



US Department  
of Transportation

Research and  
Special Programs  
Administration

# Memorandum

Date July 17, 1990 Reply to Attn. of DTS-75

Subject INFORMATION: Helicopter Noise Data  
Letter Report DTS-75-FA053-LR8 (Rev. 1)

From E.J. Rickley *E.J. Rickley*

To Donna Warren, AEE-120

One-third octave spectral noise data are provided for 15 helicopters from the TSC Helicopter Noise Data Library. The original data were measured by TSC in 1978 through 1983 and published in reports as listed below. The data have been adjusted to reference conditions at a reference altitude of 1000 feet, utilizing the SAE standard atmosphere. The data are presented for the record at time of PNLTmax for a representative event, one each for takeoff, approach and level flyover.

Data are provided in tabular form for the following helicopters:

Table #	Helicopter	Report No.
1	Aerospatiale Astar SA350D	FAA-EE-84-05
2	Aerospatiale Dauphin SA365N	FAA-EE-84-02
3	Aerospatiale Gazelle SA341G	FAA-EE-79-03
4	Aerospatiale Puma SA330J	FAA-EE-79-03
5	Aerospatiale Twinstar SA-3555F	FAA-EE-84-04
6	Augusta A-109	FAA-EE-81-16
7	Bell 212	FAA-EE-79-03
8	Bell 222	FAA-EE-84-01
9	Boeing / Vertol CH-47D Chinook	FAA-EE-84-07
10	Boelkow BO-105	FAA-EE-79-03
11	Hughes 500D/E	FAA-EE-84-03
12	Sikorsky S-61 (CH3A)	FAA-EE-79-03
13	Sikorsky S-65 (CH53)	FAA-EE-79-03
14	Sikorsky Blackhawk UH-60A (S-70)	FAA-EE-81-16
15	Sikorsky S-76 Spirit	FAA-EE-84-06

Data are also provided in file form on PC-compatible 5.25" floppy disk (MS-DOS V3.3) as ASCII text files T1 - T15.

cc:  
T. Connor, FAA/AEE-120  
Robert A. Lee, USAF/BBE

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Table 1 (Rev 1)  
 AEROSPATIALE ASTAR SA350D HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	55.00	56.43	61.77
32	57.70	52.23	53.17
40	55.90	60.23	69.47
50	50.50	50.33	55.77
63	50.31	54.74	57.49
80	48.83	50.05	62.11
100	49.46	65.57	44.41
125	70.38	73.38	55.73
160	60.12	77.70	65.13
200	60.86	68.22	65.44
250	66.71	71.96	66.01
315	59.99	72.89	59.21
400	59.88	67.35	65.98
500	56.99	65.11	60.53
630	57.83	64.09	58.71
800	58.22	61.90	59.01
1000	57.75	59.22	55.51
1250	58.14	57.48	54.24
1600	56.64	55.01	53.93
2000	52.42	51.06	47.27
2500	51.13	49.00	46.98
3150	47.88	45.16	43.85
4000	43.19	39.89	38.09
5000	38.59	37.17	30.67
6300	32.94	32.77	21.97
8000	25.53	27.24	12.29
10000	15.17	17.97	1.12

OASPL	74.04	81.55	75.15
AWT	67.19	72.73	67.27
PNL	78.43	84.60	78.38
PNLT	81.03	85.75	80.24

SEL	79.85	86.26	77.86
DURATION (SEC)	41.26	38.91	29.58

REF SPD	63.00 55.5 Kts	63.00 55.4	116.00 100
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\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

REF ALT (FT)	600.5	347.6	482.2
REF SPD (KTS)	56.5	58.2	102.5
REF SPD (KTS)	54.75	54.75	100.8

Table 2 (Rev 1)  
 AEROSPATIALE DAUPHIN SA365N HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	64.34	74.99	77.82
32	48.34	52.59	57.12
40	52.34	60.49	55.52
50	59.14	67.59	62.62
63	44.45	57.29	49.03
80	42.56	52.10	46.34
100	50.48	66.92	54.76
125	56.58	81.33	60.07
160	57.60	80.65	60.89
200	54.13	74.07	56.42
250	60.45	68.70	59.15
315	61.59	73.93	60.99
400	58.23	69.18	56.84
500	56.29	69.54	55.11
630	56.26	66.91	56.99
800	57.56	63.41	55.90
1000	70.27	61.73	62.43
1250	61.81	58.57	59.69
1600	59.31	56.68	56.63
2000	66.05	56.02	59.00
2500	62.16	52.83	56.64
3150	60.36	51.14	54.40
4000	56.21	46.23	49.71
5000	52.68	42.83	45.53
6300	44.80	36.71	37.73
8000	35.69	32.61	30.01
10000	27.12	24.63	21.88
OASPL	74.81	85.82	78.75
AWT	73.96	75.21	68.49
PNL	84.86	87.85	80.05
PNLT	88.39	89.12	81.60
SEL	84.69	87.05	78.37
DURATION (SEC)	30.24	31.13	21.40
REF SPD (KTS)	75.00 ✓	75.00 ✓	120.00 ✓

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	343.8	336.9	450
TEST SPD	75	75	116
REF SPD (CORRECTED)	75	75	120

Table 3 (Rev 1)  
 AEROSPATIALE GAZELLE SA341G HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1978

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	51.59	56.22	59.34
32	52.29	56.82	55.84
40	55.89	67.42	62.34
50	49.29	48.42	50.24
63	42.50	46.83	47.75
80	43.00	55.04	48.17
100	48.11	62.66	54.99
125	53.11	69.37	57.90
160	54.42	70.89	58.32
200	52.03	64.42	53.15
250	52.15	69.45	56.88
315	56.36	67.48	57.53
400	54.19	65.34	57.89
500	55.61	63.60	57.36
630	53.85	61.98	57.75
800	55.10	60.28	55.77
1000	58.95	58.61	57.31
1250	63.63	61.59	63.10
1600	57.07	53.88	57.82
2000	57.24	52.74	52.72
2500	59.81	51.29	55.62
3150	56.52	43.82	51.73
4000	54.47	40.60	47.33
5000	48.93	36.26	42.56
6300	40.75	33.87	36.40
8000	34.39	26.75	30.93
10000	19.09	10.38	14.70
OASPL	69.65	77.63	70.85
AWT	69.00	70.32	67.85
PNL	80.74	81.25	78.56
PNLT	82.61	83.03	80.40
SEL	81.03	82.79	77.13
DURATION (SEC)	37.60	41.27	18.48
REF SPD (KTS)	63.56	64.64	127.80

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST VLT	244.32	418.89	475.37
TEST SPD	81.15	71.48	131.63
REF SPD (KTS)	63.56	64.64	127.8

Table 4 (Rev 1)  
 AEROSPATIALE PUMA SA330J HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1978

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	49.63	60.04	64.55
32	63.93	61.84	58.45
40	65.13	71.74	77.85
50	54.83	61.74	64.45
63	49.34	64.35	64.36
80	46.25	57.76	58.18
100	65.27	72.57	54.97
125	63.28	78.28	67.69
160	67.10	80.18	65.28
200	63.82	75.89	64.58
250	62.95	71.13	67.84
315	65.49	70.44	59.92
400	62.65	67.38	67.98
500	65.91	64.81	66.40
630	65.69	61.77	70.26
800	66.49	60.53	71.13
1000	66.12	60.61	69.89
1250	63.98	57.80	68.36
1600	62.10	55.73	66.07
2000	61.76	53.85	62.21
2500	59.30	50.72	58.70
3150	56.15	47.48	55.04
4000	51.98	42.23	49.48
5000	46.76	38.70	44.22
6300	40.86	39.54	33.71
8000	33.42	24.34	27.32
10000	21.53	10.16	7.51
OASPL	76.98	84.60	81.70
AWT	73.63	73.44	76.98
PNL	84.23	86.82	86.11
PNLT	85.98	88.16	87.37
SEL	84.87	86.54	85.19
DURATION (SEC)	28.91	42.46	15.22
REF SPD (KTS)	69.39	69.62	126.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT 437.21 405.87 548.6  
 TEST SPD 54.23 60.0 130.3  
 REF SPD (KTS) 69.39 69.62 126.0

Table 5 (Rev 1)  
 AEROSPATIALE TWINSTAR HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	53.17	60.16	69.16
32	50.27	53.16	51.26
40	62.77	64.16	68.26
50	51.37	49.36	67.26
63	59.68	56.17	59.27
80	60.20	52.88	64.39
100	44.32	70.20	50.98
125	56.74	79.20	56.10
160	58.37	76.12	65.79
200	71.20	71.84	63.98
250	61.35	70.97	72.74
315	60.81	72.01	64.32
400	64.59	70.55	66.57
500	61.88	67.81	59.99
630	63.20	64.38	57.75
800	59.66	61.28	58.70
1000	57.74	57.49	56.14
1250	55.68	54.84	53.60
1600	53.81	53.74	52.09
2000	51.99	50.57	49.99
2500	49.59	47.42	47.64
3150	47.12	45.44	43.50
4000	42.54	41.69	38.20
5000	39.43	39.11	33.77
6300	32.56	32.88	24.90
8000	24.29	26.53	13.84
10000	14.26	20.75	0.16

OASPL	74.80	83.13	77.79
AWT	68.54	73.33	68.87
PNL	80.07	85.36	81.11
PNLT	81.96	86.60	82.66

SEL	77.82	86.65	79.17
DURATION (SEC)	11.18	42.77	23.06

REF SPD (MPH)	63.00	63.00	116.00
(KTS)	55.04	55.14	100 (90)
(KTS)			

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	594.2	344.0	519.8
TEST SPD	53.6	63.0	79.9
REF SPD (MPH)	54.75	51.75	100.8

Table 6 (Rev 1)  
 AUGUSTA A109 HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1980

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	64.20	80.08	71.21
32	54.00	75.18	70.71
40	46.40	51.78	54.71
50	51.40	53.78	57.81
63	57.91	51.09	57.13
80	58.41	55.31	54.95
100	55.83	60.61	54.86
125	70.33	67.82	62.68
160	70.15	74.02	73.60
200	68.27	65.43	60.53
250	62.49	69.78	68.39
315	66.11	78.39	72.43
400	64.45	73.84	67.81
500	64.50	74.38	65.89
630	64.55	70.44	62.91
800	64.23	68.22	60.25
1000	62.12	62.90	58.62
1250	61.43	61.01	56.83
1600	59.59	58.86	55.23
2000	59.37	57.09	53.95
2500	56.71	53.27	52.16
3150	53.32	49.76	48.79
4000	49.34	44.51	44.38
5000	45.19	39.67	39.11
6300	38.67	30.51	31.19
8000	30.06	21.91	21.35
10000	19.79	9.65	8.22
OASPL	77.42	85.11	79.66
AWT	71.85	77.58	71.57
PNL	82.95	88.01	83.05
PNLT	84.17	89.24	84.96
SEL	85.03	91.19	83.63
DURATION (SEC)	42.52	41.10	28.63
REF SPD (KTS)	60.00	60.00	116.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	273.25	429.13	569.03
TEST SPD	83.29	61.46	123.1
REF SPD	60.0	60.0	116.0

Table 7 (Rev 1)  
 BELL 212 HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1978

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	76.24	79.97	67.27
32	73.54	77.47	64.07
40	64.24	69.97	73.77
50	64.74	72.47	77.07
63	69.84	73.88	76.48
80	51.65	60.10	69.40
100	65.74	68.67	64.68
125	69.74	76.38	74.78
160	73.72	78.05	74.36
200	68.41	79.83	78.65
250	68.43	73.56	73.49
315	67.39	76.31	68.24
400	65.30	71.72	69.67
500	63.38	64.99	64.35
630	61.17	61.08	62.36
800	58.05	58.45	61.16
1000	57.23	57.80	58.83
1250	57.72	54.79	55.33
1600	55.94	52.79	54.28
2000	52.64	47.59	51.28
2500	49.33	44.31	48.82
3150	45.88	39.21	44.75
4000	39.41	31.71	41.07
5000	33.96	24.40	38.87
6300	26.78	14.34	31.51
8000	20.50	6.54	22.69
10000	12.75	0.00	10.92
OASPL	81.63	87.04	84.98
AWT	69.90	75.26	73.25
PNL	82.08	87.33	86.89
PNLT	84.02	88.59	87.77
SEL	83.67	89.48	86.77
DURATION (SEC)	42.08	56.64	53.62
REF SPD (KTS)	53.37	54.70	93.96

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	274.09	391.47	419.41
TEST SPD	62.92	53.37	108.18
REF SPD (KTS)	53.37	54.7	93.96



Table 8 (Rev 1)  
 BELL 222 HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	72.33	85.39	82.19
32	64.73	66.19	70.39
40	69.23	68.69	76.89
50	60.23	72.49	72.29
63	71.55	66.50	69.80
80	55.87	64.31	66.62
100	51.01	78.72	62.02
125	66.44	84.43	72.33
160	61.19	84.04	70.23
200	73.65	77.76	71.83
250	62.12	73.90	67.58
315	59.42	74.82	67.17
400	64.14	72.18	63.52
500	61.09	69.03	62.45
630	61.19	65.50	61.41
800	60.44	61.60	60.17
1000	59.04	60.00	59.43
1250	59.22	58.44	58.21
1600	59.06	55.33	57.43
2000	57.48	52.63	55.50
2500	54.78	49.79	52.51
3150	51.32	45.81	49.40
4000	47.84	41.24	45.09
5000	43.59	37.50	41.35
6300	36.59	32.50	33.05
8000	29.43	30.59	26.06
10000	17.92	24.16	16.54
OASPL	79.32	90.55	85.07
AWT	69.98	76.97	70.31
PNL	82.91	90.20	83.13
PNLT	85.16	91.09	84.16
SEL	81.56	88.95	81.41
DURATION (SEC)	29.18	31.31	29.45
REF SPD (KTS)	65.00 ✓	65.00 ✓	123.00 ✓

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST AIT	735.0	352.9	350.8
TEST SPD	54.7	64.7	128.0
REF SPD (KTS)	65.0	65.0	127.0

Table 9 (Rev 1)  
 BOEING VERTOL CH-47D HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - July 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	73.90	85.44	80.03
32	82.60	72.64	81.23
40	72.20	80.44	80.03
50	70.80	81.94	74.53
63	64.91	75.76	69.44
80	61.02	74.28	67.35
100	67.34	72.68	73.08
125	71.35	83.79	72.99
160	70.17	87.89	71.82
200	63.99	88.30	62.65
250	63.13	82.26	64.70
315	67.57	79.06	64.25
400	64.53	78.52	63.32
500	65.69	73.15	62.11
630	64.78	72.73	62.92
800	64.90	69.41	62.86
1000	65.03	67.50	61.44
1250	64.10	64.50	61.46
1600	61.24	61.85	60.37
2000	61.01	59.36	59.73
2500	57.26	56.41	56.89
3150	54.44	52.43	53.59
4000	52.41	47.38	50.71
5000	48.51	43.81	47.01
6300	43.64	35.73	41.58
8000	37.22	28.59	35.91
10000	27.36	12.69	26.62
OASPL	84.79	94.20	86.56
AWT	73.18	82.92	71.42
PNL	84.75	96.08	84.09
PNLT	85.37	96.66	84.56
SEL	83.31	93.34	81.49
DURATION (SEC)	23.59	22.45	21.17
REF SPD (KTS)	85.00	85.00	120.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	568.3	410.3	470.0
TEST SPD	80.0	80.0	120.0
REF SPD (KTS)	85.0	85.0	120.0

Table 10 (Rev 1)  
 BOELKOW BO-150 HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1978

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	60.69	68.05	64.39
32	65.79	76.95	75.79
40	49.99	54.35	55.79
50	51.29	53.15	52.49
63	58.20	61.87	53.10
80	54.51	54.38	57.32
100	51.03	54.99	50.73
125	63.13	63.10	60.95
160	73.84	74.82	77.37
200	58.26	65.54	60.99
250	63.29	67.48	64.94
315	67.42	75.41	73.37
400	63.06	71.17	65.74
500	61.80	74.02	70.01
630	58.27	67.91	65.51
800	57.45	67.02	62.63
1000	55.55	64.43	60.77
1250	53.47	60.18	59.05
1600	52.84	57.90	57.11
2000	50.04	56.21	55.89
2500	47.80	53.30	52.46
3150	46.04	48.94	48.13
4000	41.26	43.44	43.63
5000	38.00	37.88	39.08
6300	32.12	29.08	32.06
8000	24.75	19.91	23.54
10000	14.96	6.83	11.77
OASPL	76.69	82.78	81.65
AWT	67.89	76.07	73.29
PNL	80.18	86.06	84.16
PNLT	82.41	87.71	86.72
SEL	80.61	87.00	- -
DURATION (SEC)	36.96	37.10	- -
REF SPD (KTS)	67.22	69.62	117.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	307.1	511.53	50.57
TEST SPD	61.17	57.81	101.64
REF SPD (KTS)	67.22	69.62	117.0

Table 11 (Rev 1)  
 HUGHES 500D HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	40.29	45.14	53.54
32	41.79	52.14	57.14
40	58.39	69.24	74.64
50	44.69	54.64	58.94
63	40.09	39.05	43.95
80	41.21	45.46	52.87
100	54.33	56.17	57.19
125	66.24	64.97	69.91
160	65.27	64.99	68.44
200	55.20	59.90	58.87
250	54.64	67.03	60.82
315	61.50	67.95	62.87
400	59.96	66.39	62.15
500	58.74	65.03	58.84
630	61.75	65.49	60.35
800	56.78	61.87	55.70
1000	52.85	59.05	52.98
1250	49.25	57.96	52.31
1600	47.95	54.42	49.83
2000	45.39	50.88	50.10
2500	41.93	48.00	48.88
3150	39.42	43.67	45.51
4000	36.22	38.14	41.44
5000	33.60	34.16	36.89
6300	28.42	27.44	30.15
8000	22.05	20.18	22.78
10000	11.64	8.78	11.12
OASPL	71.69	76.28	77.53
AWT	64.97	70.44	65.99
PNL	75.05	80.03	77.36
PNLT	76.38	80.66	78.54
SEL	77.97	82.21	76.69
DURATION (SEC)	31.86	34.27	22.17
REF SPD (KTS)	62.00	62.00	111.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	405.1	289.5	471.6
TEST SPD	57.0	62.0	100.0
REF SPD (KTS)	62.0	53.87	96.46

Table 12 (Rev 1)  
 SIKORSKY S-61 (CH3A) HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1978

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	54.59	57.12	59.15
32	68.09	65.72	63.75
40	66.49	72.82	70.95
50	56.89	61.22	58.95
63	50.79	58.43	60.96
80	47.80	59.74	59.17
100	67.02	70.84	64.78
125	62.23	75.65	71.29
160	64.04	78.84	64.10
200	63.86	76.35	63.82
250	64.09	68.38	67.75
315	69.02	76.87	70.87
400	67.47	69.90	69.42
500	67.42	69.12	71.16
630	67.29	66.35	71.73
800	66.48	63.99	66.61
1000	66.89	62.63	65.40
1250	64.83	62.48	64.22
1600	63.48	59.31	62.54
2000	62.68	56.24	62.11
2500	59.65	53.30	60.34
3150	56.75	49.30	55.69
4000	51.94	44.28	51.14
5000	47.37	40.58	46.25
6300	40.87	33.23	38.70
8000	32.10	24.03	29.22
10000	21.70	12.65	17.95
OASPL	78.36	84.48	80.44
AWT	74.76	75.75	76.00
PNL	85.20	87.82	86.37
PNLT	87.20	89.11	87.49
SEL	86.37	87.20	84.51
DURATION (SEC)	24.50	27.24	16.26
REF SPD (KTS)	73.21	73.59	129.60

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	417.06	389.02	461.55
TEST SPD	58.34	53.77	108.01
REF SPD (N <sub>2</sub> )	73.21	73.59	129.6

Table 13 (Rev 1)  
 SIKORSKY S-65 (CH53) HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1978

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	67.05	63.18	85.44
32	57.85	62.18	65.54
40	68.15	71.08	77.54
50	68.65	65.58	76.64
63	79.15	70.79	79.05
80	55.36	62.10	60.57
100	64.67	73.31	63.96
125	72.17	82.62	77.97
160	74.27	85.84	73.27
200	73.87	83.76	79.37
250	73.10	78.89	70.21
315	75.59	79.32	73.00
400	74.42	77.87	74.84
500	73.23	77.52	73.96
630	70.17	74.19	74.51
800	68.10	71.99	69.16
1000	67.93	71.10	68.41
1250	65.68	68.55	68.47
1600	63.66	67.10	65.72
2000	60.47	63.11	63.39
2500	57.54	59.19	60.30
3150	53.23	54.71	56.08
4000	47.22	48.84	49.92
5000	42.58	44.10	42.93
6300	34.64	37.15	33.88
8000	29.28	28.72	23.97
10000	16.41	16.61	13.06
OASPL	84.90	90.83	89.32
AWT	77.92	82.56	79.42
PNL	88.92	94.18	90.72
PNLT	91.78	95.34	92.46
SEL	88.67	92.10	88.58
DURATION (SEC)	24.66	21.75	18.03
REF SPD (KTS)	73.90	75.58	146.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	327.68	409.62	436.28
TEST SPD	85.76	80.09	148.43
REF SPD (KTS)	73.9	75.58	146.0

Table 14 (Rev 1)  
 SIKORSKY BLACKHAWK UH-60A (S70)  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1980

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	54.96	62.42	76.56
32	62.05	71.62	70.36
40	61.83	75.52	88.86
50	55.08	69.92	78.96
63	49.68	64.13	85.28
80	54.91	69.14	77.91
100	55.14	77.36	75.16
125	61.07	83.06	66.39
160	74.73	87.28	64.95
200	62.73	80.70	72.33
250	56.47	74.04	77.32
315	64.32	77.37	77.93
400	58.81	70.73	73.69
500	62.35	68.78	72.87
630	61.10	67.16	70.61
800	60.46	65.57	69.03
1000	57.82	62.89	64.80
1250	56.07	62.24	62.17
1600	55.72	60.16	60.04
2000	54.50	57.20	57.92
2500	53.92	56.32	53.31
3150	52.50	52.73	47.43
4000	46.63	47.03	40.04
5000	43.57	44.14	33.53
6300	40.69	42.70	20.69
8000	34.70	36.25	8.56
10000	23.60	25.79	0.00
OASPL	76.77	90.40	91.89
AWT	68.81	78.80	78.00
PNL	81.68	92.76	89.77
PNLT	83.60	93.66	90.91
SEL	81.04	89.82	88.61
DURATION (SEC)	26.24	26.53	19.26
REF SPD (KTS)	74.00	69.00	150.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT  
 TEST SPD  
 P(CF SPD(Nx))

397.14  
 80.38  
 80.0

562.2  
 143.43  
 157.0

Table 15 (Rev 1)  
 SIKORSKY S-76 SPIRIT HELICOPTER  
 One-Third Octave Noise Data  
 PNLTmax Spectra - Corrected \*

USDOT  
 RSPA/TSC  
 7/17/90

Centerline Measuring Site - June 1983

Third-Octave Band Center Frequency Hz	Takeoff (Sound Pressure Level - dB re: 20 microPascal)	Approach	Flyover
25	58.88	67.51	85.94
32	55.08	61.61	63.24
40	57.68	68.11	73.74
50	44.98	57.81	68.64
63	44.38	57.42	59.35
80	44.49	67.23	56.36
100	64.92	73.84	60.66
125	56.32	76.95	67.97
160	57.54	80.96	64.77
200	50.57	77.18	61.18
250	58.60	74.32	66.02
315	57.54	74.84	61.22
400	59.40	73.29	64.46
500	58.56	68.94	62.89
630	59.04	67.31	63.95
800	62.15	63.60	64.51
1000	61.18	60.20	65.07
1250	60.05	57.42	63.75
1600	58.58	54.70	61.36
2000	57.26	52.58	59.34
2500	56.31	49.82	57.56
3150	52.78	45.11	52.77
4000	48.73	41.29	48.31
5000	46.01	38.52	44.38
6300	38.22	31.70	37.49
8000	29.24	23.08	26.37
10000	16.75	10.27	12.62
CASPL	71.94	85.65	86.65
AWT	68.97	76.08	72.31
PNL	79.80	88.07	82.78
PNLT	82.22	88.72	83.59
SEL	80.54	87.82	81.96
DURATION (SEC)	28.04	28.27	19.22
REF SPD (KTS)	74.00	74.00	130.00

\* Data adjusted to 1000 ft. reference altitude  
 using SAE reference atmosphere

TEST ALT	375.0	362.2	446.9
TEST SPD	78.0	75.0	130.0
REF SPD (NIX)	74.0	74.0	130.0



11/24/0

Bell  
206 L

<u>Taxicoff</u>	<u>Approach</u>	<u>Flyover</u>
48.96	60.09	53.57
46.65	59.28	48.97
54.55	54.97	58.57
48.12	60.35	57.28
53.91	68.15	59.58
71.59	71.82	73.19
58.97	72.29	64.99
61.53	70.75	63.89
60.80	75.51	66.10
56.94	69.75	64.31
54.87	69.58	59.42
54.29	64.68	61.14
52.29	59.66	56.55
52.35	54.22	55.78
51.09	51.03	54.80
49.75	49.06	53.24
48.04	48.06	51.19
46.29	45.23	49.11
45.44	42.14	48.05
42.42	38.60	44.40
38.35	35.54	39.72
33.20	31.01	36.40
27.13	24.29	29.75
17.74	15.12	19.65