

>>> "Jones, Mark" <[mark.jones@usairways.com](mailto:mark.jones@usairways.com)> 6/9/2008 9:43 AM >>>  
Chris,  
Not much difference. The extra fuel would of course come out of the extra cargo capability but still max pax and design payload.  
Mark

-----Original Message-----  
From: Chris Fales [<mailto:cfales@mjinc.com>]  
Sent: Monday, June 09, 2008 9:07 AM  
To: Jones, Mark  
Subject: Re: BGM rwy 16/34

Thank you for your help.

Would there be a difference if the destination were Atlanta (736 mi) rather than Charlotte (547 mi)?

Chris Fales

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>>> "Jones, Mark" <[mark.jones@usairways.com](mailto:mark.jones@usairways.com)> 6/7/2008 12:07 AM >>>  
Chris,

By extending BGM rwy 16/34 a 1000 FT to a total of 8001 FT, the E190 acft MTOW did see an increase of 3000-4000 LB. A range/payload study of the E190 BGM to CLT (see attached file) shows NO passenger restrictions expected with either 7001 FT or 8001 FT usable length. Max payload 26300 LB always obtained; the segment is Max Zero Fuel Weight limited. I hope this is helpful.  
Mark

The assumptions used for this study are:

Weights

Aircraft Operating Empty Weight = OEW inclusive of 75% of the fleet (risk 25%)  
Passenger Weight = 190 lbs (summer) or 195 lbs (winter) + average bags/pax\* x 30 lbs/bag \* If history does not exist for average bags/pax, then 1.3 bags/pax is assumed (bags/pax 50% reliable).

Takeoff runway = BGM rwy 16/34 at current 7001 FT and test rwys 16A/34A at 8001 FT.

Takeoff temperature = Inclusive of 85% for time of day (risk 15%).  
Default temperature is 29C / 84F. I used 1400 LCL for BGM temp.

Aircraft best flap, optimum performance - if available (risk 0%)

Enroute Winds = 50% reliable by month calculated per flight profile (risk 50%).

Temp = ISA - standard day (risk 50%)

If no history on Arrival Fuel, then Default Arrival Fuel is 75 minutes

(FAA 45 minutes + 30 minutes Hold). Minimum Arrival Fuel Over Default set at 15 minutes

Mark Jones  
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>>> Chris Fales 6/2/2008 3:40 PM >>>  
Mark,

I am trying to do a runway length analysis based on using the Embraer 190 as the design aircraft. That was chosen because USAirways is acquiring that model, and they are a major carrier in this area. I have obtained a copy of the airport planning manual from Embraer, but frankly it is not a lot of help.

I am trying to answer the question: What will be the benefit of adding 1,000' to the length of our primary runway? I am hoping to find an answer in terms of stage length. The mean max temperature at the airport is 78.4 degrees F, the elevation is 1,636, The current r/w length is 7,100' and the current difference in runway end elevations is 67'. The proposed length would be 8,100', and the difference in r/w end elevation would be about 76'. FAA requirements for determining runway length say it has to be based on a "length of haul that is flown by airplanes on a substantial use basis." We are assuming that a future stage length may be from BGM to Charlotte, or from BGM to Memphis. Atlanta?

Would it be too much to request you folks to run an analysis and say what stage length your operating procedures for that airplane would currently permit from BGM, and what would be the change if additional length were added?

Please feel free to call if you have any questions or if there are other considerations I am not considering.

Thanks for your help,

### Planning Level Passenger Restrictions Binghamton - Charlotte (50% confidence)

Record	A/C Type	Month	Dep Time	Dep City	Air City	MTOW	Trip Fuel	Arr Fuel	Payload	LBS/Pax	Bags per Pax	Pax/Extra	Cargo	Pax Restricts	Limit	Runway	Length
1	E90	JAN	1400	BGM	CLT	110206	6389	3200	26300	195	1.3	99/3134	0	MZFW	16	7001 FT	
2	E90	JAN	1400	BGM	CLT	114200	6389	3200	26300	195	1.3	99/3134	0	MZFW	16A	8001 FT	
3	E90	JAN	1400	BGM	CLT	103646	6389	3200	26300	195	1.3	99/3134	0	MZFW	34	7001 FT	
4	E90	JAN	1400	BGM	CLT	107549	6389	3200	26300	195	1.3	99/3134	0	MZFW	34A	8001 FT	
5	E90	FEB	1400	BGM	CLT	110017	6349	3200	26300	195	1.3	99/3134	0	MZFW	16	7001 FT	
6	E90	FEB	1400	BGM	CLT	114122	6349	3200	26300	195	1.3	99/3134	0	MZFW	16A	8001 FT	
7	E90	FEB	1400	BGM	CLT	103435	6349	3200	26300	195	1.3	99/3134	0	MZFW	34	7001 FT	
8	E90	FEB	1400	BGM	CLT	107232	6349	3200	26300	195	1.3	99/3134	0	MZFW	34A	8001 FT	
9	E90	MAR	1400	BGM	CLT	109382	6232	3200	26300	195	1.3	99/3134	0	MZFW	16	7001 FT	
10	E90	MAR	1400	BGM	CLT	113293	6232	3200	26300	195	1.3	99/3134	0	MZFW	16A	8001 FT	
11	E90	MAR	1400	BGM	CLT	103016	6232	3200	26300	195	1.3	99/3134	0	MZFW	34	7001 FT	
12	E90	MAR	1400	BGM	CLT	106611	6232	3200	26300	195	1.3	99/3134	0	MZFW	34A	8001 FT	
13	E90	APR	1400	BGM	CLT	108184	6108	3200	26300	195	1.3	99/3134	0	MZFW	16	7001 FT	
14	E90	APR	1400	BGM	CLT	111846	6108	3200	26300	195	1.3	99/3134	0	MZFW	16A	8001 FT	
15	E90	APR	1400	BGM	CLT	102285	6108	3200	26300	195	1.3	99/3134	0	MZFW	34	7001 FT	
16	E90	APR	1400	BGM	CLT	105627	6108	3200	26300	195	1.3	99/3134	0	MZFW	34A	8001 FT	
17	E90	MAY	1400	BGM	CLT	107742	5978	3200	26300	190	1.3	99/3629	0	MZFW	16	7001 FT	
18	E90	MAY	1400	BGM	CLT	111046	5978	3200	26300	190	1.3	99/3629	0	MZFW	16A	8001 FT	
19	E90	MAY	1400	BGM	CLT	101767	5978	3200	26300	190	1.3	99/3629	0	MZFW	34	7001 FT	
20	E90	MAY	1400	BGM	CLT	105154	5978	3200	26300	190	1.3	99/3629	0	MZFW	34A	8001 FT	
21	E90	JUN	1400	BGM	CLT	107293	5933	3200	26300	190	1.3	99/3629	0	MZFW	16	7001 FT	
22	E90	JUN	1400	BGM	CLT	110818	5933	3200	26300	190	1.3	99/3629	0	MZFW	16A	8001 FT	
23	E90	JUN	1400	BGM	CLT	101462	5933	3200	26300	190	1.3	99/3629	0	MZFW	34	7001 FT	
24	E90	JUN	1400	BGM	CLT	104904	5933	3200	26300	190	1.3	99/3629	0	MZFW	34A	8001 FT	
25	E90	JUL	1400	BGM	CLT	107157	5877	3200	26300	190	1.3	99/3629	0	MZFW	16	7001 FT	
26	E90	JUL	1400	BGM	CLT	110484	5877	3200	26300	190	1.3	99/3629	0	MZFW	16A	8001 FT	
27	E90	JUL	1400	BGM	CLT	101172	5877	3200	26300	190	1.3	99/3629	0	MZFW	34	7001 FT	
28	E90	JUL	1400	BGM	CLT	104589	5877	3200	26300	190	1.3	99/3629	0	MZFW	34A	8001 FT	
29	E90	AUG	1400	BGM	CLT	107202	5922	3200	26300	190	1.3	99/3629	0	MZFW	16	7001 FT	
30	E90	AUG	1400	BGM	CLT	110535	5922	3200	26300	190	1.3	99/3629	0	MZFW	16A	8001 FT	
31	E90	AUG	1400	BGM	CLT	101261	5922	3200	26300	190	1.3	99/3629	0	MZFW	34	7001 FT	
32	E90	AUG	1400	BGM	CLT	104685	5922	3200	26300	190	1.3	99/3629	0	MZFW	34A	8001 FT	
33	E90	SEP	1400	BGM	CLT	107293	6025	3200	26300	190	1.3	99/3629	0	MZFW	16	7001 FT	
34	E90	SEP	1400	BGM	CLT	110818	6025	3200	26300	190	1.3	99/3629	0	MZFW	16A	8001 FT	
35	E90	SEP	1400	BGM	CLT	101462	6025	3200	26300	190	1.3	99/3629	0	MZFW	34	7001 FT	
36	E90	SEP	1400	BGM	CLT	104904	6025	3200	26300	190	1.3	99/3629	0	MZFW	34A	8001 FT	
37	E90	OCT	1400	BGM	CLT	108067	6144	3200	26300	190	1.3	99/3629	0	MZFW	16	7001 FT	
38	E90	OCT	1400	BGM	CLT	111635	6144	3200	26300	190	1.3	99/3629	0	MZFW	16A	8001 FT	
39	E90	OCT	1400	BGM	CLT	102182	6144	3200	26300	190	1.3	99/3629	0	MZFW	34	7001 FT	
40	E90	OCT	1400	BGM	CLT	105514	6144	3200	26300	190	1.3	99/3629	0	MZFW	34A	8001 FT	
41	E90	NOV	1400	BGM	CLT	109065	6296	3200	26300	195	1.3	99/3134	0	MZFW	16	7001 FT	
42	E90	NOV	1400	BGM	CLT	112871	6296	3200	26300	195	1.3	99/3134	0	MZFW	16A	8001 FT	
p	E90	NOV	1400	BGM	CLT	102811	6296	3200	26300	195	1.3	99/3134	0	MZFW	34	7001 FT	
44	E90	NOV	1400	BGM	CLT	106300	6296	3200	26300	195	1.3	99/3134	0	MZFW	34A	8001 FT	
45	E90	DEC	1400	BGM	CLT	110017	6403	3200	26300	195	1.3	99/3134	0	MZFW	16	7001 FT	
46	E90	DEC	1400	BGM	CLT	114122	6403	3200	26300	195	1.3	99/3134	0	MZFW	16A	8001 FT	
47	E90	DEC	1400	BGM	CLT	103435	6403	3200	26300	195	1.3	99/3134	0	MZFW	34	7001 FT	
48	E90	DEC	1400	BGM	CLT	107232	6403	3200	26300	195	1.3	99/3134	0	MZFW	34A	8001 FT	

**Worst Case Binghamton - Charlotte Weight Restrictions**

Record	examined	Q:1SESRS	E90.																								
48 flights	A/C Type	Month	Dep Time	Dep City	Arr City	Dep Temp	Wind	Flap	Runway	MTOW	MTOW Str	Trip Fuel	Arr Fuel	Arr Adj	Payload	LBS/Pax	Bags/Pax	Bags Flag	Pax/Cargo	Restricts	Limit	Mileage	Altitude	Mach	VTAS	Wind	ESAD
1	E90	JAN	1000-1500	BGM	CLT	21	-10	4	16	105381	GMJAN29	7490	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-118	669	
2	E90	JAN	1000-1500	BGM	CLT	21	-10	4	16A	107977	MJAN2911	7490	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-118	669	
3	E90	JAN	1000-1500	BGM	CLT	21	-10	4	34	92764	GMJAN29	6981	3200	15	18701	195	1.5 D	77/0	21	MTOW	494	35000	0.78	449	-118	669	
4	E90	JAN	1000-1500	BGM	CLT	21	-10	4	34A	102331	MJAN2913	7490	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-118	669	
5	E90	FEB	1000-1500	BGM	CLT	23	-10	4	16	105251	GMFEB29	7530	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-120	673	
6	E90	FEB	1000-1500	BGM	CLT	23	-10	4	16A	107716	MFEB2911	7530	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-120	673	
7	E90	FEB	1000-1500	BGM	CLT	23	-10	4	34	92555	GMFEB29	7004	3200	15	18500	195	1.5 D	77/0	22	MTOW	494	35000	0.78	449	-120	673	
8	E90	FEB	1000-1500	BGM	CLT	23	-10	4	34A	102129	MFEB2913	7530	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-120	673	
9	E90	MAR	1000-1500	BGM	CLT	28	-10	4	16	104842	GMMAR29	7278	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-107	648	
10	E90	MAR	1000-1500	BGM	CLT	28	-10	4	16A	107202	MMAR2911	7278	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-107	648	
11	E90	MAR	1000-1500	BGM	CLT	28	-10	4	34	92036	GMMAR29	6753	3200	15	18200	195	1.5 D	75/0	23	MTOW	494	35000	0.78	449	-107	648	
12	E90	MAR	1000-1500	BGM	CLT	28	-10	4	34A	101628	MMAR2913	7278	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-107	648	
13	E90	APR	1000-1500	BGM	CLT	33	-10	4	16	103512	GMAPR29	7063	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-95	626	
14	E90	APR	1000-1500	BGM	CLT	33	-10	4	16A	105694	MAPR2911	7063	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-95	626	
15	E90	APR	1000-1500	BGM	CLT	33	-10	4	34	90851	GMAPR29	6499	3200	15	17300	195	1.5 D	72/0	27	MTOW	494	35000	0.78	449	-95	626	
16	E90	APR	1000-1500	BGM	CLT	33	-10	4	34A	100390	MAPR2913	7063	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-95	626	
17	E90	MAY	1000-1500	BGM	CLT	34	-10	4	16	102522	GMMAY29	6783	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-78	597	
18	E90	MAY	1000-1500	BGM	CLT	34	-10	4	16A	104952	MMAY2911	6783	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-78	597	
19	E90	MAY	1000-1500	BGM	CLT	34	-10	4	34	90203	GMMAY29	6221	3200	15	16900	190	1.5 D	71/0	27	MTOW	494	35000	0.78	449	-78	597	
20	E90	MAY	1000-1500	BGM	CLT	34	-10	4	34A	99648	MMAY2913	6753	3200	15	25817	190	1.5 D	99/2552	0	MTOW	494	35000	0.78	449	-78	597	
21	E90	JUN	1000-1500	BGM	CLT	38	-10	4	16	99140	GMJUN29	6598	3200	15	25504	190	1.5 D	99/2239	0	MTOW	494	35000	0.78	449	-69	583	
22	E90	JUN	1000-1500	BGM	CLT	38	-10	3	16A	101748	MJUN2911	6645	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-69	583	
23	E90	JUN	1000-1500	BGM	CLT	38	-10	4	34	87570	GMJUN29	5962	3200	15	14600	190	1.5 D	62/0	37	MTOW	494	35000	0.78	449	-69	583	
24	E90	JUN	1000-1500	BGM	CLT	38	-10	4	34A	96687	MJUN2913	6464	3200	15	23200	190	1.5 D	98/0	0	MTOW	494	35000	0.78	449	-69	583	
25	E90	JUL	1000-1500	BGM	CLT	39	-10	4	16	98302	GMJUL29	6443	3200	15	24803	190	1.5 D	99/1538	0	MTOW	494	35000	0.78	449	-61	571	
26	E90	JUL	1000-1500	BGM	CLT	39	-10	3	16A	101100	MJUL2911	6528	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-61	571	
27	E90	JUL	1000-1500	BGM	CLT	39	-10	4	34	86937	GMJUL29	5831	3200	15	14100	190	1.5 D	60/0	39	MTOW	494	35000	0.78	449	-61	571	
28	E90	JUL	1000-1500	BGM	CLT	39	-10	4	34A	95963	MJUL2913	6317	3200	15	22601	190	1.5 D	96/0	3	MTOW	494	35000	0.78	449	-61	571	
29	E90	AUG	1000-1500	BGM	CLT	38	-10	4	16	99140	GMAUG29	6474	3200	15	25608	190	1.5 D	99/2343	0	MTOW	494	35000	0.78	449	-60	570	
30	E90	AUG	1000-1500	BGM	CLT	38	-10	3	16A	101748	MAUG2911	6514	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-60	570	
31	E90	AUG	1000-1500	BGM	CLT	38	-10	4	34	87570	GMAUG29	5853	3200	15	14700	190	1.5 D	62/0	36	MTOW	494	35000	0.78	449	-60	570	
32	E90	AUG	1000-1500	BGM	CLT	38	-10	4	34A	96687	MAUG2913	6343	3200	15	23301	190	1.5 D	99/36	0	MTOW	494	35000	0.78	449	-60	570	
33	E90	SEP	1000-1500	BGM	CLT	38	-10	4	16	99140	GMSEP29	6683	3200	15	25405	190	1.5 D	99/2140	0	MTOW	494	35000	0.78	449	-75	592	
34	E90	SEP	1000-1500	BGM	CLT	38	-10	3	16A	101748	MSEP2911	6736	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-75	592	
35	E90	SEP	1000-1500	BGM	CLT	38	-10	4	34	87570	GMSEP29	6036	3200	15	14500	190	1.5 D	61/0	37	MTOW	494	35000	0.78	449	-75	592	
36	E90	SEP	1000-1500	BGM	CLT	38	-10	4	34A	96687	MSEP2913	6546	3200	15	23101	190	1.5 D	98/0	1	MTOW	494	35000	0.78	449	-75	592	
37	E90	OCT	1000-1500	BGM	CLT	33	-10	4	16	103512	GMOCT29	7097	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-97	629	
38	E90	OCT	1000-1500	BGM	CLT	33	-10	4	16A	105694	MOCT2911	7097	3200	15	26300	190	1.5 D	99/3035	0	MZFW	494	35000	0.78	449	-97	629	
39	E90	OCT	1000-1500	BGM	CLT	33	-10	4	34	90851	GMOCT29	6531	3200	15	17300	190	1.5 D	73/0	25	MTOW	494	35000	0.78	449	-97	629	
40	E90	OCT	1000-1500	BGM	CLT	33	-10	4	34A	100390	MOCT2913	7091	3200	15	26292	190	1.5 D	99/3027	0	MTOW	494	35000	0.78	449	-97	629	
41	E90	NOV	1000-1500	BGM	CLT	27	-10	4	16	104880	GMNOV29	7450	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-116	665	
42	E90	NOV	1000-1500	BGM	CLT	27	-10	4	16A	107325	MNOV2911	7450	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-116	665	
43	E90	NOV	1000-1500	BGM	CLT	27	-10	4	34	92139	GMNOV29	6911	3200	15	18200	195	1.5 D	75/0	23	MTOW	494	35000	0.78	449	-116	665	
44	E90	NOV	1000-1500	BGM	CLT	27	-10	4	34A	101728	MNOV2913	7450	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-116	665	
45	E90	DEC	1000-1500	BGM	CLT	20	-10	4	16	105561	GMDEC29	7612	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-124	682	
46	E90	DEC	1000-1500	BGM	CLT	20	-10	3	16A	108078	MDEC2911	7612	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-124	682	
47	E90	DEC	1000-1500	BGM	CLT	20	-10	2	34	92872	GMDEC29	7093	3200	15	18700	195	1.5 D	77/0	21	MTOW	494	35000	0.78	449	-124	682	
48	E90	DEC	1000-1500	BGM	CLT	20	-10	4	34A	102432	MDEC2913	7612	3200	15	26300	195	1.5 D	99/2540	0	MZFW	494	35000	0.78	449	-124	682	