

**TH75E Unit #T75 Full Noise Survey**  
**22 April 1994**  
**Magma Mine Site, Ely, Nevada**

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Site Description

This full noise survey was conducted between 1025 and 1425 on 22 April 1994 at the Magma, Ely Nevada Mine. This inactive copper mine is located near the central Nevada town of Ely. It is a high desert area with rocky soil and scrub brush. The altitude is approximately 7,000 feet above sea level. The site was on the inside of an inactive mine pit. The drill rig was on a pad with a ten-foot (10') dirt/rock berm on the left (Figure 1). There were no additional noise sources such as heavy equipment and aircraft that could have contributed to noise levels in the survey. There were some vehicles (running occasionally) positioned around the site. Echoing throughout the canyon was very prevalent.

Environmental Conditions

During the entire survey, winds were from the east at speeds around 5-10 miles per hour. Temperatures started in the mid 50<sup>o</sup>s F and rose to the mid 60<sup>o</sup>s F during the course of the survey with 20% humidity. The background noise level taken with the SLM before drilling operations was less than 75.0 dBA.

Site Equipment

The drill surveyed was unit #T75 based out of Chandler, Arizona. The rig is mounted on a 1989 International tandem diesel carrier. Ancillary equipment included an International pipe truck, air powered, diaphragm type water pump, flat-bed equipment trailer and a Ford F-350 driller's pick-up truck.

Technical Approach

Layne Christensen Safety Coordinator, Jim Wright, conducted this survey. During the survey, the drill crew wore the noise dosimeters for approximately four hours while performing routine drilling operations. For this time, there were no shut downs or work stoppages. It took 15 minutes to drill a string of pipe. During this time the driller and helpers performed various maintenance activities. This survey would constitute an "average" time frame of drilling on a TH75E RC drill rig.

Audio Dosimetry Results

Dosimetry of personnel on this TH75E RC drill rig showed exposure averages above the OSHA/ MSHA action levels of 85 dBA TWA<sub>8</sub> and the 50% dose. The tables on the following pages outline specific dosimetry results.

Instantaneous Sound Level Measurement Results

Instantaneous SLM results for the TH75E RC drill rig at Ely showed noise levels above 85 dBA up to forty feet (40') away from the rig during drilling operations. These levels were dependent upon the direction of the rig. The front showed the lowest levels

beginning at ~ 86 dBA. The noise levels at the left and right sides of the drill produced levels of ~ 105 dBA due to the close proximity of the engine.

Conclusion

The dosimetry data, 85 dBA line and instantaneous SLM readings taken during this survey are within other historical surveys conducted.

<b>Equipment List</b>	
Instrument	Serial Number
UEI DSM 100 SLM	93100157
DuPont Mk1 Personal Dosimeter	14901
DuPont Mk1 Personal Dosimeter	14902
DuPont Mk2 Personal Dosimeter	14905
DuPont AC-1 Acoustical Calibrator	01149

<b>Calibration Records</b>						
Serial Number	Pre-Cal			Post-Cal		
	94dBA	114dBA	124dBA	94dBA	114dBA	124dBA
14902 (driller)	93.7	113.9	123.7	94.3	114.3	124.3
14901 (helper)	93.4	112.9	123.1	94.3	114.1	124.3
14905 (sampler)	94.0	113.9	124.1	94.1	114.0	124.1
93100157	94 dBA @ 100 Hz			94 dBA @ 100 Hz		

<b>Noise Dosimeter Survey Results</b>						
	Survey Dose %	anticipated Dose <sub>8</sub> %	survey dBA <sub>avg</sub>	anticipated <sup>1</sup> TWA <sub>8</sub>	dBA <sub>max</sub>	Time (hrs:min)
14902 – driller	36.3	73.0	92.8	82.7	117.3	4:09
14901 - helper	76.3	150.0	87.5	88.1	116.9	4:09
14905 - sampler	52.7	105.0	90.0	85.4	113.2	4:09

<sup>1</sup> based on survey dose% in equation  $TWA_8 = 16.61 \log_{10} (D\%/100) + 90$

<b>Instantaneous SLM Readings</b>				
Distance from Rig in feet	SLM Readings in dBA from Position			
	Front	Rear	Left	Right
0	86.0	90.6	100.1	107.5
5	84.5	87.7	95.7	102.8
10	82.7	86.8	92.5	98.1
15	81.3	83.5	90.1	94.1
20	79.9	80.9	88.7	93.0
25	-	79.8	87.8	91.3
30	-	-	85.2	90.0
35	-	-	83.8	87.6
40	-	-	82.5	85.2
45	-	-	80.9	83.9
50	-	-	79.8	79.5

<b>Misc. Instantaneous SLM Readings</b>	
Operator's Station	91.0 dBA

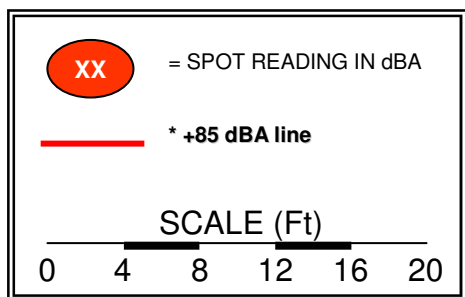
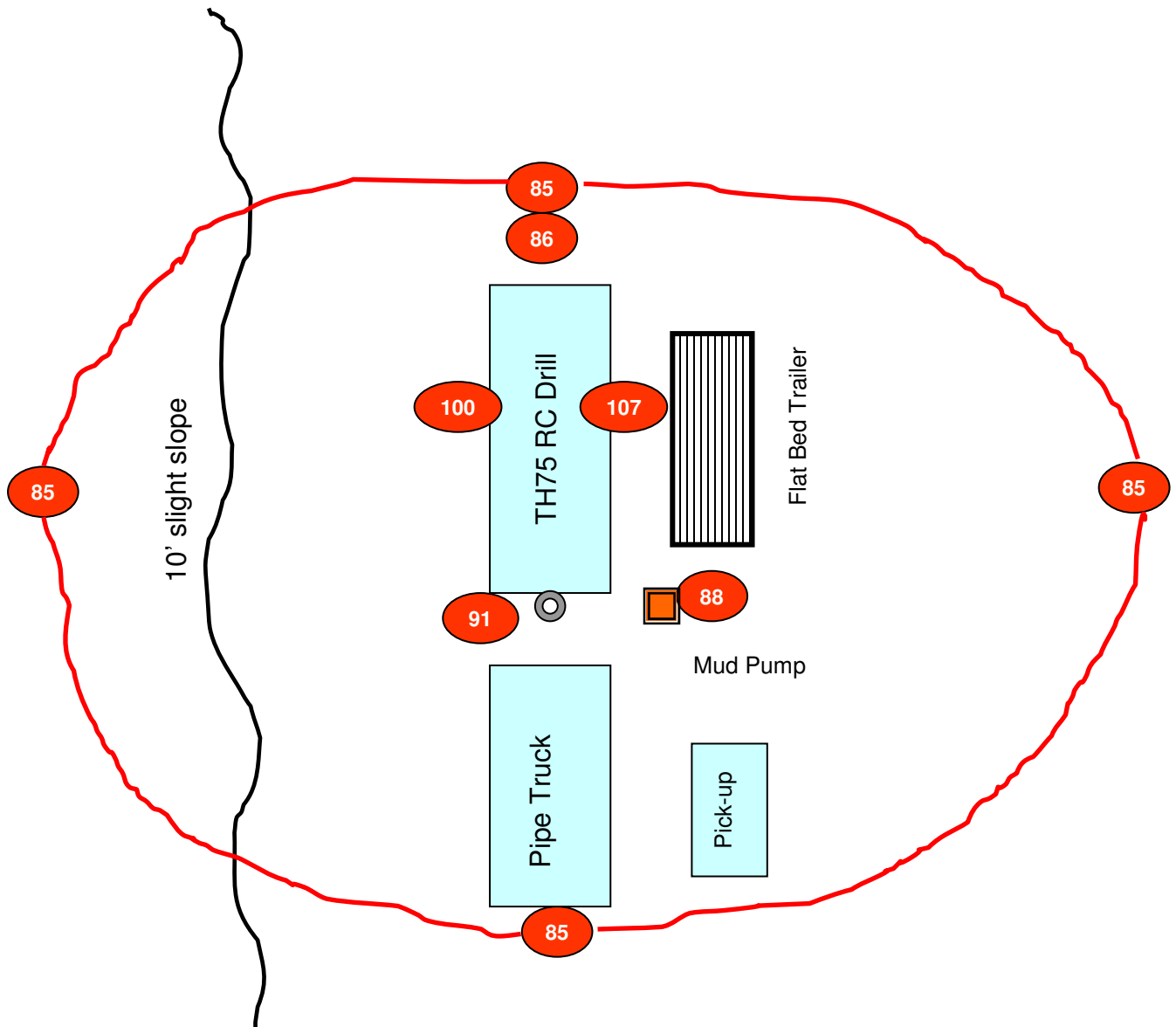


Figure 1 Magma Ely Mine  
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