Updated Date: 2011-10-29

Table 1 Preliminary Test Results† – Desired/Achieved "Average Peak" Accelerations at Collapse‡

Unit: g

Test No.			Desired (per AC156)					Achieved (experiment)					
			Ground Seismic Coeff. S_S[1]	Ground PGA_H[2]	Ground PGA_V[3]	Target Roof FA_H[4]	Target Roof FA_V[5]	Roof (Frame) Center[6]			Ceiling Grid Center[7]		
#	Collapse Level	Input	Hor.	Hor.	Vert.	Hor.	Vert.	x	y	z	x	y	z
1			*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
2	NS1108K-275	x, z	2.75	0.73	0.49	1.17	0.49	1.80**	0.35	0.81	8.42	9.60*	5.20*
3	NS1108L-275	x	2.75	0.73	0.49	1.17	0.49	1.89	0.25	0.77	7.59	3.86	1.27
4	NS1108M-225	3D	2.25	0.60	0.40	0.96	0.40	1.42	1.72	0.83	4.48	4.89	1.23
5	NS1108N-200	3D	2.00	0.53	0.36	0.85	0.36	1.19	1.48	0.85	4.85	8.50*	1.81
6	NS1108O-125	3D	1.25	0.33	0.22	0.53	0.22	0.76	0.97	0.73	3.11	3.39	0.80
7	NS1108P-225	3D	2.25	0.60	0.40	0.96	0.40	1.39	1.66	0.90	5.30	8.20*	2.80
8	NS1108Q-175	3D	1.75	0.47	0.31	0.75	0.31	1.02	1.23	0.89	3.15	3.79	0.91
9	NS1108R-275	3D	2.75	0.73	0.49	1.17	0.49	1.85	2.27	1.21	6.16	10.6*	3.02
10	NS1108S-250	3D	2.50	0.67	0.44	1.07	0.44	1.70	1.99	1.15	4.57	6.80*	6.40*
Approx. Ave. Ratios (3D[8]) (normalized to FA_H)			-	-	-	*(1.00*	*0.42)*	*1.47*	*1.79*	*1.07*	*5.06*	*5.51*	*1.93*

† *These preliminary data shall be reviewed, reevaluated and reinvestigated.*

‡ *Average Peak Accelerations: average of 10 maximum values from achieved histories.* ***(Some of response accelerations of the ceiling grid had large spikes-peaks due to possible impact of the grid during the system collapse. Some of these values were not included in the calculation of the Ave. Factors).***

** *Test #2 target was Roof (Frame) Corner.*

The definition and the equation of "*desired*" parameters are as follows:

1. S_S = the mapped maximum earthquake spectral acceleration at short periods per AC156

$$S_{DS\_H} = 2/3 F_a S_S \quad (1)$$

where S_{DS_H} is the design spectral response acceleration at short periods in the horizontal direction, and F_a is the site coefficient taken as 1 in this calculation.

2. PGA_H = Peak Ground Acceleration in the Horizontal direction

$$PGA_H = 0.4 S_{DS\_H} \quad (2)$$

3. PGA_V = Peak Ground Acceleration in the Vertical direction

$$PGA_v = 2/3 PGA_H \quad (3)$$

4. FA_H = target Peak Roof/Floor Acceleration in the Horizontal direction

$$FA_H = 1.6 \cdot PGA_H \quad (4)$$

5. FA_V = target Peak Roof/Floor Acceleration in the Vertical direction (Not amplified)

$$FA_v = PGA_v \quad (5)$$

The "*achieved* parameters are the achieved quantities from the experimental data:

6. Roof (Frame) Center = Peak accelerations achieved from West and East Roof Centers (West+East)/2
7. Ceiling Grid Center = Peak accelerations achieved from the Ceiling Grid Center main runner East and West (West+East)/2
8. Approx. Ave. Ratios are calculated using 3D input test results only (i.e. Test #4 to #10).

Table 2 Preliminary Test Results† – Desired/Achieved "*Spectral Peak Accelerations*"

Unit: g

Test No.			Desired (per AC156)					Achieved‡ (experiment)		
			Ground Seismic Coeff. S_S[1]	Ground S_{DS_H}[2]	Ground S_{DS_V}[2]	Target Roof FS_H[4]	Target Roof FS_V[5]	Roof (Frame) Center[6]		
#	Collapse Level	Input	Hor.	Hor.	Vert.	Hor.	Vert.	x	y	z
	1		*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
2	NS1108K-275	x, z	2.75	1.83	1.22	2.93	1.22	4.14*	0.91	1.65
3	NS1108L-275	x	2.75	1.83	1.22	2.93	1.22	4.56	1.19	0.91
4	NS1108M-225	3D	2.25	1.50	1.00	2.40	1.00	3.33	3.41	1.53
5	NS1108N-200	3D	2.00	1.33	0.89	2.13	0.89	2.92	3.08	1.30
6	NS1108O-125	3D	1.25	0.83	0.56	1.33	0.56	2.04	2.48	1.06
7	NS1108P-225	3D	2.25	1.50	1.00	2.40	1.00	3.27	3.50	1.64
8	NS1108Q-175	3D	1.75	1.17	0.78	1.87	0.78	2.44	2.59	1.29
9	NS1108R-275	3D	2.75	1.83	1.22	2.93	1.22	3.97	4.29	1.95
10	NS1108S-250	3D	2.50	1.67	1.11	2.67	1.11	3.63	3.97	1.73
Coefficient Factors (3D[7]) (respect to S_S)			*1.00*	*0.67*	*0.44*	*1.07*	*0.44*	-	-	-
Approx. Ave. Factors (3D[8]) (respect to FS_H)			-	-	-	*1.00*	*0.42*	*1.29*	*1.41*	*0.63*

† ***These preliminary data shall be reviewed, reevaluated and reinvestigated.***

‡ ***Achieved Spectral Peak Accelerations were calculated from the test data in the range of 0.1 to 30hz (horizontal) and the range of 0.1 to 15hz (vertical).***

* ***Test #2 target was Roof (Frame) Corner.***

The definition and the equation of "*desired*" parameters are as follows:

1. S_S = the mapped maximum earthquake spectral acceleration at short periods per AC156
2. S_{DS_H} = the design spectral response acceleration at short periods in the horizontal direction

$$S_{DS\_H} = 2/3 F_a S_S \quad (6)$$

where F_a is the site coefficient taken as 1 in this calculation.

3. S_{DS_V} = the design spectral response acceleration at short periods in the vertical direction

$$S_{DS\_V} = 2/3 S_{DS\_H} \quad (7)$$

4. FS_H = the target Roof/Floor spectral response acceleration in the Horizontal direction

$$FS_H = 1.6 \cdot S_{DS\_H} \quad (8)$$

5. FS_V = the target Roof/Floor spectral response acceleration in the vertical direction (Not amplified)

$$FS_V = S_{DS\_V} \quad (9)$$

The "*achieved* parameters are the calculated quantities from the experimental data:

6. Roof (Frame) Center = Spectral peak accelerations from West and East Roof Centers (West+East)/2
7. Desired parameter-coefficient factors respect to S_S.
8. Approx. Ave. Factors are calculated using 3D input test results only (i.e. Test #4 to #10).