengers - Winter	10	10	10	10	10
1,000 NM Fuel Loading	2,805	2,805	2,805	2,805	2,805
Passengers and Baggage (lbs.) - Summer	495	295	-305	-505	-805
Passengers and Baggage (lbs.) - Winter	3,395	3,095	2,595	2,395	2,195
No. of Passengers - Summer	2	1	0	0	0
No. of Passengers - Winter	10	10	10	10	10
1,200 NM Fuel Loading	3,331	3,331	3,331	3,331	3,331
Passengers and Baggage (lbs.) - Summer	-31	-231	-831	-1,031	-1,331
Passengers and Baggage (lbs.) - Winter	2,869	2,569	2,069	1,869	1,669
No. of Passengers - Summer	0	0	0	0	0
No. of Passengers - Winter	10	10	10	9	8
1,400 NM Fuel Loading	3,867	3,867	3,867	3,867	3,867
Passengers and Baggage (lbs.) - Summer	-567	-767	-1,367	-1,567	-1,867
Passengers and Baggage (lbs.) - Winter	2,333	2,033	1,533	1,333	1,133
No. of Passengers - Summer	0	0	0	0	0
No. of Passengers - Winter	10	10	8	7	6

Passengers and Baggage = 200 pounds
Maximum Passengers Payload - 2,000 pounds or 10 passengers

Source: Aircraft Flight Planning Manuals (selected manufacturers)

TABLE M
Canadair CRJ200LR Passenger Loading vs. Range

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	40,000	39,500	38,500	38,250	38,000
Takeoff Weight (Winter)	45,000	44,500	43,500	43,000	42,500
Operating Empty Weight	30,500	30,500	30,500	30,500	30,500
Payload (Summer)	9,500	9,000	8,000	7,750	7,500
Payload (Winter)	14,500	14,000	13,000	12,500	12,000
200 NM Fuel Loading	3,930	3,930	3,930	3,930	3,930
Passengers and Baggage (lbs.) - Summer	5,570	5,070	4,070	3,820	3,570
Passengers and Baggage (lbs.) - Winter	10,570	10,070	9,070	8,570	8,070
No. of Passengers - Summer	28	25	20	19	18
No. of Passengers - Winter	50	50	45	43	40
300 NM Fuel Loading	4,430	4,430	4,430	4,430	4,430
Passengers and Baggage (lbs.) - Summer	5,070	4,570	3,570	3,320	3,070
Passengers and Baggage (lbs.) - Winter	10,070	9,570	8,570	8,070	7,570
No. of Passengers - Summer	25	23	18	17	15
No. of Passengers - Winter	50	48	43	40	38
400 NM Fuel Loading	4,930	4,930	4,930	4,930	4,930
Passengers and Baggage (lbs.) - Summer	4,570	4,070	3,070	2,820	2,570
Passengers and Baggage (lbs.) - Winter	9,570	9,070	8,070	7,570	7,070
No. of Passengers - Summer	23	20	15	14	13
No. of Passengers - Winter	48	45	40	38	35
700 NM Fuel Loading	6,430	6,430	6,430	6,430	6,430
Passengers and Baggage (lbs.) - Summer	3,070	2,570	1,570	1,320	1,070
Passengers and Baggage (lbs.) - Winter	8,070	7,570	6,570	6,070	5,570
No. of Passengers - Summer	15	13	8	7	5
No. of Passengers - Winter	40	38	33	30	28
1,000 NM Fuel Loading	8,030	8,030	8,030	8,030	8,030
Passengers and Baggage (lbs.) - Summer	1,470	970	-30	-280	-530
Passengers and Baggage (lbs.) - Winter	6,470	5,970	4,970	4,470	3,970
No. of Passengers - Summer	7	5	0	0	0
No. of Passengers - Winter	32	30	25	22	20
Passengers and Baggage = 200 pounds					
Source: Aircraft Flight Planning Manuals (selected manufacturers)					

TABLE N**AVRO RJ85 Passenger Loading vs. Range**

	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	75,000	74,000	72,000	71,000	70,000
Takeoff Weight (Winter)	84,000	83,000	81,000	80,000	79,000
Operating Empty Weight	54,719	54,719	54,719	54,719	54,719
Payload (Summer)	20,281	19,281	17,281	16,281	15,281
Payload (Winter)	29,281	28,281	26,281	25,281	24,281
200 NM Fuel Loading	7,030	7,030	7,030	7,030	7,030
Passengers and Baggage (lbs.) - Summer	13,251	12,251	10,251	9,251	8,251
Passengers and Baggage (lbs.) - Winter	22,251	21,251	19,251	18,251	17,251
No. of Passengers - Summer	66	61	51	46	41
No. of Passengers - Winter	85	85	85	85	85
300 NM Fuel Loading	8,143	8,143	8,143	8,143	8,143
Passengers and Baggage (lbs.) - Summer	12,138	11,138	9,138	8,138	7,138
Passengers and Baggage (lbs.) - Winter	21,138	20,138	18,138	17,138	16,138
No. of Passengers - Summer	61	56	46	41	36
No. of Passengers - Winter	85	85	85	85	81
400 NM Fuel Loading	9,287	9,287	9,287	9,287	9,287
Passengers and Baggage (lbs.) - Summer	10,994	9,994	7,994	6,994	5,994
Passengers and Baggage (lbs.) - Winter	19,994	18,994	16,994	15,994	14,994
No. of Passengers - Summer	55	50	40	35	30
No. of Passengers - Winter	85	85	85	80	75
700 NM Fuel Loading	12,768	12,768	12,768	12,768	12,768
Passengers and Baggage (lbs.) - Summer	7,513	6,513	4,513	3,513	2,513
Passengers and Baggage (lbs.) - Winter	16,513	15,513	13,513	12,513	11,513
No. of Passengers - Summer	38	33	23	18	13
No. of Passengers - Winter	83	78	68	63	58
1,000 NM Fuel Loading	15,823	15,823	15,823	15,823	15,823
Passengers and Baggage (lbs.) - Summer	4,458	3,458	1,458	458	-542
Passengers and Baggage (lbs.) - Winter	13,458	12,458	10,458	9,458	8,458
No. of Passengers - Summer	22	17	7	0	0
No. of Passengers - Winter	67	62	52	47	42
Passengers and Baggage = 200 pounds					
Source: Aircraft Flight Planning Manuals (selected manufacturers)					

TABLE P					
Fairchild Dornier 328 Jet Passenger Loading vs. Range					
	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
Takeoff Weight (Summer)	31,500	31,500	30,900	30,400	30,200
Takeoff Weight (Winter)	34,300	34,200	33,300	33,000	32,900
Operating Empty Weight	20,767	20,767	20,767	20,767	20,767
Payload (Summer)	10,733	10,733	10,133	9,633	9,433
Payload (Winter)	13,533	13,433	12,533	12,233	12,133
200 NM Fuel Loading	1,600	1,600	1,600	1,600	1,600
Passengers and Baggage (lbs.) - Summer	9,133	9,133	8,533	8,033	7,833
Passengers and Baggage (lbs.) - Winter	11,933	11,833	10,933	10,633	10,533
No. of Passengers - Summer	32	32	32	32	32
No. of Passengers - Winter	32	32	32	32	32
300 NM Fuel Loading	1,984	1,984	1,984	1,984	1,984
Passengers and Baggage (lbs.) - Summer	8,749	8,749	8,149	7,649	7,449
Passengers and Baggage (lbs.) - Winter	11,549	11,449	10,549	10,249	10,149
No. of Passengers - Summer	32	32	32	32	32
No. of Passengers - Winter	32	32	32	32	32
400 NM Fuel Loading	2,432	2,432	2,432	2,432	2,432
Passengers and Baggage (lbs.) - Summer	8,301	8,301	7,701	7,201	7,001
Passengers and Baggage (lbs.) - Winter	11,101	11,001	10,101	9,801	9,701
No. of Passengers - Summer	32	32	32	32	32
No. of Passengers - Winter	32	32	32	32	32
700 NM Fuel Loading	3,792	3,792	3,792	3,792	3,792
Passengers and Baggage (lbs.) - Summer	6,941	6,941	6,341	5,841	5,641
Passengers and Baggage (lbs.) - Winter	9,741	9,641	8,741	8,441	8,341
No. of Passengers - Summer	32	32	32	29	28
No. of Passengers - Winter	32	32	32	32	32
1,000 NM Fuel Loading	5,230	5,230	5,230	5,230	5,230
Passengers and Baggage (lbs.) - Summer	5,503	5,503	4,903	4,403	4,203
Passengers and Baggage (lbs.) - Winter	8,303	8,203	7,303	7,003	6,903
No. of Passengers - Summer	28	28	25	22	21
No. of Passengers - Winter	32	32	32	32	32
Passengers and Baggage = 200 pounds					
Source: Aircraft Flight Planning Manuals (selected manufacturers)					

For the Avro RJ85, a departure length of 6,900 feet allows for 41 passengers on a 200 nm flight in the summer. A departure length of 7,200 feet can allow for an additional 10 passengers in the summer. A full passenger load can be accommodated in the winter at the 200 nm range. For the Fairchild-Dornier 328Jet, the benefits of a 7,200-foot departure length are evident with stage lengths above 700 nm. Assuming a 700

nm stage length, a full passenger load can be carried with a 7,200-foot departure length, only 28 passengers can be carried with a departure length of 6,900 feet.

Departure Requirements Summary

Takeoff weight and payload are reduced for most aircraft operating from Telluride Regional Airport due to the airport's elevation. Modest increases in departure length can provide for measurable increases in payload for business jet users and regional jet users. Since the stage length an aircraft may be able to fly is dependent upon passenger and fuel loading, it is best to measure the benefits of a longer departure length by examining the increase in payload provided by a longer runway length. These were previously summarized in **Table D**. Depending on operator requirements, the additional payload provided by a longer runway could be used to carry additional passengers, or fuel for a longer flight.

Table Q determines maximum range assuming maximum passenger loading. As shown in table, the maximum range generally increases as the available departure length is provided. Most notable is the Learjet 60 which cannot carry a full passenger load and depart on the existing runway length. A 7,800-foot departure length, in contrast, would allow for a full passenger load to be carried more than 400 nm.

The available departure length becomes critical in determining the capabilities of the regional jets to operate profitably at the airport. Profitability is a function of the number of passengers which can be carried on a particular flight. For the Canadair CRJ200, only 18 passengers can be carried on 200 nm flight in the summer with a departure length of 6,900 feet. This increases to 19 passengers with a 7,000-foot departure length, 20 passengers with a 7,200-foot departure length, 25 passengers with a 7,600-foot departure length, and 28 passengers with a 7,800-foot departure length. In the winter at the same 200 nm stage length, the Canadair CRJ 200 can carry 40 passengers. With a 7,000-foot departure length, this increases to 43 passengers. At 7,200 feet, 43 passengers can be carried, while 50 passengers can be carried with departure lengths above 7,600 feet. The same is true for the Avro RJ85. An increase in departure length increases the number of passengers which can be carried 200 nm in the summer from 41 at 6,900 feet to 66 at 7,800 feet.

Based upon the additional passengers which can be carried at the longer departure lengths, it would appear that a departure length to 7,800 feet would ensure maximum profitability and flexibility for airlines operating at Telluride Regional Airport. The more seats available, the more flexibility the airline has in offering a mix of discounted fares on the particular flight to attract passengers.

TABLE Q					
Maximum Range Determination					
	ASDA Length				
	7,800'	7,600'	7,200'	7,000'	6,900'
<i>CESSNA CITATION V</i>					
Payload - Summer	6,100	6,100	6,100	6,100	6,100
Payload - Winter	6,500	6,500	6,500	6,500	6,500
Passenger Loading ¹	1,800	1,800	1,800	1,800	1,800
Fuel Burn (lbs./nm)	5.08	5.08	5.08	5.08	5.08
Max. Range - Summer	846	846	846	846	846
Max Range - Winter	925	925	925	925	925
<i>BEECHJET 400A</i>					
Payload - Summer	3,377	3,377	3,377	3,277	3,177
Payload - Winter	5,477	5,477	5,377	5,377	5,277
Passenger Loading ¹	1,800	1,800	1,800	1,800	1,800
Fuel Burn (lbs./nm)	4.64	4.64	4.64	4.64	4.64
Max. Range - Summer	340	340	340	318	297
Max Range - Winter	792	792	770	770	749
<i>BOMBARDIER LEARJET 31A</i>					
Payload - Summer	4,097	3,897	3,497	3,097	2,897
Payload - Winter	5,297	5,297	5,297	5,297	5,297
Passenger Loading ¹	2,000	2,000	2,000	2,000	2,000
Fuel Burn (lbs./nm)	2.77	2.77	2.77	2.77	2.77
Max. Range - Summer	758	686	541	396	324
Max Range - Winter	1,191	1,191	1,191	1,191	1,191
<i>BOMBARDIER LEARJET 35A/36A</i>					
Payload - Summer	4,662	4,562	4,362	4,262	4,162
Payload - Winter	5,862	5,762	5,462	5,362	5,262
Passenger Loading ¹	1,200	1,200	1,200	1,200	1,200
Fuel Burn (lbs./nm)	4.35	4.35	4.35	4.35	4.35
Max. Range - Summer	796	773	727	704	681
Max Range - Winter	1,072	1,049	980	957	934
<i>BOMBARDIER LEARJET 60</i>					
Payload - Summer	3,300	3,100	2,500	2,300	2,000
Payload - Winter	6,200	5,900	5,400	5,200	5,000
Passenger Loading ¹	2,000	2,000	2,000	2,000	2,000
Fuel Burn (lbs./nm)	3.17	3.17	3.17	3.17	3.17
Max. Range - Summer	411	347	158	95	–
Max Range - Winter	1,327	1,232	1,074	1,011	948
¹ Maximum Passenger Load					
Source: Aircraft Flight Planning Manuals (selected manufacturers)					

SUMMARY

From the discussion above, the following conclusions can be made:

- A landing length of more than 6,600 feet is needed to serve the business jets examined in this study. Depending upon the final runway gradients for Runway 9-27, these landing requirements could increase.
- A landing length of 6,800 feet would best serve the Canadair CRJ200.
- A departure length of 7,800 feet would:
 - allow for the Canadair CRJ200 to depart in the summer to a destination 200 miles away with 28 passengers. This is 10 passengers more than can be achieved at the existing runway length and three passengers more than with a departure length of 7,600 feet;
 - allow for the Avro RJ85 to depart in the summer to a destination 200 miles away with 66 passengers. This is 25 passengers more than can be achieved at the existing runway length and five passengers more than with a departure length of 7,600 feet.
- The Canadair CRJ200 is the critical aircraft for runway length. This aircraft has the longest landing length requirements. A departure length of 7,800 feet would allow for 56 percent of the available seats to be used in the summer.
- Additional departure length increases available fuel loading and reduces intermediate fuel stops. A departure length of 7,800 feet:
 - allows the Learjet 60 to carry a full load of passengers (10) 400 miles in the summer. At the existing runway length, the Learjet 60 could only carry three passengers the same distance. The maximum range in the winter is increased from 948 nm to 1,327 nm;
 - increases the maximum range for the Learjet 35A/36A from 681 nm to 796 nm in the summer, and from 934 nm to 1,072 miles in the winter;
 - increases the maximum range for the Learjet 31A from 324 nm to 758 nm in the summer;
 - increases the maximum range for the Beechjet 400A from 297 nm to 340 nm in the summer and from 740 nm to 792 nm in the winter.