K. J. Bours 48/0/02 Letab tropal to forthe from the bollometer granded Malden- F Kendle Kullung Tunnel Test 21/8/84 Mr. 9, 13.00ah. Lade, L. 20 - 4363 48/01/18 Lest 22 1632

From Superintendent of Laboratories Chief Design Engineer In 18 84 In reply please quote Chief Design Engineer In Reply please quote Snd Floor

ZIG ZAG TUNNELS - FUMM TESTS

4454°6

Lejebpoue:

Further to our report of fume concentrations in Sig Zag Tunnel Tests of 21.8.84: -

TRANSPORT HOUSE

Attention Mr P. Robinson

The criterion which is used to assess the potential hazard to workers is The for a normal 8 hour workday and a 40 hour week to which nearly all workers may for a normal 8 hour workday and a 40 hour week to which nearly all workers may for a normal 8 hour workday and a 40 hour week to which nearly all workers may

To aid in the evaluation of short term exposures a Threshold Limit Value - Short Term Exposure Limit (S.T.E.L.) is used. This is defined as a 15 - minute average exposure which should not be exceeded.

The relevant limits are:

Carbon Monoxide 50 A:L.V. (S.T.E.L.)

Carbon Monoxide S5 35

These limits were not exceeded except for the tunnel start when the contaminant concentrations exceeded the range of instrumentation for three minutes in the immediate vicinity of the locomotives.

Heat Stress measurements carried out showed no indication of hazardous conditions since temperature rises in the tunnel were lesser than expected. The Heat Stress Index readings ranged from 12°C to 13°C which are well below the Permissible T.L.V.15.

B.P. LAWSON
Superintendent of Laboratories

TE (Well were

TAG

(2500G) cost of graduation of the bathromy (20)
TUNNEL L'OOLY ELC /KE COEDER
YAN ECLYSER (A) HALYSER (A)
Locamodue Mikhi WIRARED WILYEER + RECORDED (19)
- radahamilan
appear 430 m colong dunal.
agram 470 m valory tring! I an tunnel voll, I'm abuse noil, Downtha
SEMICT .2
2. Interest of VOT, 2m above diber.
2m about alous aloud I Extensor of Yan Hinni Well side
B. GUARDS VAN:
L. LOCOMOTIVE : I ham Engine Am Intake (1) and radicals and intake (1) and some odyscent to duver breathing some.
L. LOCOMOTIVE: I. Hom Engine Am Intake (1) and radiable an
Sample Parabans:
219-20g # 10 Tunnel - Tune Test
The state of the s

			194		ř				P (2)
NOTES INDIVIDUAL CONTRACTOR	1			17 (Mar eX)		350	~		2
		100		127			8		
0	e	H C COMPANY IN THE		. A			10 may 21 110	213232	
0	7			an Committee Committee		(#C III	T V	1 W2140	£Z.
C	2			T I D' NE TAKE		ro Pipron K	10-11-11-11-11-11-11-11-11-11-11-11-11-1		75
. 0	3				14311 SK	· 'u	- me where her of the s	VII	15
	(25)			W William Com a re	20 Feb 1 Feb	Sistemata (i			<i>ુ</i>
-5	125)			energy extra			12 (2021) 2011 2012 2014 2014 2	CONTRACTOR	<i>bh</i>
ZI	-18-			- 2 - E-		524 N	220 1/2 42/2/07		Sn
- 5/	5/		4		0	×	* SHOKE-I	990	Ln
	- 11	21	· a	¥	. 0				24
8	ا و ''		o l		a	3 T			Sp
	7		0		0			= =	hh
	-7	1501 200	-0	A #5	0	98 Ci-		** ***	εh-
		× +× = 3	0		0		27 as a		Th
0		26.# - E - X			6	91 9			-1+
_\a	7		191		s		42	-	
	1		(52)		50		ThunkT	pug	00
	2		9				-1 -5		35
L .	7.3	907 II			52		(20) (20)		38
0	276 - 1	195	<i>3</i>		ر م			.:	۲٤
		t. 28.7	31	+-	ο _ξ	4	9	-	%
U	+		8	77					SE
0	5	12/ 3 47	9		372				78
O .	"	7:0	2		مکه				33
·	4	T-0N	0		52				ŝ
and processing	ا [[" ندته "		(150)		57,				18
	U	¥ # 956	00/		07		01 91	בליף	3
95<	09/ <	THE STATE OF THE	or	Hart.	59		ēk		P
°5<	00/<	ara sha	Q		0)		소 대장	4)	17
95<	>100	## IMP. 131	0	19 11 10	2			an Marke	17
0	Ò		0		7		Up in dunnel	Stort	77
5- 0	a		0	weens a s	0				بر
0	0		0		0		יושרן עלינס	•	25.01
0	0		.0		0		er Dy Zog.	Stat	10.19
			(చి)		לות וחלמעון				
ON	ون	Interior	EHAIN	- Janh	1 1				
1300	工	12.	۸α٬	Alue.	י לכנסיון				ן ווער
				T/					





The second secon

		T.		17			1
					æ 11	* # 2	i -
		4-27	***				
,			5			* ************************************	
				**		Cores com Name	
						CONTRACTOR PROTECTION SAME	25
			(2020 00)(V. (2020))		EC-800 + 38+0126		eta)
							100 元
			24				i
			** *****	38 8 8	364	35.6 9364 % 1991-10	
		111 Sec. 10 Sec.	**************************************	K ₁	¥	0 II K 01	
		ы					1
		1					
	120						- 1
	T. T. T.	6. "	8	n		* 11 * 1-011	
	18 8 A 84		*			30 KW 1-24 WW 1-1	
						i e see	1
	200002 10					2 0 0 200 13	
_ \							
						5 1000	
							1 9
C 10 W. F. FERRICA CO.			1	\		More out travel	Le . h
x + ()						/	
	c						75
ر د							- 4
Transition of the same of the	7						Æ
9	7		%~ 7				न्
9	7		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		0		67
2	τ				0	das	80
le venes	7		7 .		۶	13	Le
							8
	<i>†</i>		<i>↑1</i>		02-01	Enth No 10	95
0	D	c) A	3/		0		25
0	a	ON 2.0	ع .		٥		3.24
0	O		SI	-	0	By Iving	3.23
0	a .	- × 2 ×	0		9 (40)	1 · · · · · · · · · · · · · · · · · · ·	Name of the Owner
		¥ 7 = =			0	trats	3.0
0	0	5.5	0		Ó	- 1 3	
0	0		0		C	Start on MI VIC	Ch
0	0	NEW N	C	0	C	Pares M. V.C.	SE 7
			*		distribute		-
				1		E .	1
CN	- co	· AMALII	FIGVIE	China H	בישלועה ועממומים	91 800 9 1 Date 1270g	5 (55
CH	a	Majul	Extense	Sulomo	Engine Kadiah	61 axio 4 D. 1 Ming	Jime

	4)	Į.		3	() () () () () () () () () ()	Probability of a	No.	9
			i			1				3
			05	-51-	BI _					uosmo-
				ļ						
			()(<u> </u>				Q((S
			36.	80	21					Thouthal
					<u> </u>					
			().	P 79-						מוניסטיונאי
*				0 3	ļ					1 4 7
	n 2140.		일본당(11 01	-55-11					
+ Platforn	<u>D 50227</u>		2 0	1	-10-11	N .			611-971	M. Victori
, , , , , , , , , , , , , , , , , , ,									701	
(*************************************									571.751	नुहार
			0097) (A)	127.01					tsal Isumi
						(*)				C C
			ගා හි ල	DI 0	2-10-01					pp7 p17
									2.3	
			35:43	-B 0	5-2.8-1				091.991	mobyli.
									102 111	<u>ומון הנטחער</u>
									197.121	sacrom (ID)
				MI	OAI	to	1021	VQ	pwg	
- Assentation of						J -			7014	
				()ti	29-9				197.14	<u>המון הנטמטער</u>
arratureer.	Actual	τeq	Dep.		•11A	neb•	Pa 65	Arr.		
PER WAY AN	ONTH	-daT			ß		L		DISTANCE	NOITATE
DED NVA VI	ONINN	ild		VCTUVI			CHEDOTED	3	<u> </u>	
LIEF DEINER INSECTOR										
NEVIHER BYINGE										
TENGIH TOVD DWC*180S XES/NO								теистн		
ENGINE NO. 8117 EILY PEIS SIZY TRAIN NO. 7.37 CH										
13-6-15, atha Waller cuscing or passure 19-81										
TEST OF ELCHOLORITH RUNNING THINES SPEED EOL										
30/83										

Į