APPENDIX O

ANTICIPATED ONSHORE NOISE LEVELS

Appendix O
Anticipated Onshore Noise Levels

Regarding the following Noise Calculation Worksheets:

Sources of noise level data:

• Construction equipment	EPA 1971
• Supply and crew boats	Continental Shelf Associates, Inc., 1995
• Derrick barge and tug boat (provided in this appendix)	Direct measurements (data contained in
• Airplane	EPA 1971
• Pile Drivers (provided in this appendix)	Delmag Technical Data Sheet, 2003

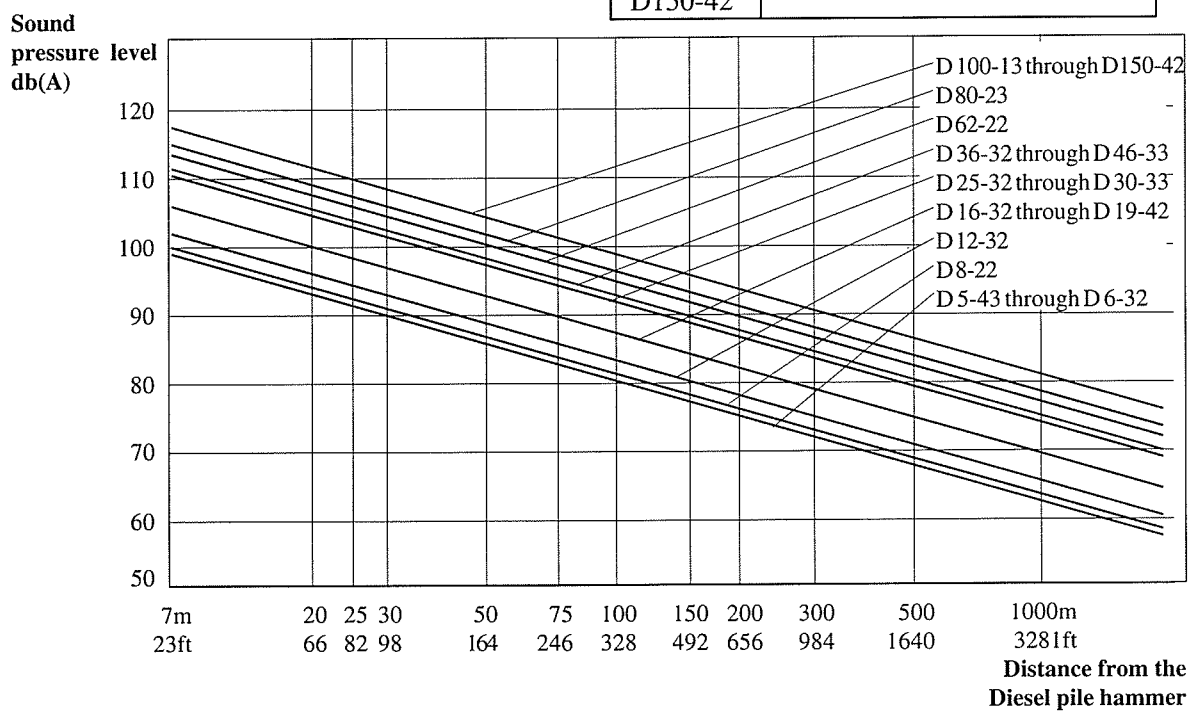
"Project Generated Leq" is calculated by logarithmic addition of all project equipment noise levels.
"Ambient plus Project Leq" is calculated by logarithmic addition of the ambient noise value and Project Generated Leq.

Sound emission data

Sound pressure level at a distance of 23 feet (7 meters) from the Diesel pile hammer

Type	Sound pressure level in dB(A)
D6-32	99
D8-22	100
D12-32	102
D16-32	106
D19-42	
D25-32	110
D25-33	
D30-32	
D30-33	
D36-32	111
D36-33	
D46-32	
D46-33	
D62-22	114
D80-23	116
D100-13	119
D150-42	

Sound pressure level as a function of the distance from the Diesel pile hammer



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DELMAG
SPECIFICATION DIESEL HAMMERS*

Model **		D6-32	D8-22	D12-42	D16-32	D19-42	D25-32	D30-32	D36-32	D46-32	D62-22	D80-23	D100-13	D150-42	D200-42
App. piston weight	lbs	1,325	1,770	2,830	3,530	4,015	5,515	6,615	7,940	10,145	13,700	17,700	22,100	33,070	44,100
Energy per blow [1]															
Maximum	ft.lbs	13,500	20,100	33,990	40,200	43,225	66,380	75,452	90,540	122,140	164,620	212,420	265,530	377,260	492,000
Minimum	ft.lbs	6,300	9,434	15,660	18,871	21,510	29,486	35,383	40,900	52,260	78,960	126,192	157,743	242,290	315,000
Explosion force [2]	kN	505	505	606	686	686	1304	1304	1695	1695	1695	1800	2600	-	5400
Blows per min. [3]															
Minimum		38	36	35	36	35	35	36	36	35	35	35	35	36	36
Maximum		52	52	52	52	52	52	52	53	53	50	45	45	52	52
Performance by fuel pump setting # 4	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100
setting # 3	%	88	83	83	88	83	90	90	83	83	83	90	90	90	90
setting # 2	%	73	66	66	67	66	74	74	66	66	66	74	77	77	77
setting # 1	%	60	50	50	48	50	51	51	49	49	50	64	64	64	64
Consumption															
Diesel fuel	gal/hr	0.70	1.00	0.95	1.45	1.45	2.11	2.64	3.04	4.23	5.28	6.60	7.93	12	15.86
Lubrication oil	gal/hr	0.16	0.66	0.26	0.26	0.26	0.26	0.26	0.61	0.61	0.84	0.77	0.77	1.3	1.5
Capacity															
Diesel fuel	gal	5.0	5.3	6.3	20.0	20.0	17.7	17.7	23.5	23.5	25.8	40.9	40.9	85	113
Lubrication oil	gal	1.3	1.6	1.7	5.0	5.0	5.0	5.0	4.5	4.5	8.3	8.4	8.4	13.7	21
Operating weight [4]															
Hammer	lbs.	3570	4000	5730	7560 / 7880	8046 / 8365	11752 / 12370	12855 / 13472	16515 / 17375	18720 / 19580	26173 / 27077	36085 / 37275	43703 / 44894	72750	125660
Tripp. Device	lbs.	220	220	220	220	220	397	397	882	882	882	1654	1654	2095	3300
Tool box	lbs.	165	165	165	165	165	220	220	220	220	275	275	275	-	-
Dimensions [5]															
a Length overall	in	150.0	185.0	185.8	186.2	186.2	207.1	207.1	208.1	208.1	233.3	283.5	290	271	323.8
a_1 Extend. Length	in	-	-	-	219.3	219.3	246.0	246.4	247.4	247.4	272.6	-	-	-	-
b Diam. Impact block	in	13.8	13.8	15.7	17.3	17.3	22.0	22.0	27.2	27.2	27.9	32.3	32.3	39	49.2
d Width overall	in	18.3	16.1	17.3	19.1	19.1	25.2	25.2	28.3	28.3	31.5	35.0	35.0	50.0	56.1
Min. U-lead width	in	21	21	21	21	21	26	26	32	32	32	38	38	54	66

[1] depends on the blows per minute, referring to the jump height of the piston
[2] measured value on a steel pipe pile , may vary with pile type and soil resistance
[3] depends on fuel pump setting, soil and weather conditions and pile type
[4] weight with / without upper cylinder extension
[5] guiding for hammer and tripping device not considered

* all details are correct at the time of print, subject to alterations without prior notice
** ® all hammer types above have the registered trade mark

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

REPORT OF FIELD OBSERVATIONS

Job No.:	Date: 6/4/01 (M) T W T F S S
Client:	Project: NOISE MEASUREMENT OF D/B
Location: POINT OF LONG BEACH	Weather: SUNNY 70°F BREEZY
Observer: ALAN EMSLIE	Observation Period: Start: 2:00PM Stop: 3:30PM

Description: D/B HAAKON 2:00PM - 2:15PM

① STANDING BY - TUG LEAVING W/SCOW WHEN METER TURNED ON

TIME	dB READING
0	67.5
3 MIN	69.8
6 MIN	70.4
9 MIN	70.8
12 MIN	70.4
15 MIN	70.6
MAX	77.8 @ TURN ON TIME OF METER WHEN TUG LEAVING W/SCOW

2:30 PM - 2:45 PM

② TUG BRINGING SCOW & OFFLOADING BY HAAKON

0	72.2
3 MIN	74.3
6 MIN	78.4
9 MIN	77.0
12 MIN	79.7
15 MIN	80.1
MAX	82.1

Mileage: _____ miles

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REPORT OF FIELD OBSERVATIONS

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padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

Job No.:	Date: 6/4/01 (M) T W T F S S
Client:	Project: NOISE MEASUREMENT OF D/B
Location: PORT OF LONG BEACH	Weather: SUNNY 70°F BREEZY
Observer: ALAN EMSLIE	Observation Period: Start: 2:00PM Stop: 3:30PM

Description: D/B NJORD DREDGING 3:00PM - 3:15PM

TIME	dB
0	74.5
3 MIN	71.3
6 MIN	69.4
9 MIN	70.3
12 MIN	76.2
15 MIN	79.6
MAX	81.5

D/B HANGING DREDGING FROM SCOW & OFF LOADING 3:30PM

TIME	dB
0	73.1
3 MIN	D/B SHUT DOWN TO FIX CLAMSHELL BUCKET
6 MIN	
9 MIN	
12 MIN	
15 MIN	
MAX	

Mileage: _____ miles

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Padre Associates, Inc.
Noise Calculation Worksheet
Haskell's Beach

Equipment / Source	Noise Level 50 feet from Source (dBA)	Number of operations (per hour)	Duration of each operation (mins)	Noise Level at 50 feet from equipment SEL	Noise Level at 50 feet from equipment Leq	Distance to receptor (feet)	Noise level at receptor* Leq
Backhoe	85	0	0	0	0	0	0
Baler	87	0	0	0	0	0	0
Chain Saw	95	0	0	0	0	0	0
Compactor	83	0	0	0	0	0	0
Concrete Mixer	85	0	0	0	0	0	0
Concrete Pump	82	0	0	0	0	0	0
Compressor	81	4	60	117	87	850	62
Crane	83	1	60	119	83	850	58
Derrick	88	0	0	0	0	0	0
D8 Dozer (no muffler or enclosure)	90	0	0	0	0	0	0
D8H Dozer (muffler & partial enclosure)	83	0	0	0	0	0	0
D8K (muffler,enclosure,lubricated tracks)	80	0	0	0	0	0	0
Electric Generator	90	1	60	126	90	850	65
Forklift	80	0	0	0	0	0	0
Garbage Truck (Compactor)	90	0	0	0	0	0	0
Grader	85	0	0	0	0	0	0
Heavy Construction Trucks	88	0	0	0	0	0	0
Hoe Excavator	85	0	0	0	0	0	0
Jackhammer	88	0	0	0	0	0	0
Loader	83	0	0	0	0	0	0
Paver	89	0	0	0	0	0	0
Pick-up Truck	79	0	0	0	0	0	0
Pick-up Truck (2.5 ton)	79	0	0	0	0	0	0
Pick-up Truck (4WD)	75	0	0	0	0	0	0
Pile Driver	101	0	0	0	0	0	0
Pneumatic Tools	86	0	0	0	0	0	0
Pump	66	1	60	102	66	850	41
Rock Drill	98	0	0	0	0	0	0
Scraper	88	0	0	0	0	0	0
Semi Truck (idling)	78	0	0	0	0	0	0
Semi Truck (accelerating)	90	0	0	0	0	0	0
Sheepsfoot Roller	78	0	0	0	0	0	0
Shredder	75	0	0	0	0	0	0
Truck Tractor	82	0	0	0	0	0	0
Vacuum Truck	76	0	0	0	0	0	0
Van	77	0	0	0	0	0	0
Water Truck	88	0	0	0	0	0	0
Water Wagon	83	0	0	0	0	0	0
Supply Boat	92	0	0	0	0	0	0
Crew Boat	88	1	60	124	88	850	63
Tug Boat	82.1	1	60	118	82	850	57
Derrick Barge/Dive Service Vessel	81.5	1	60	117	82	850	57
Airplane	85	0	0	0	0	0	0
Project Generated Leq					**94**		**70**
Ambient Noise Level (Leq)					**66**		**66**
Ambient Plus Project Leq					**94**		**71**
Ambient Plus Project Leq with Shielding							**66**
*Assumption: Sound attenuation is 6dB for every doubling of distance							

Padre Associates, Inc.
Noise Calculation Worksheet
Sandpiper Golf Course

Equipment / Source	Noise Level 50 feet from Source (dBA)	Number of operations (per hour)	Duration of each operation (mins)	Noise Level at 50 feet from equipment SEL	Noise Level at 50 feet from equipment Leq	Distance to receptor (feet)	Noise level at receptor* Leq
Backhoe	85	0	0	0	0	0	0
Baler	87	0	0	0	0	0	0
Chain Saw	95	0	0	0	0	0	0
Compactor	83	0	0	0	0	0	0
Concrete Mixer	85	0	0	0	0	0	0
Concrete Pump	82	0	0	0	0	0	0
Compressor	81	4	60	117	87	1000	61
Crane	83	1	60	119	83	1000	57
Derrick	88	0	0	0	0	0	0
D8 Dozer (no muffler or enclosure)	90	0	0	0	0	0	0
D8H Dozer (muffler & partial enclosure)	83	0	0	0	0	0	0
D8K (muffler,enclosure,lubricated tracks)	80	0	0	0	0	0	0
Electric Generator	90	1	60	126	90	1000	64
Forklift	80	0	0	0	0	0	0
Garbage Truck (Compactor)	90	0	0	0	0	0	0
Grader	85	0	0	0	0	0	0
Heavy Construction Trucks	88	0	0	0	0	0	0
Hoe Excavator	85	0	0	0	0	0	0
Jackhammer	88	0	0	0	0	0	0
Loader	83	0	0	0	0	0	0
Paver	89	0	0	0	0	0	0
Pick-up Truck	79	0	0	0	0	0	0
Pick-up Truck (2.5 ton)	79	0	0	0	0	0	0
Pick-up Truck (4WD)	75	0	0	0	0	0	0
Pile Driver	101	0	0	0	0	0	0
Pneumatic Tools	86	0	0	0	0	0	0
Pump	66	1	60	102	66	1000	40
Rock Drill	98	0	0	0	0	0	0
Scraper	88	0	0	0	0	0	0
Semi Truck (idling)	78	0	0	0	0	0	0
Semi Truck (accelerating)	90	0	0	0	0	0	0
Sheepsfoot Roller	78	0	0	0	0	0	0
Shredder	75	0	0	0	0	0	0
Truck Tractor	82	0	0	0	0	0	0
Vacuum Truck	76	0	0	0	0	0	0
Van	77	0	0	0	0	0	0
Water Truck	88	0	0	0	0	0	0
Water Wagon	83	0	0	0	0	0	0
Supply Boat	92	0	0	0	0	0	0
Crew Boat	88	1	60	124	88	1000	62
Tug Boat	82.1	1	60	118	82	1000	56
Derrick Barge/Dive Service Vessel	81.5	1	60	117	82	1000	55
Airplane	85	0	0	0	0	0	0
Project Generated Leq					**94**		**68**
Ambient Noise Level (Leq)					**54**		**54**
Ambient Plus Project Leq					**94**		**68**
Ambient Plus Project Leq with Shielding							**63**

*Assumption: Sound attenuation is 6dB for every doubling of distance