





OCCUPATIONAL  
NOISE MANAGEMENT

**AUDIOMETRIC TEST RESULTS**

**MONITORING**

**FOR**

***YOUR COMPANY NAME***

**CONDUCTED ON**

***dd/mm/yyyy***

## **EMPLOYEE NOTIFICATION LETTERS**

Standard letters have been developed to explain in lay terms if there has been a significant / no significant change in Hearing Threshold Levels when compared to subject's Reference or most recent audiogram. These are explained as follows:

- ML-6** No significant change detected at primarily 3000, 4000 or 6000Hz, in either ear or secondly 500 to 2000Hz.
- ML-7** Significant change detected of  $\geq 15$ dB at 3000, 4000 or 6000Hz in either ear which may be temporary or permanent and is suspected to be associated with noise exposure.
- ML-7a** Change in ATS or MTS but below the  $\geq 15$ dB significant level.
- ML-7b** Change detected but is suspected to be as a result of new / tinnitus, neuroma, infection, disease or of unknown origin. Generally affecting a single frequency and related to one ear only.
- ML-7c** Change of  $\geq 15$ dB detected at low frequencies 500 to 2000Hz
- Similar in nature to RL-3 requiring referral to own GP.
- ML-8** Rarely used, but indicates a subsequent significant change of  $\geq 15$ dB. The magnitude is in order of  $\geq 30$ dB at frequencies 3000, 4000 or 6000Hz since reference test was conducted.

Tester: **TREVOR PEDLER**      Audiometer: **INTERACOUSTIC**

Model: **AD 226**      Serial Number: **0932611**      Calibration Date: **03.10.2016**

**EMPLOYEE ATTENDANCE LIST and LETTER NUMBER**

<b>SURNAME</b>	<b>NAME</b>	<b>SEX</b>	<b>LETTER</b>
SAMPLE	Peter	M	ML - 6
SAMPLE	Fred	M	ML -7a

## INTRODUCTION

Monitoring audiometric results have been assessed against criteria contained in the National Acoustic Laboratory publication "Criteria for Assessing Hearing Conservation Audiograms", NAL Report No. 80, September 1980.

The term "Hearing Threshold Level (HTL)", is a value expressed in decibels (dB) which is a measure of the minimum sound level that a person can detect at the frequencies stated in AS/NZS 1269.4: 2014 Occupational Noise Management. Hearing acuity is normally assessed at frequencies of 3 KHz, 4 KHz and 6 KHz for the purposes of monitoring audiometry and comparison is then made with the reference audiogram to detect any significant change that may have occurred.

There is however evidence to suggest that inner ear damage caused by noise exposure accumulates prior to the onset of threshold impairment.

To increase the effectiveness of audiometry for the ear by detection of noise-induced hearing loss an improved procedure for the conduct of monitoring audiometry and a revised assessment regime is applied to improve the early detection of either a temporary or permanent shift in a subject's hearing which may or may not be related to noise exposure.

The criteria used in assessing monitoring audiometric results can be defined as:-

- (a) significant change,
- (b) threshold shift conditions, and
- (c) no significant change

Table 1 details those employees whose results exceed the Hearing Conservation criteria for monitoring audiograms.

Table 2 details those employees whose results exceed threshold shifts laid out in AS/ZS 1269.4:2014 Paragraph 9.3 (a) to (e).

The remainder of the employees have been assessed as indicating no significant change and the continued use of hearing protection is strongly advised when exposed to noisy environments or designated work areas.

## **CRITERIA 1**

### **Significant Change**

<b>HL SHIFT</b>	<b>FREQUENCY</b>	<b>AGE</b>
<b>≥ 15 dB</b>	<b>3, 4 or 6 KHz</b>	<b>Any</b>

### **Summary**

During the test period attempts to confirm transient conditions will be conducted and if such conditions - a cold, earache or recent noise exposure - exist, the person will be re-tested as soon as possible after remission of symptom(s).

If no such conditions exist the audiometric test will be repeated and results obtained.

### **Action Required**

If at any frequency the results indicate a significant change from the corresponding hearing level of the Reference audiogram the following action is recommended:-

1. Advise the employee of the test result
2. Check the employee's noise history exposure since the last audiogram was taken
3. Check the suitability and condition of the employee's hearing protection device together with the technique of fitting and frequency of use
4. Take any corrective action that appears necessary in light of the foregoing checks.

### **Medical Referral**

If any medical referral criteria, as laid down in the reference audiometric test result assessment, are exceeded, or if any change in hearing level since the most recent audiogram exceeds 20dB, and is of unknown cause, the employee should be referred for a complete audiological assessment.



## CRITERIA 2

### Threshold Shift

	SHIFT/CHANGE	FREQUENCY	AGE
1.	ATS $\geq$ 5dB	3, 4 and 6 KHz	ANY
2.	MTS $\geq$ 10dB	3 and 4 KHz	
3.	MTS $\geq$ 15dB	6 KHz	
4.	TS $\geq$ 15dB	500Hz, 1, 1.5 or 2 KHz	
5.	TS $\geq$ 20dB	8 KHz	
6.	New Tinnitus		

ATS - Average Threshold Shift (Test/Retest results)

MTS - Mean Threshold Shift (Test/Retest results)

TS - Threshold Shift

### Action Required

When temporary or permanent threshold shifts are revealed by audiometry or new tinnitus reported action shall be taken to inform the responsible manager to arrange to:

1. Review the test subject's job to identify any change that may have caused an increase in noise exposure.
2. Re-determine noise exposure if necessary.
3. Apply engineering and/or administrative controls to test subject's work area or situation if reasonably practicable.
4. Check suitability and condition of the employee's hearing protection device together with fitting technique and frequency of use.
5. Take any corrective action that appears necessary to deal with any problems.





## **CONCLUSION**

To appreciate the significance of the assessed audiometric results the following factors should be kept in mind:-

1. Audiometric testing of employees is only a part of the range of administrative procedures that can be adopted to monitor the effectiveness of a Occupational Noise Management Program.
2. Continuing commitment towards occupational noise management implies:-
  - (a) progressive reduction of exposure to acceptable levels
  - (b) immediate action to eliminate sources of noise that may develop through inadequate maintenance of equipment or changed methods of operation
  - (c) a program of education, persuasion, and reassurance to achieve full participation by all concerned, and
  - (d) complete integration of noise reduction and hearing protection as part of a comprehensive Occupational Noise Management Program.



OCCUPATIONAL  
NOISE MANAGEMENT

**AUDIOMETRIC TEST RESULTS**

**REFERENCE**

**FOR**

***YOUR COMPANY NAME***

**CONDUCTED ON**

**dd/mm/yyyy**

## **EMPLOYEE NOTIFICATION LETTERS**

Standard letters have been developed to explain the test subjects hearing acuity on completion of Reference / Baseline test and these are explained as follows:

**RL-1** Normal Hearing

**RL-2** Hearing Threshold levels (HTL)  
which indicate slight hearing loss at 4000Hz

- $\geq 25\text{dB @ } 4000\text{Hz} \leq 30 \text{ Years}$
- $\geq 35\text{dB @ } 4000\text{Hz} \leq 45 \text{ Years}$

**RL-3** Abnormal low frequency hearing loss which may be related to a host of factors and may include:

- Wax impaction
- Outer or Middle ear Infection
- Sinus or Hayfever conditions
- Functioning of Eustachian tube
- Perforation of Tympanic membrane

**RL-4** Hearing Thresholds Levels that indicate a moderate hearing loss in both low and high frequencies

- $\geq 50\text{dB @ } 4000\text{Hz}$  Any age and associated low frequency results, commonly this type of loss is referred to a mixed loss and maybe uni or bilateral

**RL-4b** Hearing Threshold Levels which indicate a moderate hearing loss in High frequencies only

- $\geq 50\text{dB @ } 4000\text{Hz}$  any age

**RL-5** Hearing Threshold Levels which indicate, a severe hearing loss in both low and high frequencies and requires audiological assessment to determine forms of rehabilitation which may be appropriate for the person including surgery in some instances.

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Model: **AD 226**      Serial Number: **0932611**      Calibration Date: **03.10.2016**

**EMPLOYEE ATTENDANCE LIST and LETTER NUMBER**

SURNAME	NAME	SEX	LETTER
SAMPLE	Pam	F	RL - 1
SAMPLE	Steve	M	RL - 2

## **INTRODUCTION**

Reference audiometric results have been assessed against criteria contained in the National Acoustic Laboratory publication 'Criteria for assessing Hearing Conservation Audiograms', NAL Report No 80, September, 1980.

Table 1 details those employees whose results exceed the Hearing Conservation criteria and Table 2 categorises those employees whose results indicate other types of pathology.

The remainder of the employees have been assessed to have hearing acuity that is deemed 'normal' for their age group and the continued use of hearing protection is strongly advised when exposed to noisy environments or designated work areas.

The term, 'Hearing Threshold Level (HTL)', is a value expressed in decibels (dB), which is a measure of the minimum sound level that a person can detect at the frequencies stated in AS/NZS 1269.4:2014 Occupational Noise Management. Hearing acuity is normally assessed at frequencies of 500 Hz, 1 KHz, 1.5 KHz, 2 KHz, 3 KHz, 4 KHz, 6 KHz and 8KHz.

The two distinct criteria used in assessing reference audiometric results can be defined as that which:-

- (a) highlight results that may be indicative of noise induced hearing impairment.
- (b) may be indicative of the possible presence of other types of pathology.

## **CRITERIA 1**

### **Occupational Noise Management**

Employees whose audiometric results meet any of the following parameters are deemed to be outside what is considered 'normal' hearing relative to their age.

HTL	FREQUENCY	AGE
≥ 25 dB	4,000 Hz	≤30 years
≥ 35 dB	4,000 Hz	≤45 Years
≥ 50 dB	4,000 Hz	Any

### **Action Required**

The following action is recommended as consistent with an overall Occupational Noise Management policy:-

1. Advise the employee of the test result.
2. Check the employee's noise history exposure carefully to determine any change in work method, job location and duration.
3. Check suitability and condition of the employee's hearing protection device, technique of fitting and frequency of use.
4. Take any corrective action that appears necessary in light of the foregoing checks.
5. Retest in 12 months.

**TABLE 1**

**REFERENCE AUDIOMETRIC RESULTS**

**ASSESSED CRITERIA 1**

			RESULT @ 4KHz	
NAME	AGE	SEX	LEFT	RIGHT
SAMPLE Steve	30	M	30	35



## CRITERIA 2

### Abnormal Pathology

This area has been classified into three (3) categories:-

1. ASYMMETRICAL
2. REHABILITATION
3. ABNORMAL LOW FREQUENCY LEVELS

In certain cases employees may indicate all three conditions. However, delineation is warranted for differing medical referral grounds.

### ASYMMETRICAL HEARING LEVELS

CONDITION	FREQUENCY	HEARING LEVEL
1	500Hz, 1KHz or 2KHz	≥ 25 dB
2	3KHz, 4KHz or 6KHz	≥ 35 dB

**Note:** For the quantity specified in dB, this means the absolute difference between the left and right ears.

### Action Required

It is recommended that all employees whose results indicate Asymmetrical hearing levels be referred for a complete audiological assessment, especially if they are unaware of the condition.

### REHABILITATION

FREQUENCIES	HEARING LEVEL (TOTAL)
500Hz, 1KHz and 2KHz	> 75 dB *

\* Both ears

### Action Required

It is recommended that it would be advisable for employees who fall into this category to be referred for a complete audiological assessment. Such an assessment would indicate what form of rehabilitation would be required.

**ABNORMAL LOW FREQUENCY LEVELS**

CONDITION	FREQUENCY	HEARING LEVEL	AGE
1	500Hz, 1KHz or 1.5KHz	> 25 dB*	Any
2	2KHz	≥ 30 dB	≤ 40 years
		≥ 35 dB	41-45 years
		≥ 40 dB	46-50 years
		≥ 45 dB	51-60 years
		≥ 50 dB	> 60 years

\* Note: Either Ear

**Action Required**

It is recommended that employees whose results indicate abnormal low frequency hearing levels be referred to a medical practitioner, as this type of hearing impairment is often indicative of middle ear pathology amenable to treatment.

**TABLE 2**

**REFERENCE AUDIOMETRIC RESULTS**

**ASSESSED CRITERIA 2**

NAME	AGE	SEX	ASYMMETRICAL	REHABILITATION	ABNORMAL
NIL					

**CONCLUSION**

To appreciate the significance of the assessed audiometric results the following factors should be kept in mind:-

1. Audiometric testing of employees is only a part of the range of administrative procedures that can be adopted to monitor the effectiveness of an Occupational Noise Management.
2. Continuing commitment towards hearing conservation implies:-
  - (a) Progressive reduction of exposure to acceptable levels
  - (b) Immediate action to eliminate sources of noise that may develop through inadequate maintenance of equipment or changed methods of operation
  - (c) A program of education, persuasion and reassurance to achieve full participation by all concerned
  - (d) Complete integration of noise reduction and hearing protection as part of a comprehensive Occupational Noise Management.

# Employee Report card

## Minus 3dB Pty Ltd

Printed: 28/02/2017

Fred SAMPLE  <div style="text-align: center; margin-top: 20px;">SA</div>	DOB: 21/07/1961 Tel: _____ : _____	Sex: Male Shift: _____ Cost centre: _____
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Entered: 21/07/2016    Status: Permanent - Quiet environ    Commencement Date: \_\_\_\_\_    Years employed: \_\_\_\_\_  
 Department: \_\_\_\_\_    Company: YOUR COMPANY NAME  
 Occupation: OPERATIONS MANAGER    Address: 1 Your street  
 Claim submitted:     Claim settled:   
 Comments: \_\_\_\_\_

Date	Left ear								Right ear									% Loss		
	0.5k	1k	1.5k	2k	3k	4k	6k	8k	0.5k	1k	1.5k	2k	3k	4k	6k	8k		Left	Right	Binaural
12/08/2012	10	15	20	15	20	25	20	15	5	10	15	10	15	20	15	10	B	1.2	0.0	0.8
12/08/2014	15	20	10	10	20	30	20	15	10	15	20	15	25	20	15	10	Y	1.9	1.3	1.7
12/08/2016	10	15	15	20	20	35	25	25	10	15	15	15	30	30	20	35	Y	2.3	2.2	2.0

	0	0	0	5	0	10	5	10	5	5	0	5	15	10	5	25	Loss (last test - baseline)
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B=Reference test    Y=Monitoring test    R=Retest    P=Pre-Employment    C=Compensation    O=Driver test    3=3 month test    6=6 month test

Number of tests: 3

Australian Standards AS1269.4	(a) a shift in mean threshold at 3, 4 & 6 KHz >= 5dB (b) a shift in mean threshold at 3 & 4 KHz >= 10dB (c) a shift in mean thresholds at 6 KHz >= 15dB (d) a shift in threshold at 0.5, 1, 1.5 or 2 KHz >= 15dB (e) a shift in thresholds at 8 KHz >= 20dB	(16,1) Victorian Regulation 2007 3.2.12 & NZ Std (f) current mean thresholds at 1, 2 and 3kHz => 25dB (Rio) (h) a shift from Reference av. At 2, 3 & 4kHz => 10dB non age adj. (1) a shift from Reference av. at 2, 3 & 4kHz => 10dB, age adj. (2) Average abs. at 2k, 3k and 4k => 25dB same ear as in (1)
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(a) (b) (c) (d) (e)                      (16,1) (f) (h) (1) (2)

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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(1) (2) (3) (5)

L=Left, R=Right, B=Both, Y=Yes

NAL 80 (Waugh & Macrae)	
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Not reportable under Victorian Reg 2007,3.2.11

Comments: \_\_\_\_\_ Recall:  Recall date: \_\_\_\_/\_\_\_\_/\_\_\_\_

# Company Report 28/02/2017

Not including Terminated, Deceased

**YOUR COMPANY NAME**  
**1 Your street**  
**ADELAIDE**

**Minus 3dB Pty Ltd**  
**P.O. Box 47**  
**Para Hills S.A. 5096**  
**0417896042**

Selection: Company: YOUR COMPANY NAME at 1 YOUR STREET

<b>SAMPLE Fred</b>		<b>Date of Birth:</b> 21/07/1961		<b>Age:</b> 55		<b>Job:</b> OPERATIONS MANAGER						<b>Employee ID:</b>																
		<b>Gender:</b> Male		<b>Department:</b> BASELINE						<b>Status:</b> Permanent - Quiet environ																		
Test Date	Test Type	Ear Protection		Tinnitus	Wax	Normal Test	Referred Medically	% Loss			Left Ear								Right Ear								Tester	Audiometer
		Type	Used					Left	Right	Binaural	.5	1	1.5	2	3	4	6	8	.5	1	1.5	2	3	4	6	8		
12/08/2012	Reference		No	Yes	Yes	Yes	No	1.2	0.0	0.8	10	15	20	15	20	25	20	15	5	10	15	10	15	20	15	10	TREVOR PEDLER	AD226
12/08/2014	Monitoring		No	Yes	No	No	No	1.9	1.3	1.7	15	20	10	10	20	30	20	15	10	15	20	15	25	20	15	10	TREVOR PEDLER	AD226
12/08/2016	Monitoring		No	Yes	No	No	No	2.3	2.2	2.0	10	15	15	20	20	35	25	25	10	15	15	15	30	30	20	35	TREVOR PEDLER	AD226

<b>SAMPLE Steve</b>		<b>Date of Birth:</b> 03/05/1986		<b>Age:</b> 30		<b>Job:</b> CONSTRUCTION & MAINTENANCE						<b>Employee ID:</b>																
		<b>Gender:</b> Male		<b>Department:</b> BASELINE						<b>Status:</b> Permanent - Noise exposed																		
Test Date	Test Type	Ear Protection		Tinnitus	Wax	Normal Test	Referred Medically	% Loss			Left Ear								Right Ear								Tester	Audiometer
		Type	Used					Left	Right	Binaural	.5	1	1.5	2	3	4	6	8	.5	1	1.5	2	3	4	6	8		
12/08/2016	Reference		Yes	No	No	No	No	0.8	1.5	1.0	5	10	5	5	10	30	20	15	5	0	5	5	15	35	25	20	TREVOR PEDLER	AD226

<b>SAMPLE Peter</b>		<b>Date of Birth:</b> 15/06/1958		<b>Age:</b> 58		<b>Job:</b> CO-ORD TREE GANG						<b>Employee ID:</b>																
		<b>Gender:</b> Male		<b>Department:</b> BASELINE						<b>Status:</b> Permanent - Noise exposed																		
Test Date	Test Type	Ear Protection		Tinnitus	Wax	Normal Test	Referred Medically	% Loss			Left Ear								Right Ear								Tester	Audiometer
		Type	Used					Left	Right	Binaural	.5	1	1.5	2	3	4	6	8	.5	1	1.5	2	3	4	6	8		
12/08/2012	Reference		Yes	Yes	No	No	No	6.7	4.6	5.5	15	20	20	20	35	40	45	35	20	15	20	20	30	35	40	30	TREVOR PEDLER	AD226
12/08/2014	Monitoring		Yes	Yes	No	No	No	6.8	4.3	5.2	20	15	15	20	35	45	45	45	15	10	15	20	30	40	45	50	TREVOR PEDLER	AD226
12/08/2016	Monitoring		Yes	Yes	No	No	No	6.3	5.2	5.8	15	20	20	20	35	40	50	65	20	15	20	20	30	40	45	55	TREVOR PEDLER	AD226

<b>SAMPLE Pam</b>		<b>Date of Birth:</b> 03/02/1980		<b>Age:</b> 37		<b>Job:</b> ADMIN						<b>Employee ID:</b>																
		<b>Gender:</b> Female		<b>Department:</b>						<b>Status:</b> Permanent - Quiet environ																		
Test Date	Test Type	Ear Protection		Tinnitus	Wax	Normal Test	Referred Medically	% Loss			Left Ear								Right Ear								Tester	Audiometer
		Type	Used					Left	Right	Binaural	.5	1	1.5	2	3	4	6	8	.5	1	1.5	2	3	4	6	8		
12/08/2016	Reference		No	No	No	Yes	No	0.0	0.0	0.0	10	5	10	15	10	20	15	10	5	5	10	5	10	10	15	15	TREVOR PEDLER	AD226

Number printed: 4