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19 March 2012

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Subject: **VAPSHCS Seattle**
Correction of Seismic Deficiencies B100 NT and CLC
VA Project No: 663-406
Construction Noise and Vibration Analysis
CSA Project No. 11-0459

Dear Robert:

We visited the site on 6 March 2012 to measure noise and vibration from various mock-up construction activities. The purpose of the testing was to simulate the expected environment during the seismic upgrade phase of B100 NT and CLC. We were able to compare the results to applicable VA and industry standards and provide recommendations for a "radius of impact" as the construction phase begins.

While on-site, we were able to measure the use of an impact wrench and demolition hammer on the 1st Floor West interstitial level and the use of a core drill on the 7th Floor West. This report summarizes the results of our measurements and presents our initial recommendations.

CRITERIA

VA Master Construction Specifications (PG-18-1) Section 01 57 19, Temporary Environmental Controls, includes the following noise limitations based on repetitive impact noise on the facility:

Time Duration of Impact Noise	A-Weighted Sound Level ¹
More than 12 minutes in any hour	70
Less than 12 minutes of any hour	75
Less than three minutes of any hour	80
Less than 30 seconds of any hour	85

We expect that the activities measured during our program would occur for more than 12

¹ A-Weighted Sound Level – A term for the A-Weighted sound pressure level. The sound level is obtained by use of a standard sound level meter and is expressed in decibels. Sometimes the unit of sound level is written as dB(A).

minutes in an hour; therefore, 70 dBA would be the applicable criteria.

For your reference, we have also provided ambient noise measurement results in the appendix to compare to the predicted noise levels. A significant or easily noticeable increase in noise levels is typically defined as five dB, and a perceived doubling in loudness corresponds to an increase in 10 dB.

The VA specifications do not appear to provide any limitations for vibration. We have used the criteria included in ANSI S2.71-1983 (R2006): Guide to the Evaluation of Human Exposure to Vibration in Buildings. Table 1 of this standard provides acceleration/frequency base-response curve values at the one-third octave bands. Based on a multiplier of 1.0 (from Table A.1) for use in non-critical hospital areas, we have developed the following frequency-based dB criteria for vibration:

Third-Octave Frequency Band (Hz)	Vibration (in dBVib re: 1 μ m/s ²)
1	71.1
1.25	71.1
1.6	71.1
2	71.1
2.5	71.6
3.15	72.0
4	72.5
5	93.1
6.3	73.4
8	74.0
10	76.0
12.5	77.8
16	80.0
20	82.3
25	84.1
31.5	86.0
40	88.0
50	89.8
63	91.8
80	94.0

Note that these levels of vibration are intended for occupant comfort and do not relate to vibration being feelable. Vibration-sensitive equipment or activity could require more sensitive limitations of vibration and would need to be identified by the VA facilities staff.

MEASUREMENT RESULTS

The attached appendix includes a full spectral report of our noise and vibration

measurement results. The following table summarizes the A-weighted noise levels of the various types of activities at the selected measurement locations². Data with bold italics exceed the 70 dBA criteria. The impact wrench was used on steel bolts at the intersection of steel framing beneath Patient Room 2B-123; the demolition hammer was used on concrete at the building perimeter beneath Patient 2B-121; and the core drill was used on concrete in Toilet 7B-111b.

In the below tables, we have provided the measured ambient (with no construction activity) and the expected ambient for an occupied area. The expected ambient noise levels are a combination of what we measured on-site and what is considered typical for the type of space when occupied.

Activity: Impact Wrench (1st Floor West Interstitial)			
Location Description	Measured Sound Pressure Level (dBA)	Measured Ambient SPL (dBA)	Expected Occupied Ambient Average SPL (dBA)
Directly above, in Patient 2B-123	<i>88 to 89</i>	31	35 to 45
50-ft. offset on floor above, in Patient 2B-125	<i>75</i>	35	35 to 45
100-ft. offset on floor above, in Patient 2B-113b	61	37	35 to 45
Two floors directly above, in Shared Office 3B-124	56	32	30 to 50

Activity: Demolition Hammer (1st Floor West Interstitial)			
Location Description	Measured Sound Pressure Level (dBA)	Measured Ambient SPL (dBA)	Expected Occupied Ambient Average SPL (dBA)
Directly above, in Patient 2B-121	<i>71</i>	39	35 to 45
20-ft. offset on floor above, in Patient 2B-123	<i>67 to 68</i>	31	35 to 45
50-ft. offset on floor above, in Patient 2B-125	58	35	35 to 45
100-ft. offset on floor above, in Patient 2B-113b	51	37	35 to 45
Two floors directly above, in Shared Office 3B-124	53	32	30 to 50

² Locations are based on the revised office layouts for the 2nd Floor.

Activity: Core Drill (7th Floor West Toilet 7B-111b)			
Location Description	Measured Sound Pressure Level (dBA)	Measured Ambient SPL (dBA)	Expected Occupied Ambient Average SPL (dBA)
15-ft. offset, in Conf. Room 7B-110	55 to 59	36	35 to 40
20-ft. offset, in Work Room 7B-109	56	49	45 to 50
Directly below, outside Patient 6B-113	52	52	45 to 60
20-ft. offset on floor below, in Lounge 6B-110	42	33	30 to 45
Two floors directly below, in Neurology Room	36	34	30 to 40

We expect that the noise from each activity would propagate similarly upwards (as measured) and downwards to lower floors. For example, for work being done at the interstitial level above 2nd Floor West, we would expect the noise levels at 1st Floor West (1-1/2 floors below) to be similar to those measured in 3rd Floor West during our site visit, 1-1/2 floors above the Phase Work Area.

For the vibration measurements, we measured each activity for approximately one minute at each of the locations we conducted noise measurements. The plots of our measurements at each location are graphed in the appendix. In only one location do the results exceed the frequency-based criteria: the demolition hammer when measured directly above in Patient 2B-121. At a horizontal distance of 20 feet from our simultaneous measurement, the vibration from the demolition hammer no longer exceeded the criteria.

RECOMMENDATIONS

The results of our measurements indicate that the areas near the construction activity will exceed VA noise criteria. Therefore, we recommend that the VA incorporate a “radius of impact”, using the phasing plan developed with Stantec to keep impacted areas unoccupied. Our analysis indicates that all relocations done to meet the noise criteria will also meet the vibration criteria for comfort with normal sensitivity.

To meet the VA limitations for noise due to construction equipment, we recommend that the “radius of impact” be defined as the following distances of unoccupied space based on each Phase Work Area:

Construction Activity	Impacted Floor	Horizontal Distance
Impact Wrench	Directly Above	Approximately 75 feet
Demolition Hammer	Directly Above	Approximately 25 feet
Core Drill	Same Floor	Approximately 15 feet

These recommendations account for multiple workers doing similar activities together, with the noise levels being up to 3 dBA higher and the radius of impact defined at each

work location. Other activities that require similar structural work impact on the concrete or steel structure can be expected to generate similar noise levels.

We understand that each Construction Phase Work Area will occupy one NT wing (east or west), plus approximately one half of the offices on the north wall of the Central Core. The Phase Work Area includes the nursing floor and the interstitial floor directly above it. Construction activity in each Phase Work Area is expected to be generally simultaneous throughout the area for approximately eight weeks. As such, we estimate that the entire floor above the Phase Work Area will be within the 75-foot noise impact radius for the duration of the phase.

Certain areas, such as the patient sleep study rooms on Level 5, might require more strict noise and/or vibration criteria based on their sensitivities. If the goal is to reduce the construction noise so as not to add to the noise level above the ambient, we could provide recommendations for a secondary “critical radius”.

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This concludes our analysis for the noise and vibration measurements of mock-up construction activity in the Seattle VA Hospital. Please do not hesitate to call with any questions.

Sincerely,

CHARLES M. SALTER ASSOCIATES, INC.



Peter K. Holst, P.E., LEEDAP
Principal Consultant



Eric L. Broadhurst, P.E.
Senior Vice President

Appendix, Page 1
NOISE MEASUREMENTS (dB)

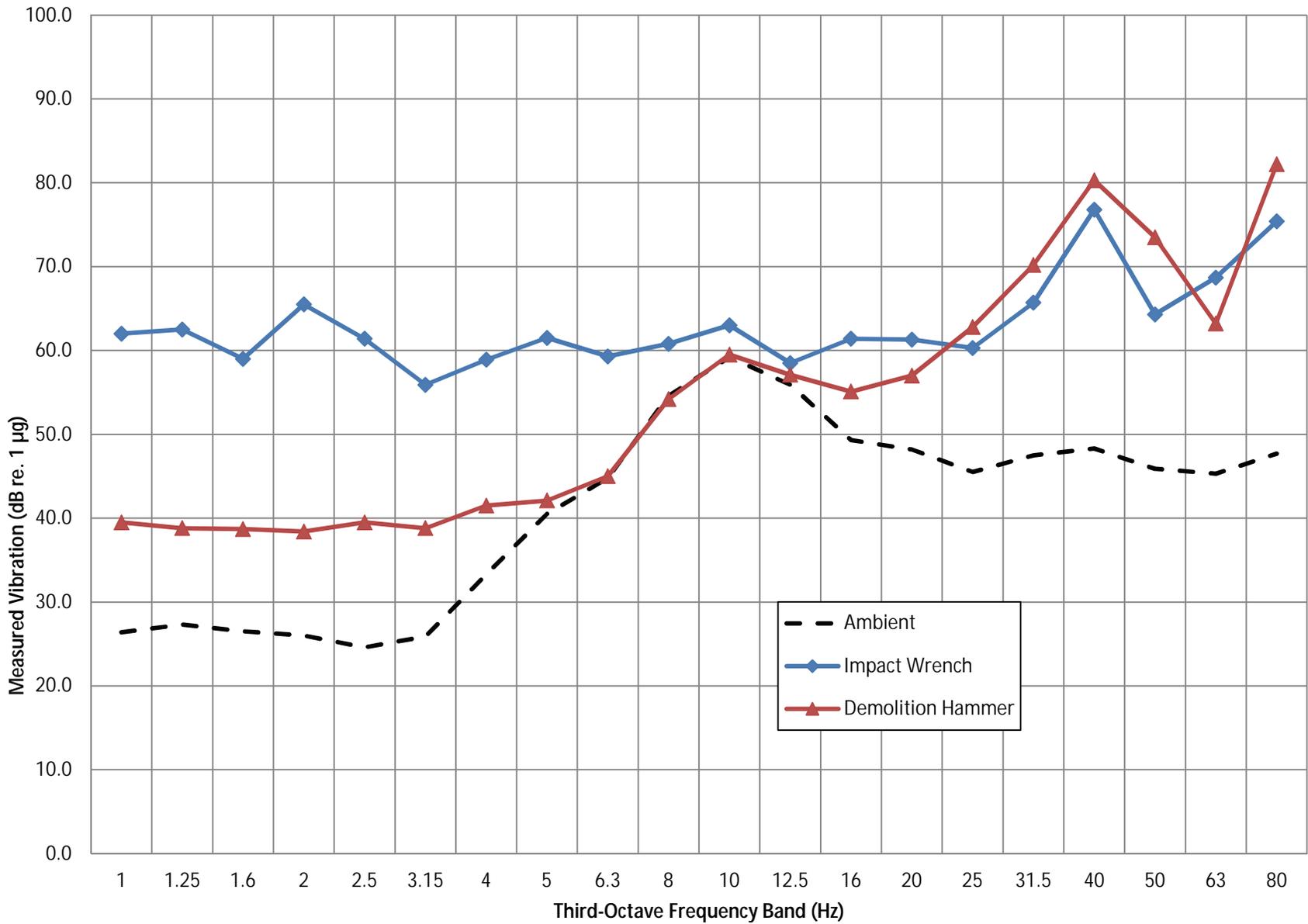
Location	Test	Comments	Third-Octave Frequency Band (Hz)																								dBA	dBL
			25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k		
2nd Flr W.																												
Location 1: Patient 2B-127	Ambient		41.1	38.3	38.5	37.3	36.8	29.6	27.2	27.9	29.7	26.2	24.4	25.7	21.6	21.8	22.2	25.6	24.8	15.6	12	10.5	10.6	9.6	8.5	7.9	30.7	
Location 2: Patient 2B-125	Ambient		44.1	49.3	45.8	42.9	38.3	36.9	34.7	31.5	35.6	34.5	28.8	26.8	25.4	25.0	25.1	29.5	29.4	23.7	16.0	12.8	12.7	11.4	9.6	9.0	35.0	56.3
Location 3: Patient 2B-121	Ambient		47.3	45.6	49.1	43.7	42.0	43.2	40.8	40.6	41.8	39.0	37.4	36.7	31.7	30.1	30.2	29.6	27.5	25.5	22.0	20.6	18.2	15.3	16.5	14.1	38.5	57.8
Location 4: Patient 2B114B	Ambient		43.2	40.4	40.7	44.7	43.9	35.0	32.4	36.3	37.1	37.0	29.5	31.0	28.8	26.2	26.9	31.4	31.4	22.8	17.6	15.1	13.8	12.5	12.2	9.8	36.9	57.5
Location 5: Shared Office 3B-124	Ambient		38.5	42.4	38.8	33.0	25.8	29.3	31.4	31.1	29.0	25.8	24.3	26.3	27.2	26.2	25.6	21.4	19.7	20.9	19.4	17.3	15.7	14.4	13.0	10.6	31.6	49.3
Location 1: Patient 2B-127	Impact Wrench	Simultaneous with Locn 2	42.3	41.0	50.5	44.0	46.9	48.1	53.8	55.8	61.8	73.3	70.1	70.5	71.4	78.1	77.3	80.7	81.1	78.9	80.0	78.2	78.7	75.3	70.1	65.5	88.8	88.9
Location 2: Patient 2B-125	Impact Wrench	Simultaneous with Locn 1	44.4	51.5	66.1	47.3	37.3	38.1	41.7	44.1	49.5	62.0	60.2	63.0	65.1	65.5	64.6	67.0	67.9	64.7	63.0	63.5	64.2	59.8	57.2	53.8	74.8	76.2
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 2	45.5	45.1	64.9	59.0	46.5	64.2	59.4	66.0	61.2	60.3	61.9	64.5	68.2	62.1	60.3	56.9	55.9	49.2	48.8	40.9	39.5	34.2	32.7	28.8	67.6	74.8
Location 2: Patient 2B-125	Demolition Hammer	Simultaneous with Locn 1	48.2	53.1	53.4	47.5	37.8	51.8	47.3	55.9	59.2	61.1	57.4	55.5	54.1	51.6	49.5	46.6	42.8	34.7	32.0	25.1	23.2	19.2	18.5	17.9	57.8	67.0
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 3	54.2	51.0	66.7	61.0	54.4	65.8	60.8	65.7	58.6	63.2	63.2	65.6	66.8	62.6	61.9	58.7	59.7	52.0	51.0	44.0	45.3	41.5	40.6	40.8	68.4	75.9
Location 3: Patient 2B-121	Demolition Hammer	Simultaneous with Locn 1	56.8	63.4	70.1	64.4	54.6	63.0	59.5	69.3	73.7	70.2	63.7	70.4	68.2	65.0	63.5	60.8	62.4	53.2	51.7	45.7	43.8	40.2	38.8	35.5	71.4	79.6
Location 1: Patient 2B-127	Impact Wrench	Simultaneous with Locn 4	44.8	42.2	48.5	44.2	47.5	47.3	52.8	55.2	62.4	75.0	69.5	67.5	68.0	72.5	73.1	76.5	77.6	76.9	79.6	78.7	79.7	77.8	71.4	68.3	87.9	87.6
Location 4: Patient 2B114B	Impact Wrench	Simultaneous with Locn 1	42.9	43.9	54.5	44.3	44.0	36.3	35.1	42.4	43.4	49.1	50.1	53.3	55.6	55.1	51.7	52.1	50.0	51.4	51.5	46.6	46.5	39.8	34.2	28.8	60.6	64.4
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 4	55.1	49.2	68.3	62.4	49.6	65.9	61.2	69.1	62.8	64.1	63.6	65.5	64.4	61.6	59.7	53.6	53.7	46.8	46.4	39.2	36.1	31.3	28.5	22.9	66.6	76.0
Location 4: Patient 2B114B	Demolition Hammer	Simultaneous with Locn 1	42.5	42.3	47.5	45.0	44.8	44.4	40.1	53.0	46.3	49.3	53.3	51.8	49.9	42.0	38.2	33.6	32.5	24.8	20.7	16.9	14.8	12.6	12.5	9.9	51.3	61.8
Location 1: Patient 2B-127	Impact Wrench	Simultaneous with Locn 5	44.0	42.5	49.8	46.0	47.8	49.8	54.3	58.0	61.7	72.4	69.8	67.7	68.2	72.8	72.6	76.2	77.5	77.8	79.5	78.6	80.5	78.8	72.4	68.9	88.3	87.8
Location 5: Shared Office 3B-124	Impact Wrench	Simultaneous with Locn 1	50.7	52.9	60.6	46.5	39.3	42.6	43.0	46.5	41.9	49.2	47.6	46.2	47.5	49.1	49.3	47.2	48.0	46.4	43.8	42.1	41.7	36.3	31.3	28.8	55.7	64.2
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 5	48.7	46.3	71.3	65.4	52.7	65.8	60.9	62.6	58.2	62.1	63.1	63.9	64.2	57.9	57.4	53.9	55.6	49.2	48.9	41.5	37.3	32.8	30.6	27.2	65.3	75.5
Location 5: Shared Office 3B-124	Demolition Hammer	Simultaneous with Locn 1	50.1	53.5	59.7	56.2	43.2	49.8	46.9	54.4	51.0	53.7	52.3	49.2	47.9	45.6	47.2	45.0	41.4	34.8	29.9	27.1	25.6	24.1	22.3	20.2	53.0	65.3
Location 7: Work Room 7B-109	Ambient	refrigerator noise	53.3	49.1	44.2	39.9	33.3	37.2	39.8	38.1	43.7	45.1	45.5	44.0	45.7	43.7	42.2	39.7	36.7	35.3	37.1	34.2	31.1	32.5	29.6	25.7	49.1	68.5
Location 6: Conference Room 7B-110	Ambient		64.6	55.3	50.7	46.8	42.5	38.1	35.1	34.1	33.3	33.2	30.7	32.1	32.4	28.5	26.0	26.6	24.2	23.2	23.7	21.8	21.3	19.3	19.1	16.9	35.8	68.4
Location 7: Work Room 7B-109	Core Drill	Simultaneous with Locn 6	53.0	49.8	44.5	41.4	37.6	40.0	46.3	54.8	58.2	52.9	59.5	51.2	53.5	49.4	45.2	45.3	41.5	39.2	40.3	37.7	33.9	30.7	29.0	25.7	56.2	68.8
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 7	64.5	56.0	51.4	50.7	48.7	47.9	50.2	62.7	60.6	59.6	62.1	55.2	52.2	52.2	47.6	46.2	42.7	39.9	37.0	36.4	33.3	30.6	28.6	24.3	58.6	71.3
Location 8: Nurse Station outside Patient 6B-113	Ambient		57.6	52.5	51.8	50.3	48.9	49.4	45.1	41.1	44.4	42.2	43.0	46.7	46.2	46.0	46.2	41.7	41.3	40.0	39.4	39.5	38.1	38.3	36.1	32.6	52.1	67.0
Location 8: Nurse Station outside Patient 6B-113	Core Drill	Simultaneous with Locn 6	57.7	55.0	52.7	50.5	49.9	50.1	47.8	46.0	46.5	46.5	48.1	45.2	45.9	46.8	45.0	42.7	40.7	38.3	39.5	37.8	37.0	35.1	32.0	29.7	51.7	69.6
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 8	64.7	56.4	51.7	49.9	53.1	53.7	55.3	55.9	56.3	57.2	58.2	51.1	48.3	46.9	44.3	43.2	39.2	37.1	34.0	33.1	31.1	30.4	28.5	24.4	54.7	69.9
Location 9: Lounge 6B-110	Ambient		54.1	47.5	43.8	40.3	31	41.7	42.2	34.3	33	30.5	29.7	30.1	29.1	25.3	22.7	21.1	20.6	18.5	18.3	20.3	18.1	13.7	13.1	11.2	33.3	
Location 9: Lounge 6B-110	Core Drill	Simultaneous with Locn 6	51.6	46.2	40.5	40.0	34.0	39.4	47.6	38.0	41.0	40.4	44.6	39.6	37.7	34.2	31.7	29.1	28.0	25.3	23.9	22.1	20.4	18.4	18.2	16.7	41.8	68.1
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 9	64.3	56.2	52.1	52.7	55.0	56.1	57.2	58.0	58.0	59.0	59.5	53.6	49.9	48.6	46.6	45.9	44.2	41.8	39.3	38.9	36.0	34.1	31.7	27.3	56.9	70.6
Location 10, 5th Floor Neurology Room	Ambient	Next to sleep therapy rooms	53.2	46.1	55.1	46.2	40.7	38.5	34.5	35.4	37.9	35.0	33.5	29.4	27.0	25.8	24.4	23.9	21.1	20.9	19.7	19.1	17.5	14.5	15.1	15.3	34.4	63.3
Location 10, 5th Floor Neurology Room	Core Drill	Simultaneous with Locn 6	53.0	44.1	55.5	45.7	40.2	38.8	35.0	36.1	38.6	36.5	36.6	31.8	29.1	29.5	27.7	25.0	21.3	19.9	19.6	17.3	15.9	13.0	15.0	14.8	36.1	63.4
Location 6: Conference Room 7B-110		Simultaneous with Locn 10	63.8	55.8	52.2	49.0	48.8	49.4	49.2	56.6	56.7	57.1	59.5	53.8	48.9	49.4	46.8	46.2	43.6	41.4	38.0	37.1	34.2	31.8	29.5	25.0	56.5	69.9
3rd Flr W., Closed Nurse Station	Ambient		48.1	54.5	45.3	42.6	42.8	36.7	35.2	35.6	37.9	38.5	37.4	38.4	41.4	39.4	38.0	35.9	32.8	31.5	30.4	28.6	26.2	24.5	23.1	21.3	44.2	63.5
3rd Flr E, Open Nurse Station	Ambient		52.2	60.7	45.1	45.6	52.9	44.2	40.2	43.8	47.7	51.3	49.8	49.2	51.4	50.3	54.5	49.5	46.9	46.0	44.0	42.8	41.4	39.5	38.0	35.3	57.7	67.8
1st Flr, Spinal Injury, Open Nurse Station	Ambient		49.3	48.3	47.0	54.2	59.6	44.9	42.5	46.0	47.6	46.6	51.1	50.9	47.3	49.5	46.9	46.8	45.3	45.0	42.4	40.1	37.5	36.6	34.1	31.3	54.9	67.7

Appendix, Page 2:

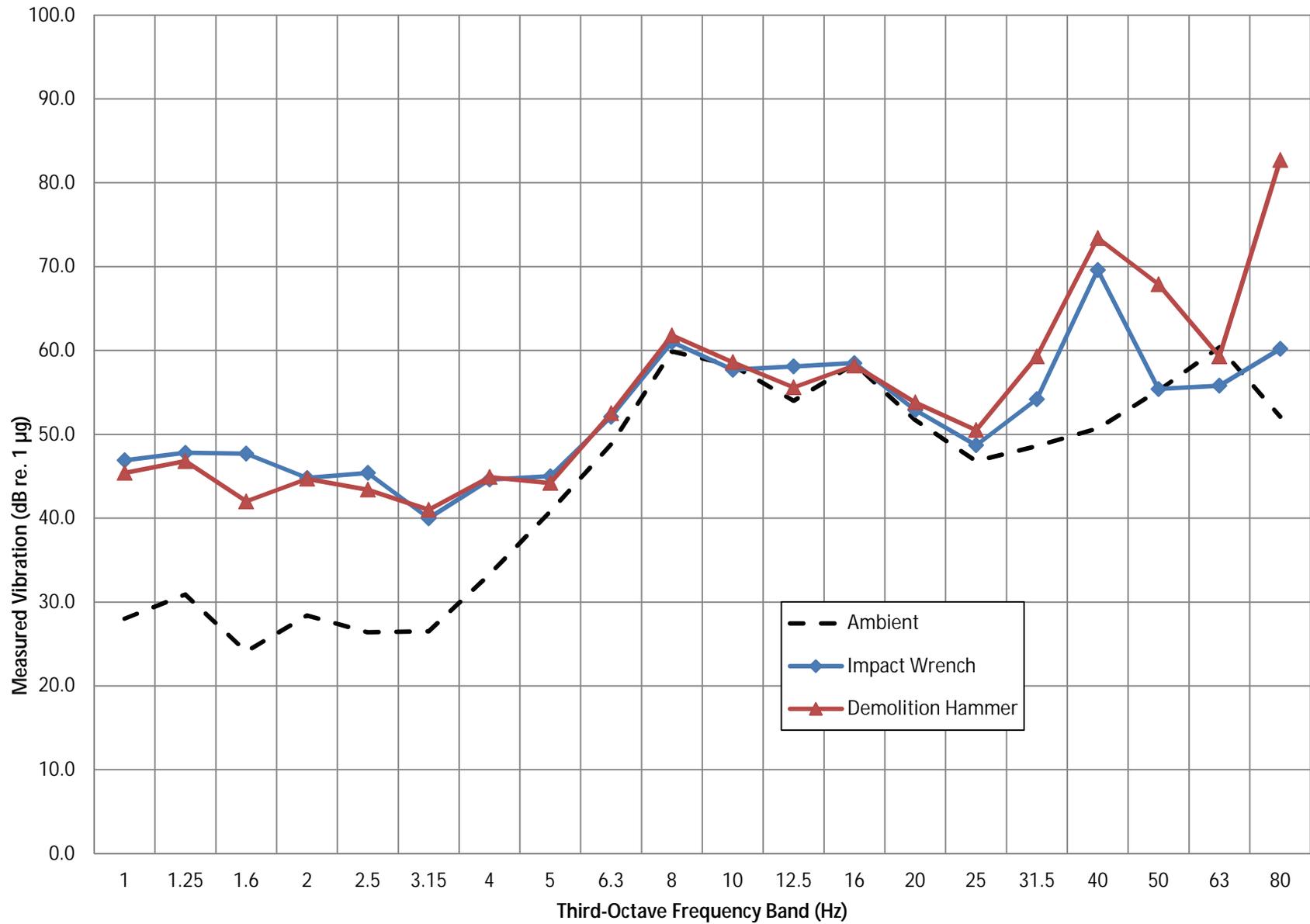
VIBRATION MEASUREMENTS (dB re 1 micro-g)

Location	Source	Comments	Third-Octave Frequency Band (Hz)																			
			1	1.25	1.6	2	2.5	3.15	4	5	6.3	8	10	12.5	16	20	25	31.5	40	50	63	80
Location 1: Patient 2B-127	Ambient		26.4	27.3	26.5	26.0	24.6	25.9	33.3	40.5	44.8	54.6	59.2	55.9	49.3	48.2	45.5	47.5	48.3	45.9	45.3	47.7
Location 2: Patient 2B-125	Ambient		28.0	30.9	24.1	28.4	26.4	26.5	33.3	40.8	48.8	59.9	58.2	54.0	58.4	51.7	46.8	48.6	50.7	55.2	60.4	52.1
Location 3: Patient 2B-121	Ambient	3.28 pC/m/s2, 1000 mV/unit out	25.8	26.6	11.4	23.1	24.6	27.0	29.3	33.2	39.3	46.5	48.2	48.1	51.3	47.0	43.8	47.8	49.5	46.0	52.5	40.6
Location 4: Patient 2B114B	Ambient	3.28 pC/m/s2, 1000 mV/unit out	27.5	25.1	25.0	25.1	27.1	27.0	33.3	37.3	45.6	55.3	56.5	52.9	54.5	50.6	48.6	47.6	49.3	50.9	56.4	49.3
Location 5: Shared Office 3B-124	Ambient	3.28 pC/m/s2, 1000mV/unit out	28.9	29.1	22.1	24.9	26.2	24.9	33.4	39.9	47.4	57.6	58.6	52.4	56.1	46.7	43.6	46.2	47.0	46.0	56.2	48.0
Location 1: Patient 2B-127	Impact Wrench	Simultaneous with Locn 2	62.0	62.5	59.0	65.5	61.4	55.9	58.9	61.5	59.3	60.8	63.0	58.5	61.4	61.3	60.3	65.7	76.8	64.3	68.7	75.4
Location 2: Patient 2B-125	Impact Wrench	Simultaneous with Locn 1	46.9	47.8	47.7	44.8	45.4	40.0	44.6	45.0	52.1	61.0	57.7	58.1	58.5	52.9	48.7	54.2	69.6	55.4	55.8	60.2
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 2	39.5	38.8	38.7	38.4	39.5	38.8	41.5	42.1	45.0	54.2	59.5	57.1	55.1	57.0	62.8	70.2	80.3	73.5	63.2	82.2
Location 2: Patient 2B-125	Demolition Hammer	Simultaneous with Locn 1	45.4	46.8	42.0	44.7	43.4	41.0	44.9	44.2	52.5	61.8	58.6	55.6	58.2	53.8	50.5	59.3	73.4	67.9	59.3	82.7
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 3	42.4	43.8	38.7	39.5	42.0	32.0	38.7	41.2	45.7	55.6	61.2	59.7	60.5	65.9	71.1	75.9	81.7	75.1	69.5	90.4
Location 3: Patient 2B-121	Demolition Hammer	Simultaneous with Locn 1	63.4	64.7	55.4	64.6	61.9	61.9	64.8	64.9	61.9	64.9	61.9	62.0	64.4	67.6	76.5	84.5	89.5	84.3	82.4	94.2
Location 1: Patient 2B-127	Impact Wrench	Simultaneous with Locn 4	42.4	43.8	66.5	62.7	64.4	47.7	64.1	59.7	58.7	60.1	64.4	62.7	60.9	61.2	59.1	63.4	75.9	64.0	68.7	72.9
Location 4: Patient 2B114B	Impact Wrench	Simultaneous with Locn 1	28.0	29.5	30.9	33.9	36.3	39.8	40.4	40.8	48.1	56.7	57.7	54.1	54.4	51.9	50.8	49.6	58.9	51.1	56.3	53.0
Location 1: Patient 2B-127	Demolition Hammer	simultaneous with Locn 4	51.8	58.5	49.4	45.9	48.3	37.9	42.0	43.4	47.1	56.5	62.3	65.1	59.7	63.0	71.0	74.3	83.0	76.6	70.8	92.3
Location 4: Patient 2B114B	Demolition Hammer	Simultaneous with Locn 1	27.4	24.0	25.0	27.4	23.9	24.0	33.2	37.8	46.9	57.7	57.4	54.1	56.1	51.3	49.7	48.9	54.0	52.6	57.6	62.9
Location 1: Patient 2B-127	Impact Wrench	Simultaneous with Locn 5	62.4	58.7	56.6	59.3	59.0	58.9	58.7	60.0	35.4	61.6	63.0	55.5	60.5	61.8	59.3	64.3	74.8	65.1	69.5	78.4
Location 5: Shared Office 3B-124	Impact Wrench	Simultaneous with Locn 1	44.7	41.9	42.0	44.9	41.9	42.0	43.6	44.8	50.0	58.1	62.7	55.1	56.8	49.7	49.0	51.7	66.1	54.8	63.5	67.2
Location 1: Patient 2B-127	Demolition Hammer	Simultaneous with Locn 5	45.8	41.6	27.5	38.7	41.5	6.0	41.8	42.7	44.9	54.8	59.1	56.3	56.8	63.1	67.9	69.5	86.9	80.7	68.2	88.7
Location 5: Shared Office 3B-124	Demolition Hammer	Simultaneous with Locn 1	44.9	41.9	42.0	45.0	45.3	44.0	43.7	45.9	49.4	58.6	61.2	54.4	57.8	51.9	57.7	56.5	70.8	65.5	63.7	80.2
Location 7: Work Room 7B-109	Ambient		28.0	24.9	19.6	21.9	23.4	31.5	48.6	50.3	53.0	63.5	56.2	55.7	64.8	58.4	54.9	55.4	52.0	54.3	55.1	56.4
Location 6: Conference Room 7B-110	Ambient		44.9	44.6	41.0	41.7	44.9	46.0	47.7	51.7	54.3	64.7	61.1	59.5	62.3	60.4	62.8	58.7	58.5	58.6	59.7	65.7
Location 7: Work Room 7B-109	Core Drill	Simultaneous with Locn 6	53.7	53.6	40.5	37.9	29.4	32.9	49.1	49.6	52.1	62.9	56.2	55.6	64.5	58.4	55.3	55.4	51.9	54.3	57.0	58.4
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 7	44.9	41.9	41.0	41.9	41.9	42.8	50.0	51.4	55.5	64.7	61.6	62.6	64.4	61.9	63.0	62.6	67.0	68.6	71.9	81.8
Location 8: Nurse Station outside Patient 6B-113	Ambient	3.19 pC/m/s2, 1000 mV/unit out	31.8	27.2	25.1	24.9	25.9	32.3	51.6	51.6	55.1	65.8	59.8	57.7	61.8	56.8	53.6	51.6	51.4	53.3	54.9	55.6
Location 8: Nurse Station outside Patient 6B-113	Core Drill	Simultaneous with Locn 6	27.6	26.4	28.3	25.6	29.9	37.2	52.0	51.9	55.5	65.7	59.6	57.6	62.2	57.6	55.7	56.5	57.8	61.7	67.0	65.0
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 8	47.0	45.6	12.1	41.1	44.1	30.3	50.5	51.6	53.8	64.7	60.7	59.5	64.9	65.0	64.8	62.2	65.0	66.8	73.5	85.9
Location 9: Lounge 6B-110	Ambient		22.4	26.1	35.2	27.6	30.4	40.0	52.2	52.7	57.0	70.6	61.7	58.4	66.8	57.8	58.2	59.1	56.4	58.1	55.8	60.9
Location 9: Lounge 6B-110	Core Drill	Simultaneous with Locn 6	25.4	27.2	26.7	29.5	33.1	36.2	50.7	51.1	54.9	70.7	61.2	57.8	65.8	57.9	55.8	56.9	56.8	59.1	64.2	63.4
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 9	46.9	41.9	12.1	42.4	42.8	42.5	49.5	50.7	54.6	64.5	60.7	59.8	64.1	61.8	63.1	62.1	68.0	71.2	74.5	87.6
Location 10, 5th Floor Neurology Room	Ambient	Next to sleep therapy rooms	47.5	34.6	34.1	35.3	35.1	36.8	45.3	49.1	54.8	62.9	61.0	60.9	67.8	60.2	58.8	68.5	65.6	60.8	58.2	67.2
Location 10, 5th Floor Neurology Room	Core Drill	Simultaneous with Locn 6	35.7	33.9	34.0	34.4	36.9	38.2	46.9	48.4	53.4	62.7	60.1	57.5	66.5	58.8	58.8	68.2	66.5	61.4	58.1	67.0
Location 6: Conference Room 7B-110	Core Drill	Simultaneous with Locn 10	40.3	45.5	36.5	43.3	43.4	41.3	49.8	52.6	54.0	64.7	61.5	60.7	63.6	61.9	63.3	62.1	66.0	66.6	68.8	81.6
		Criteria	71.1	71.1	71.1	71.1	71.6	72.0	72.5	73.1	73.4	74.0	76.0	77.8	80.0	82.3	84.1	86.0	88.0	89.8	91.8	94

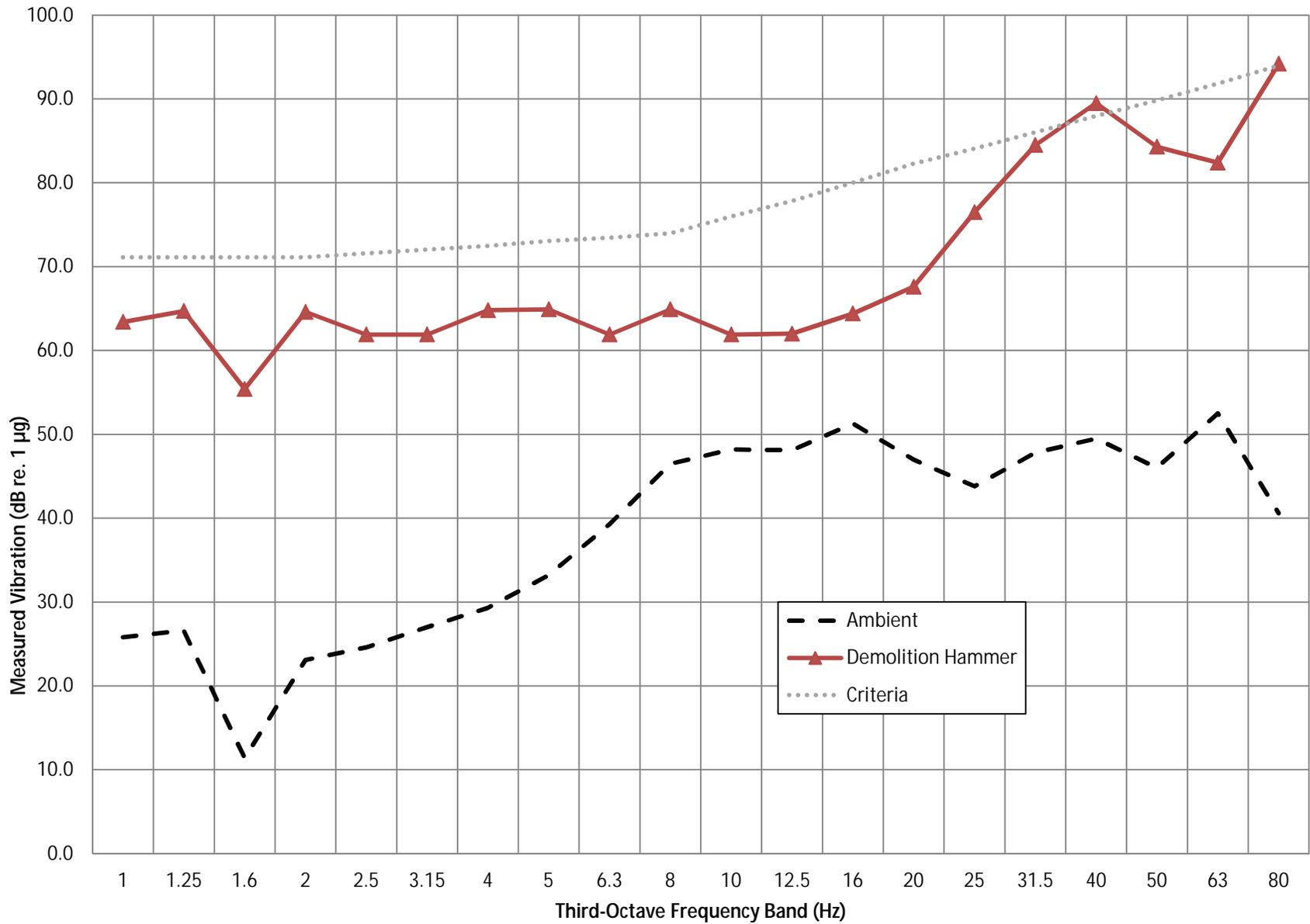
Location 1: Patient 2B-123



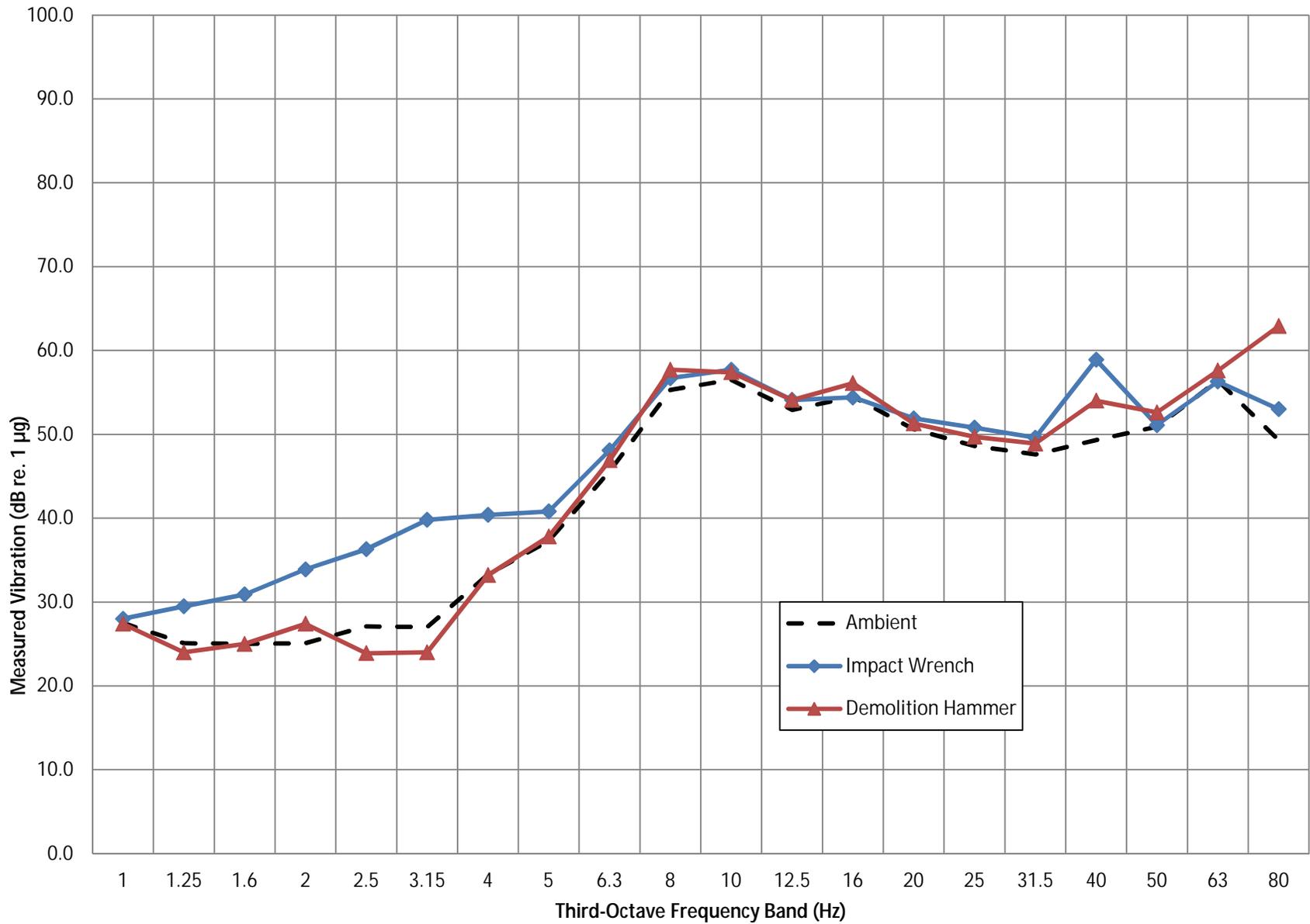
Location 2: Patient 2B-125



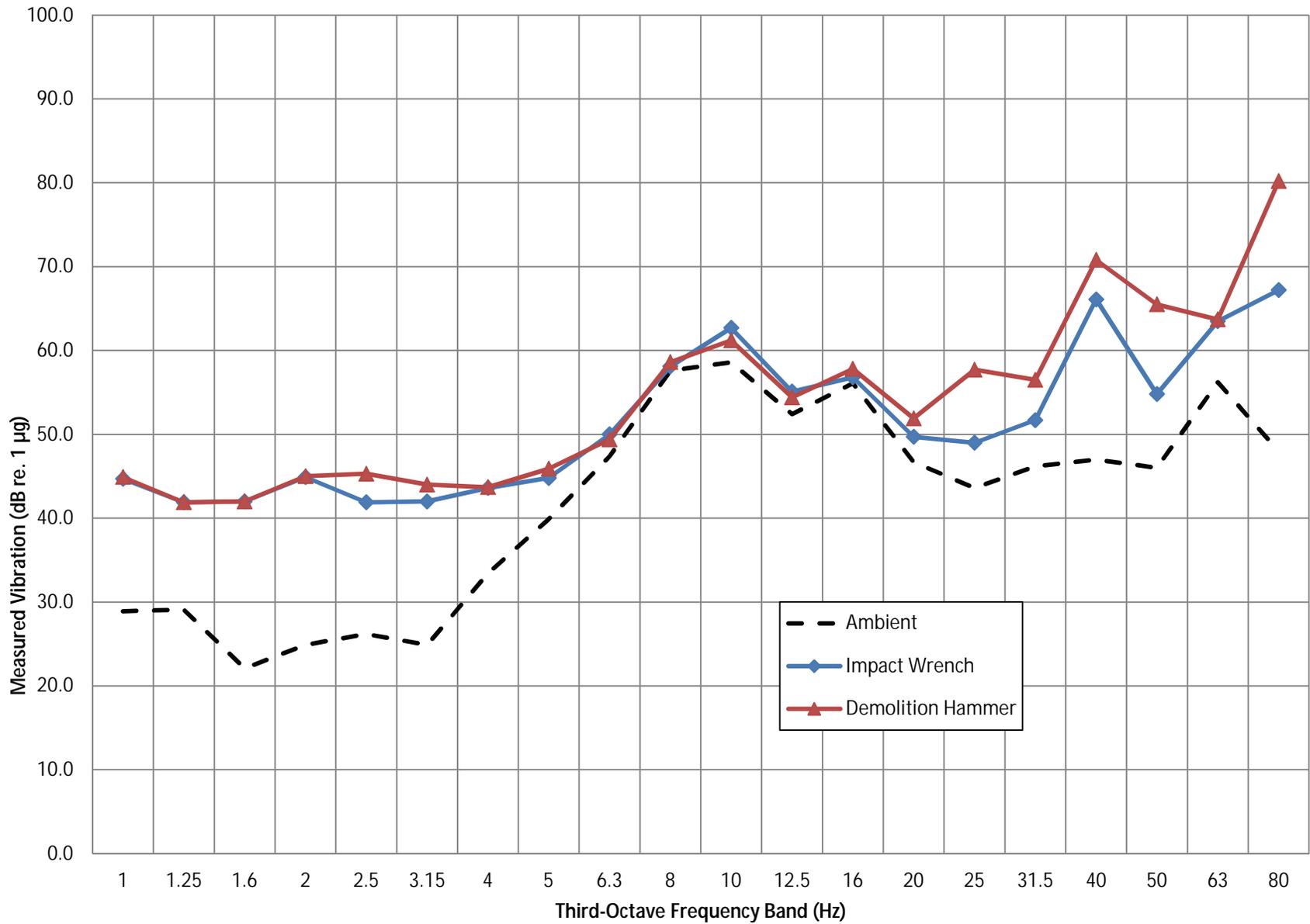
Location 3: Patient 2B-121



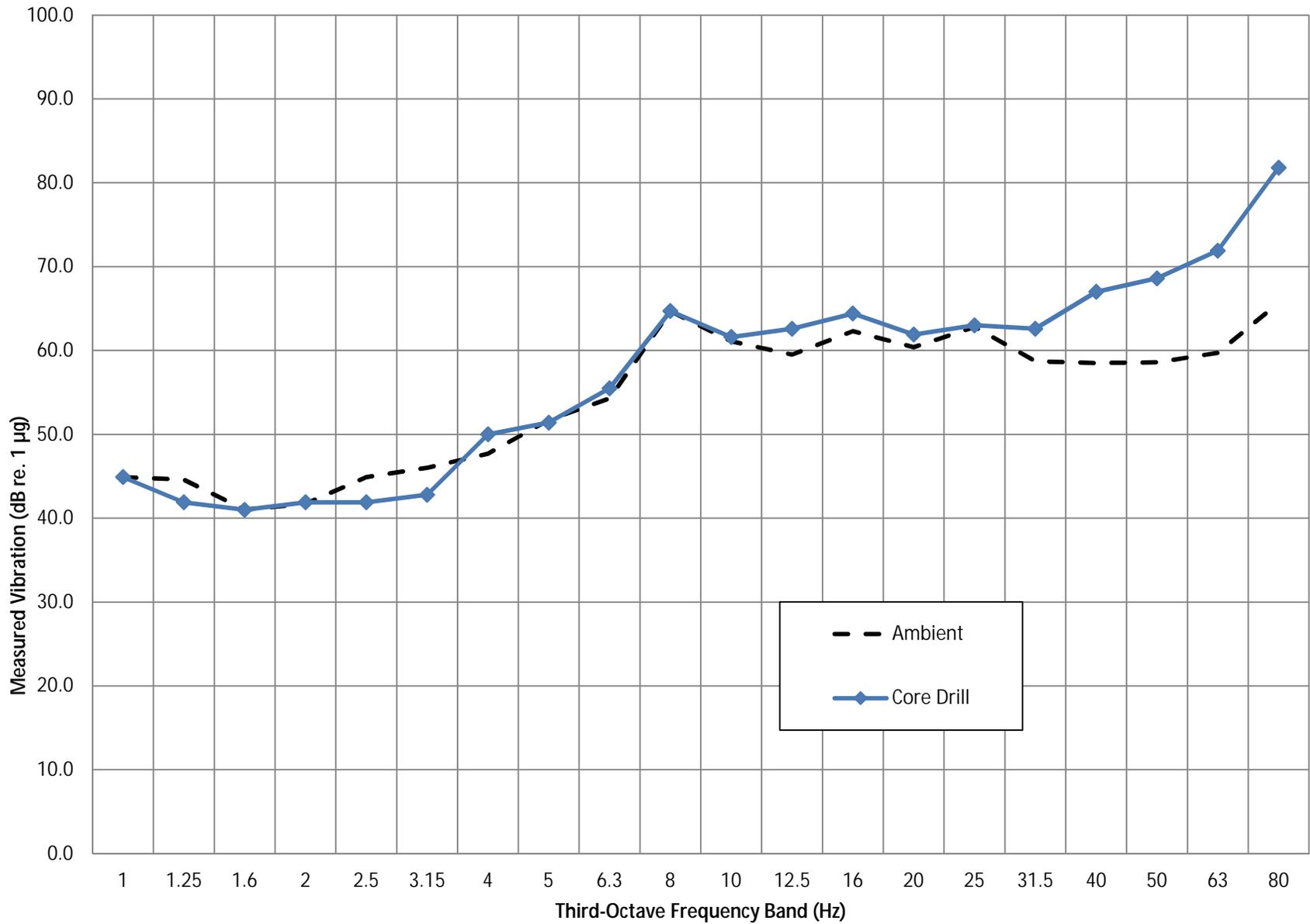
Location 4: Patient 2B-113b



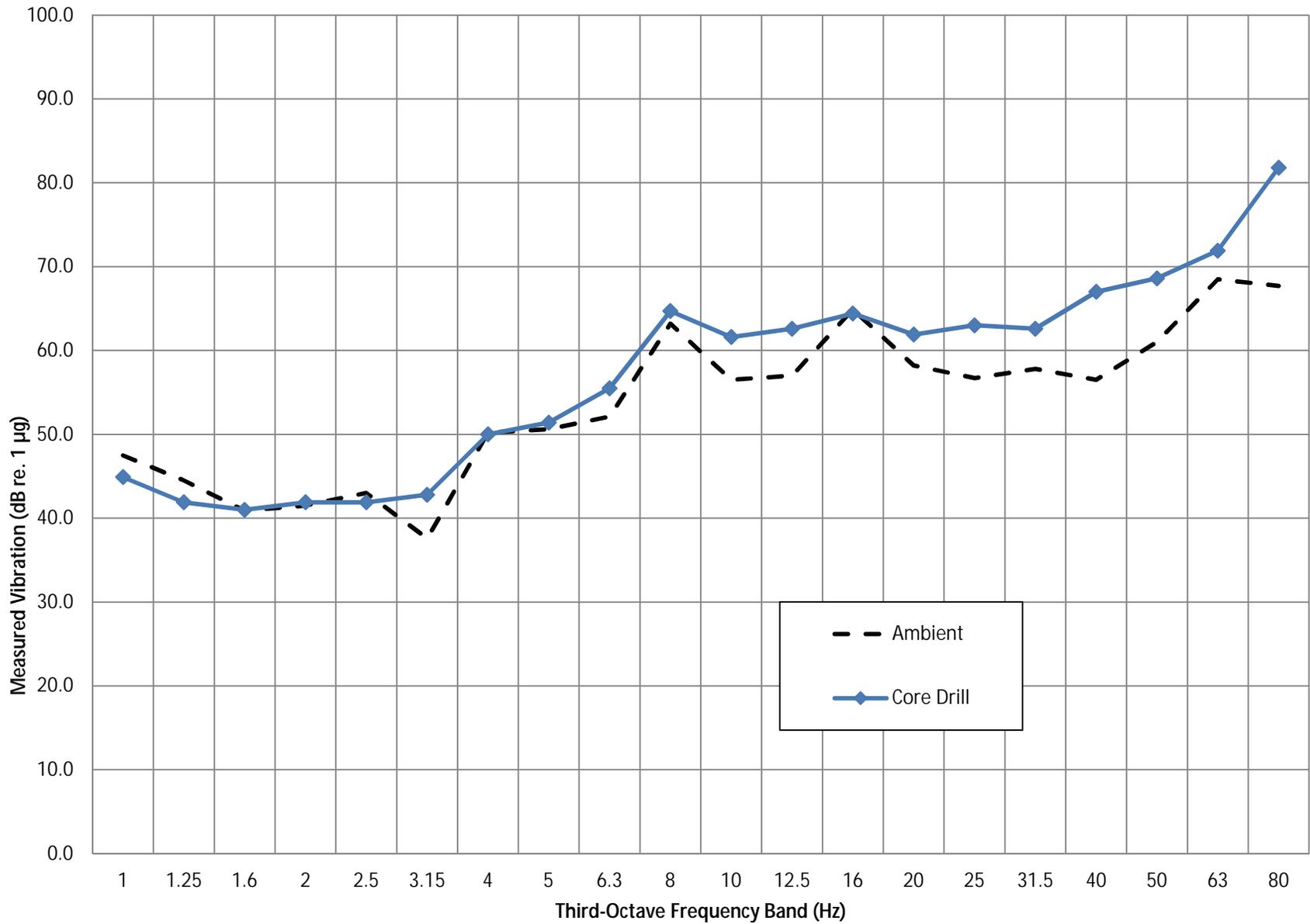
Location 5: Shared Office 3B-124



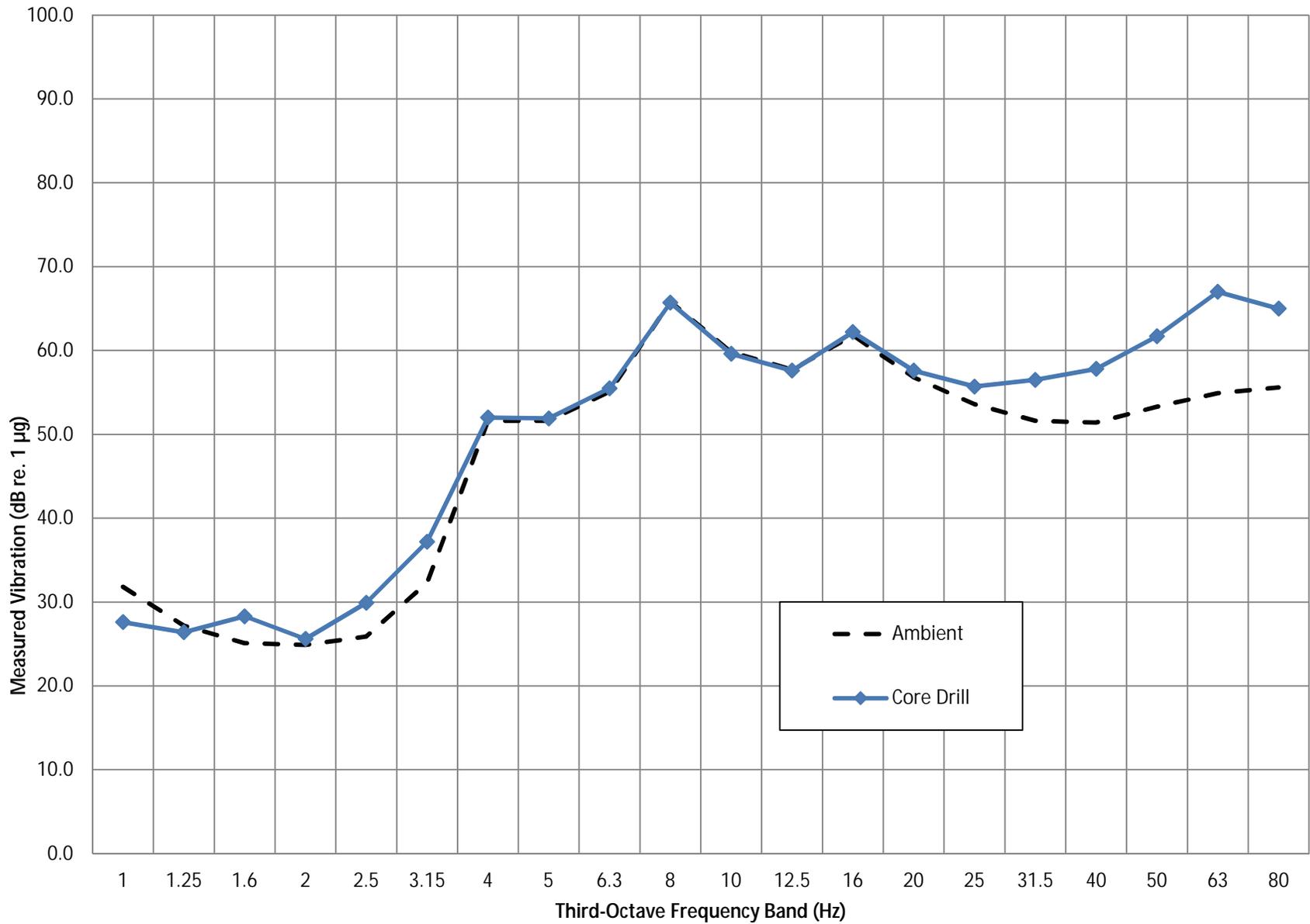
Location 6: Conference 7B-110



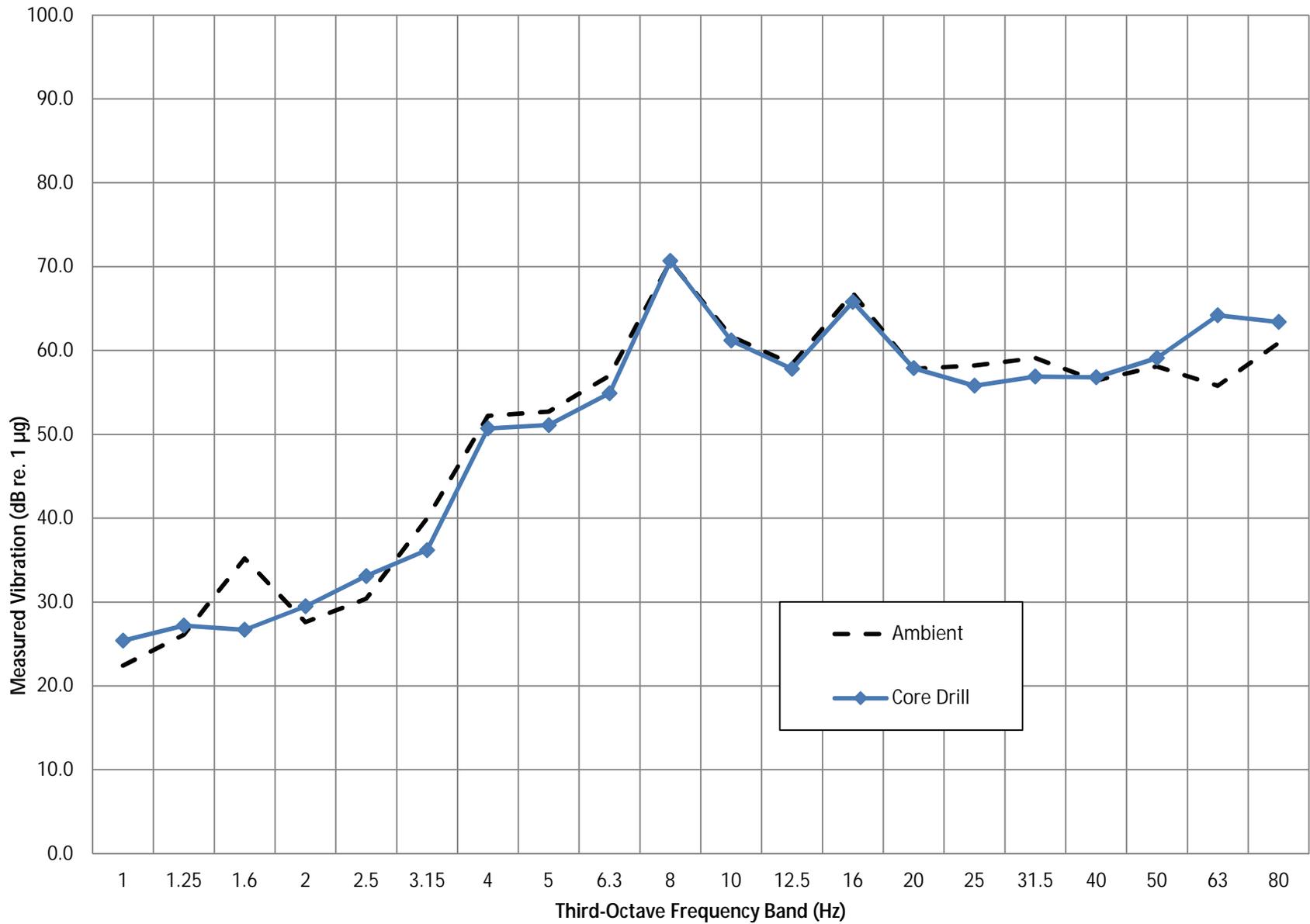
Location 7: Lounge 7B-109



Location 8: Outside Patient 6B-113



Location 9: Lounge 6B-110



Location 10: Neurology Room

