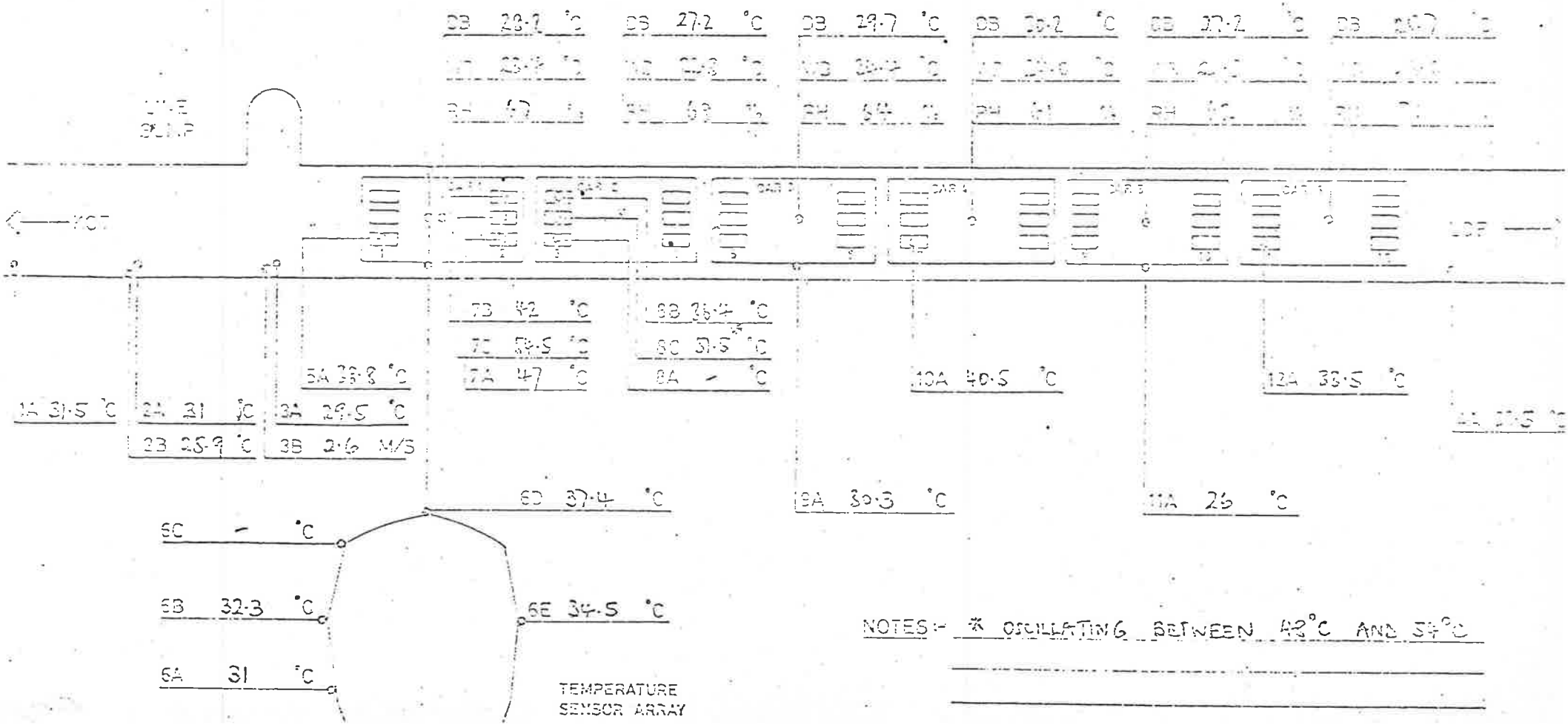
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 1A — SINGLE IMPULSE FAN OPERATION CHECK

TIME: 14·45



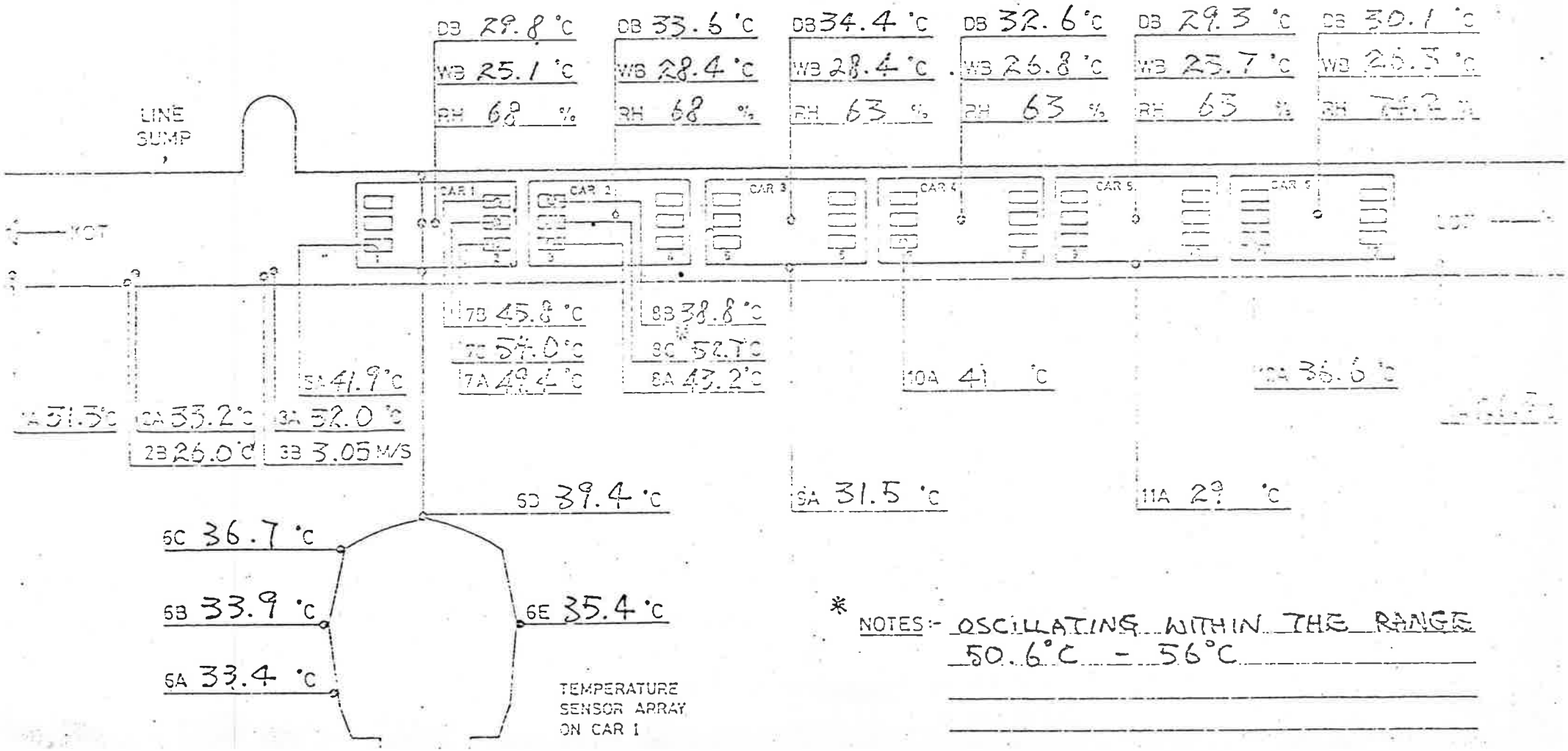
NOTES:- * OSCILLATING BETWEEN 42°C AND 54°C

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 1AR SINGLE IMPULSE FAN OPERATION CHECK

TIME: 15:00



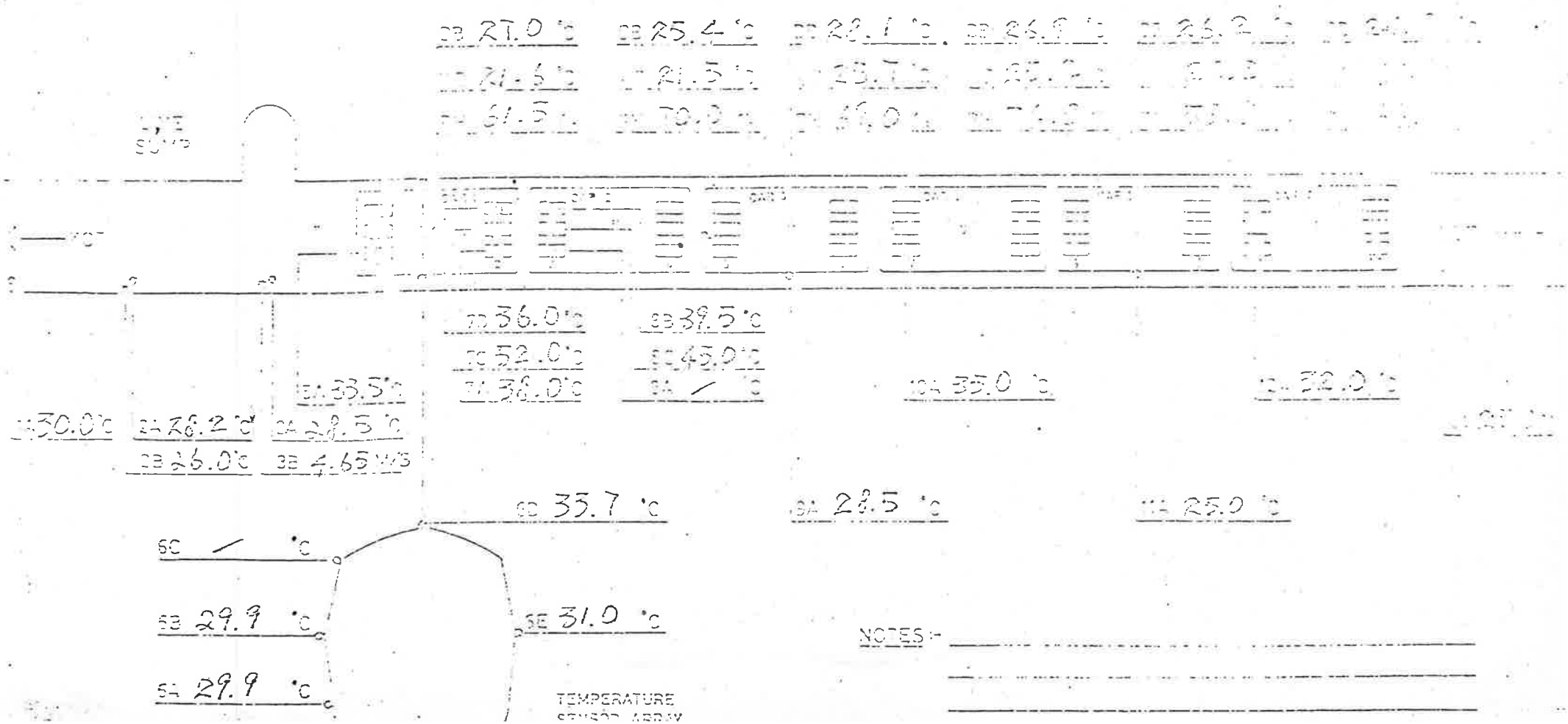
* NOTES:- OSCILLATING WITHIN THE RANGE 50.6°C - 56°C

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 1 B DOUBLE IMPULSE FAN OPERATION CHECK

TIME: 16:00



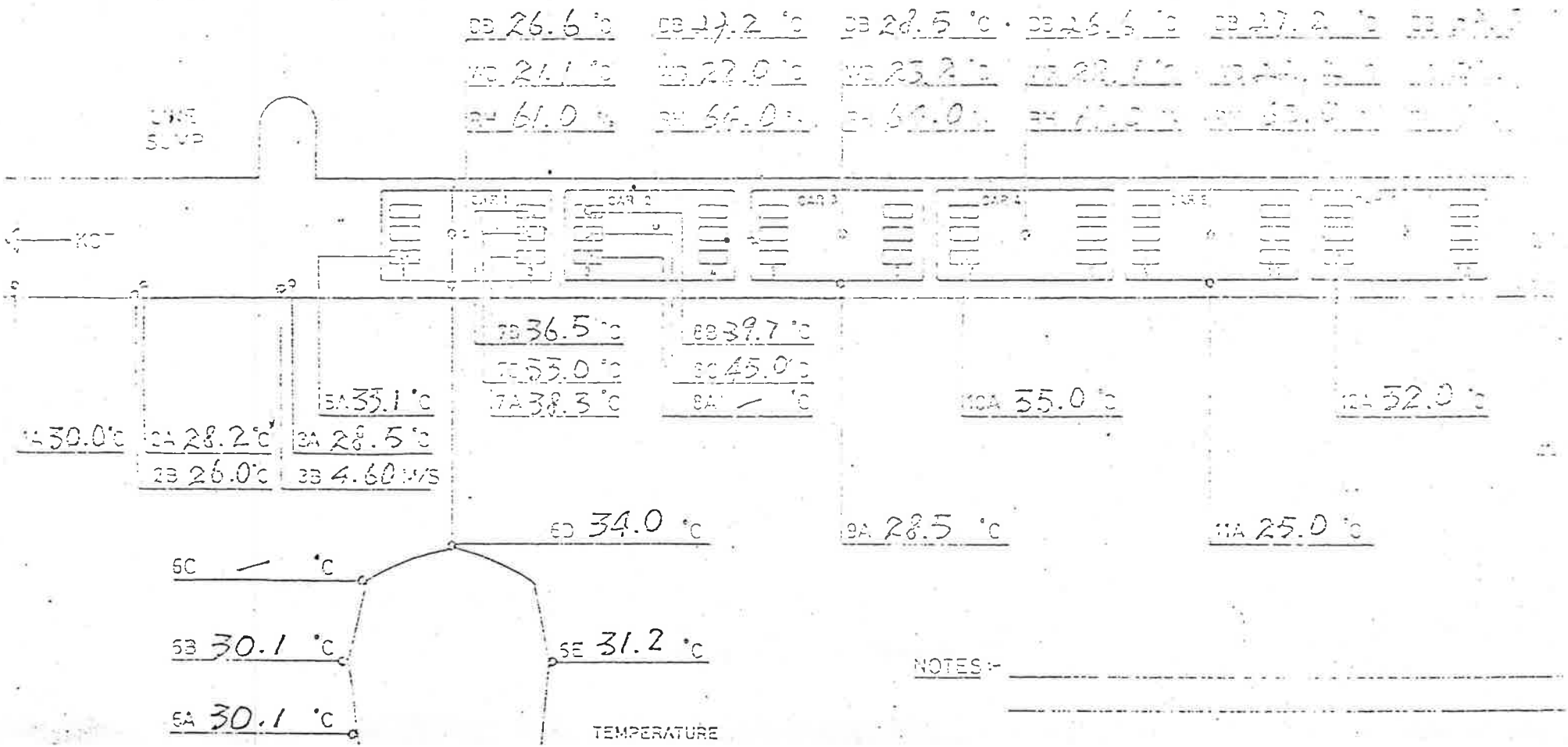
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 18 DOUBLE IMPULSE FAN OPERATION CHECK

TIME: 16:25



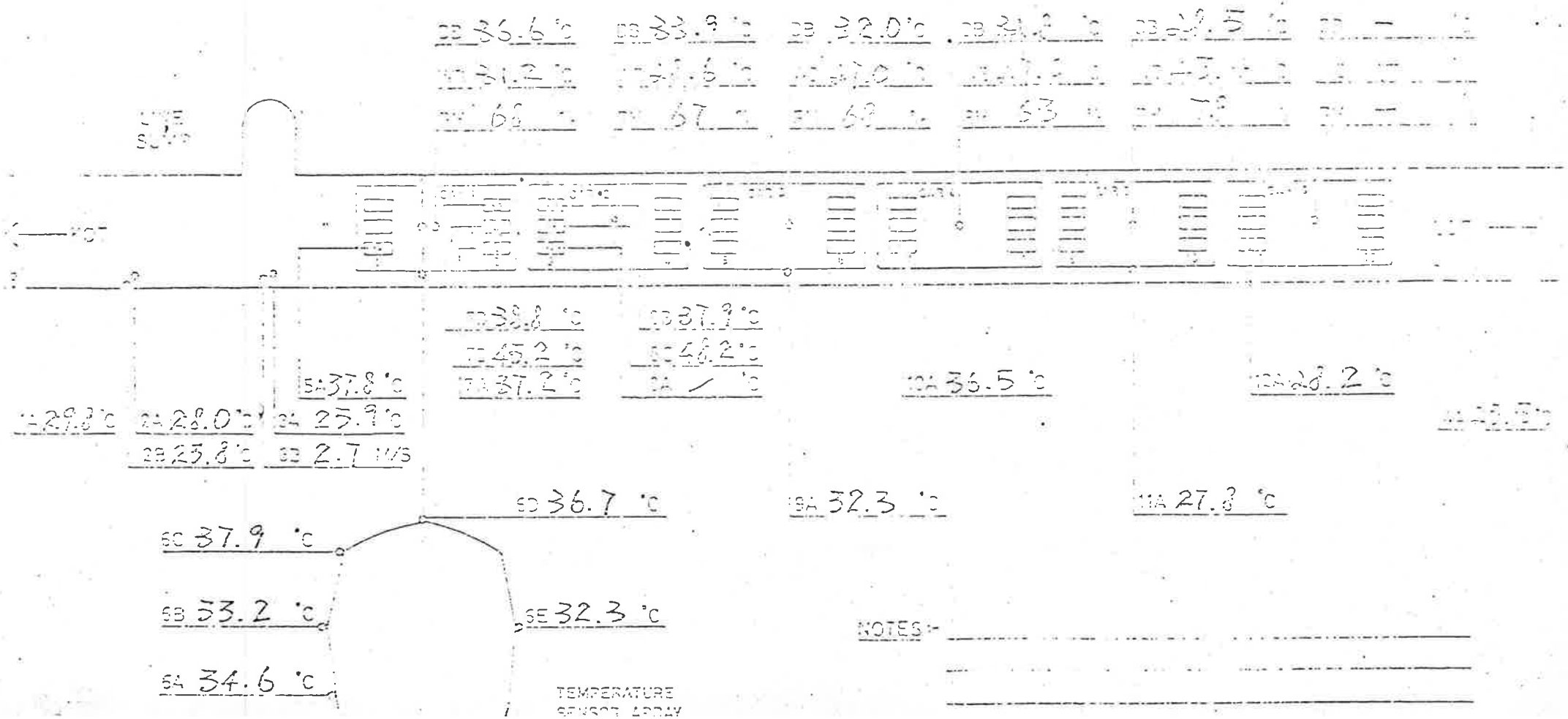
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 2 TRAIN AIR CONDITIONER PERFORMANCE CHECK

TIME: 14:55



NOTES:

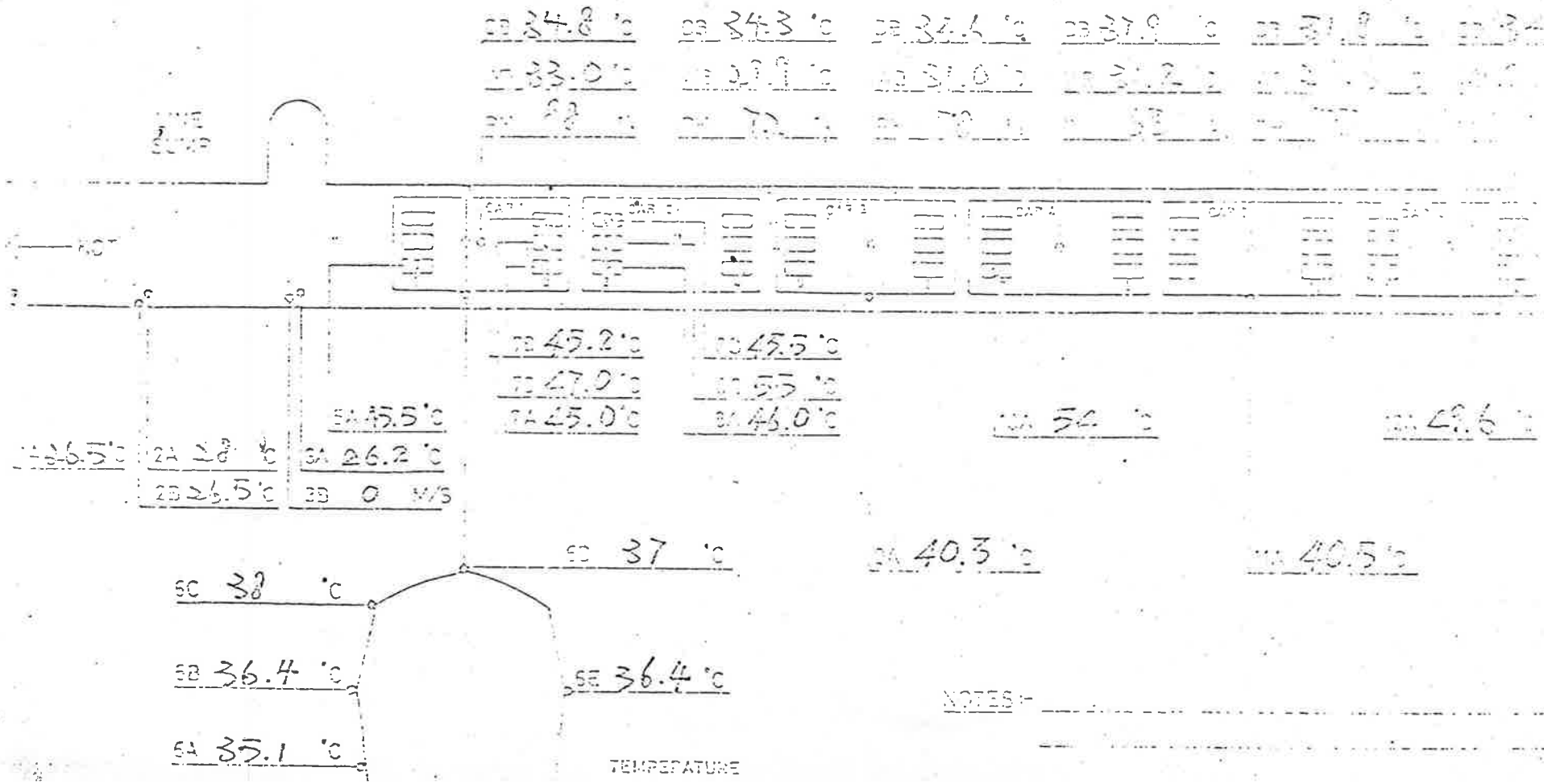
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 2R

TIME: 16:20

TRAIN AIR CONDITIONER PERFORMANCE CHECK



NOTES:-

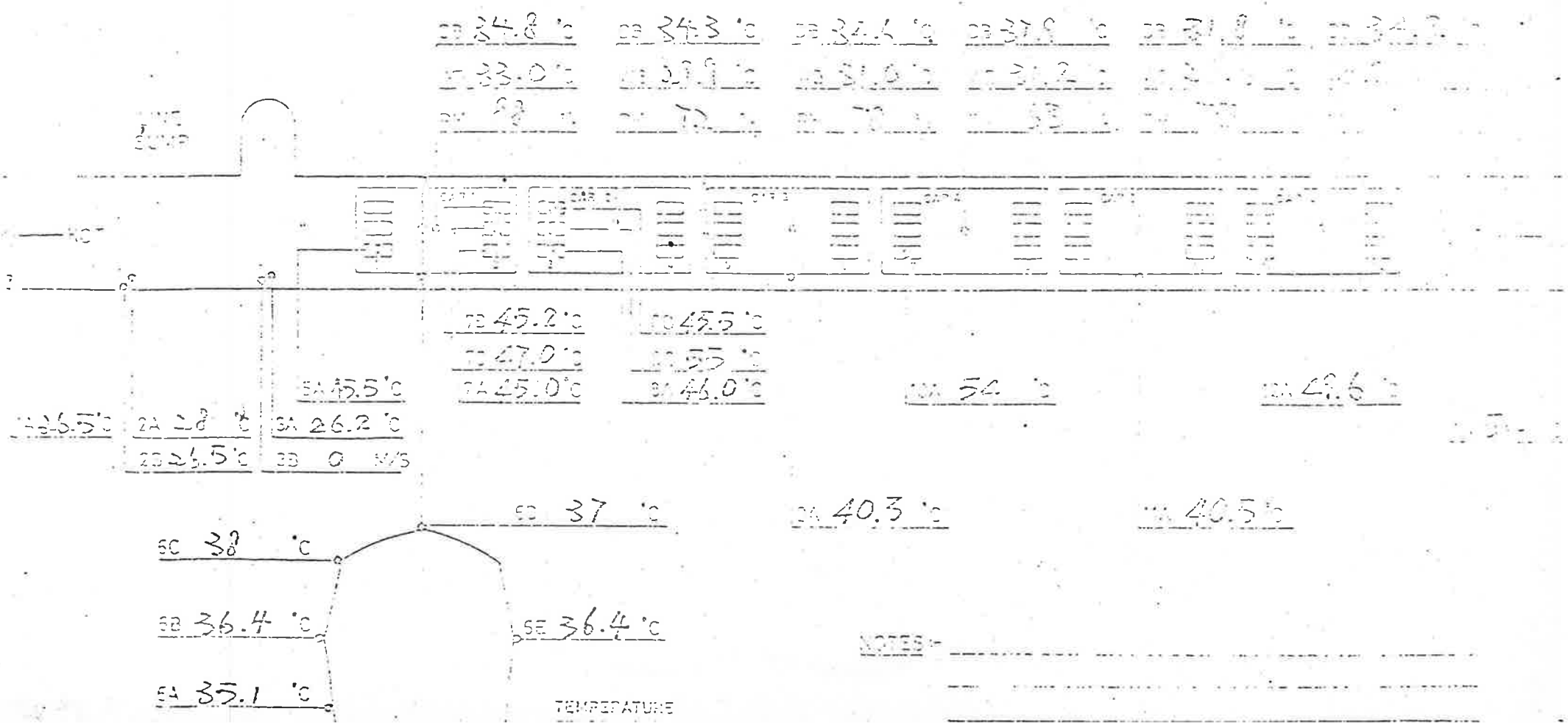
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 2R

TIME: 16:20

TRAIN AIR CONDITIONER PERFORMANCE CHECK



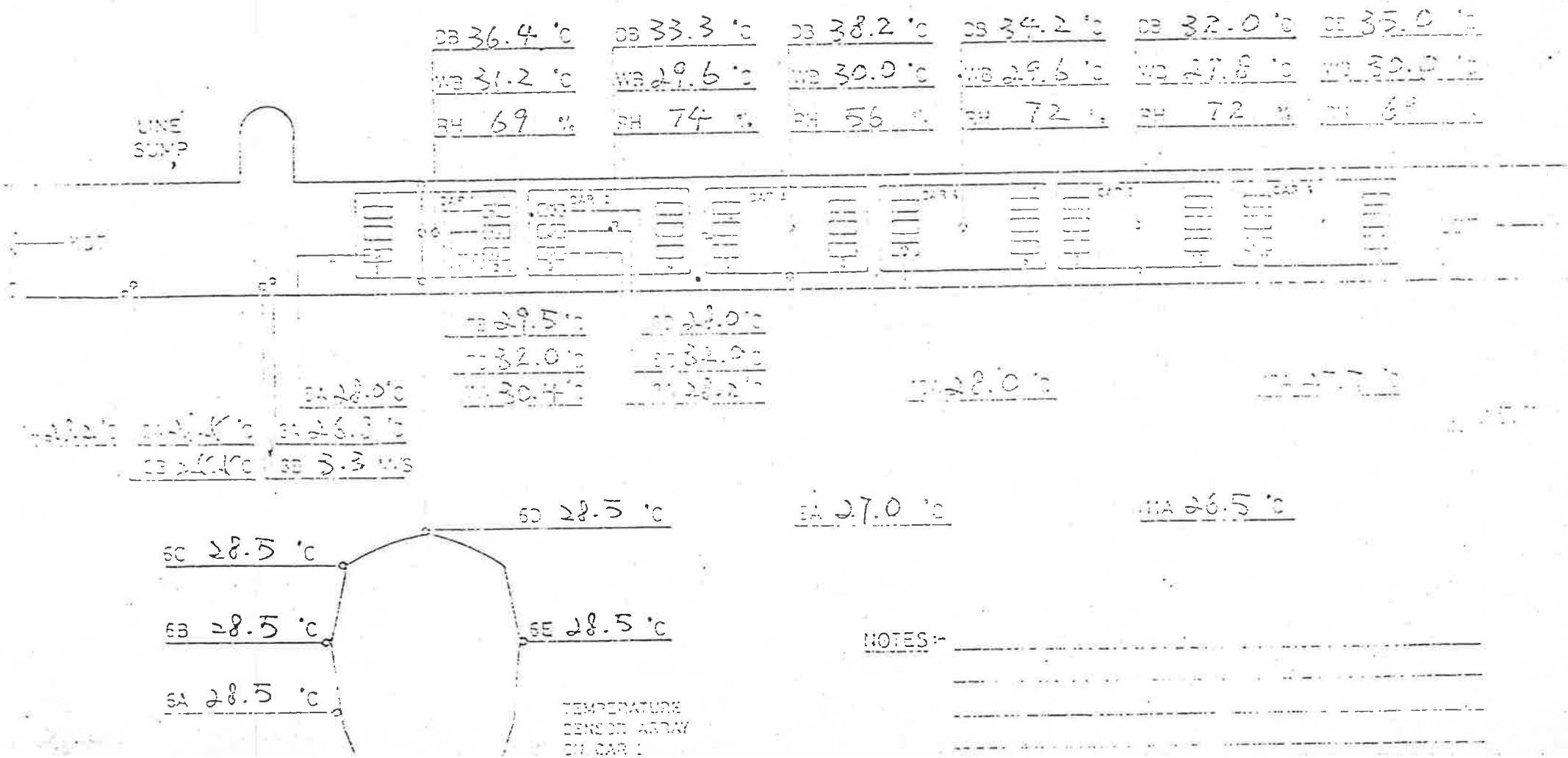
NOTES:

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 3A LOSS OF TRACTION POWER CHECK

TIME: 12:05



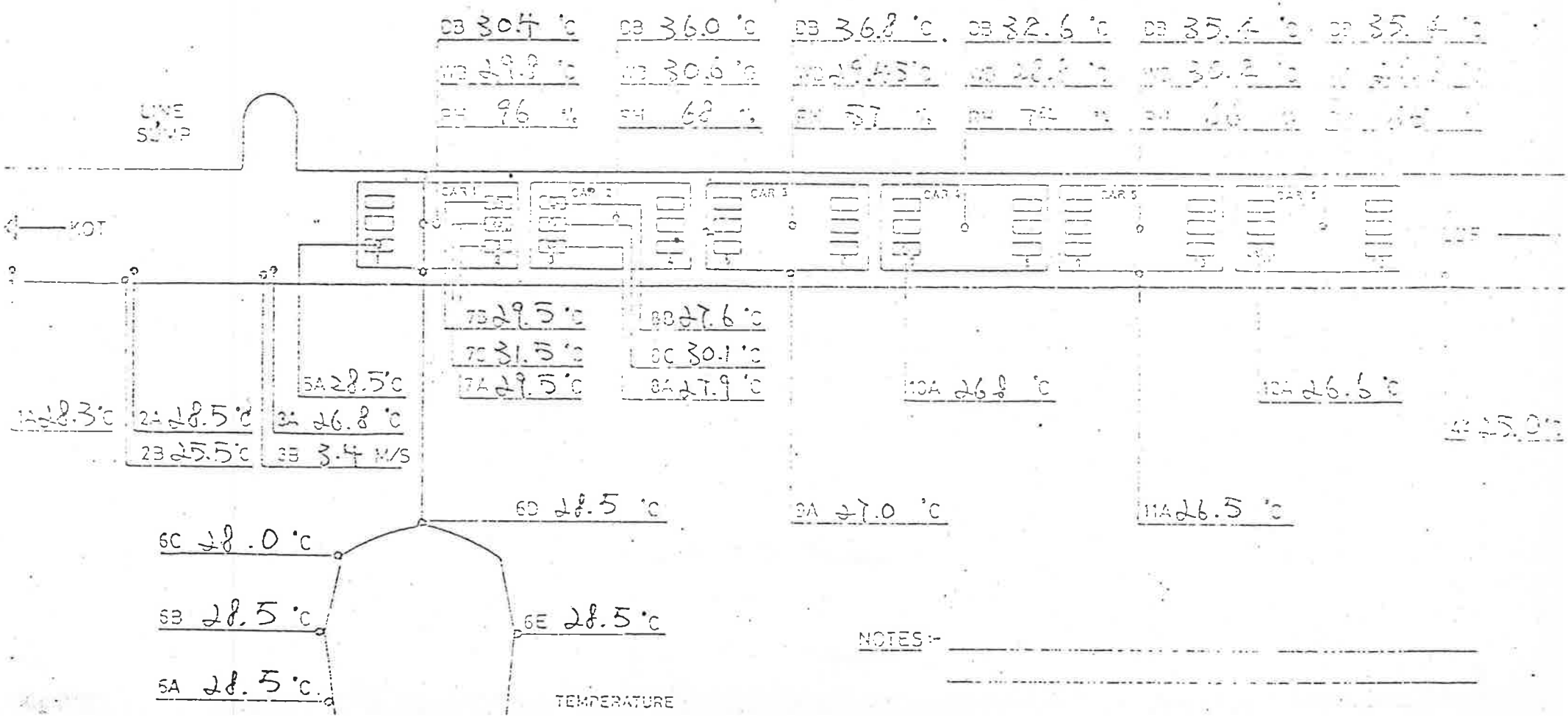
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 3A LOSS OF TRACTION POWER CHECK

TIME: 12:15



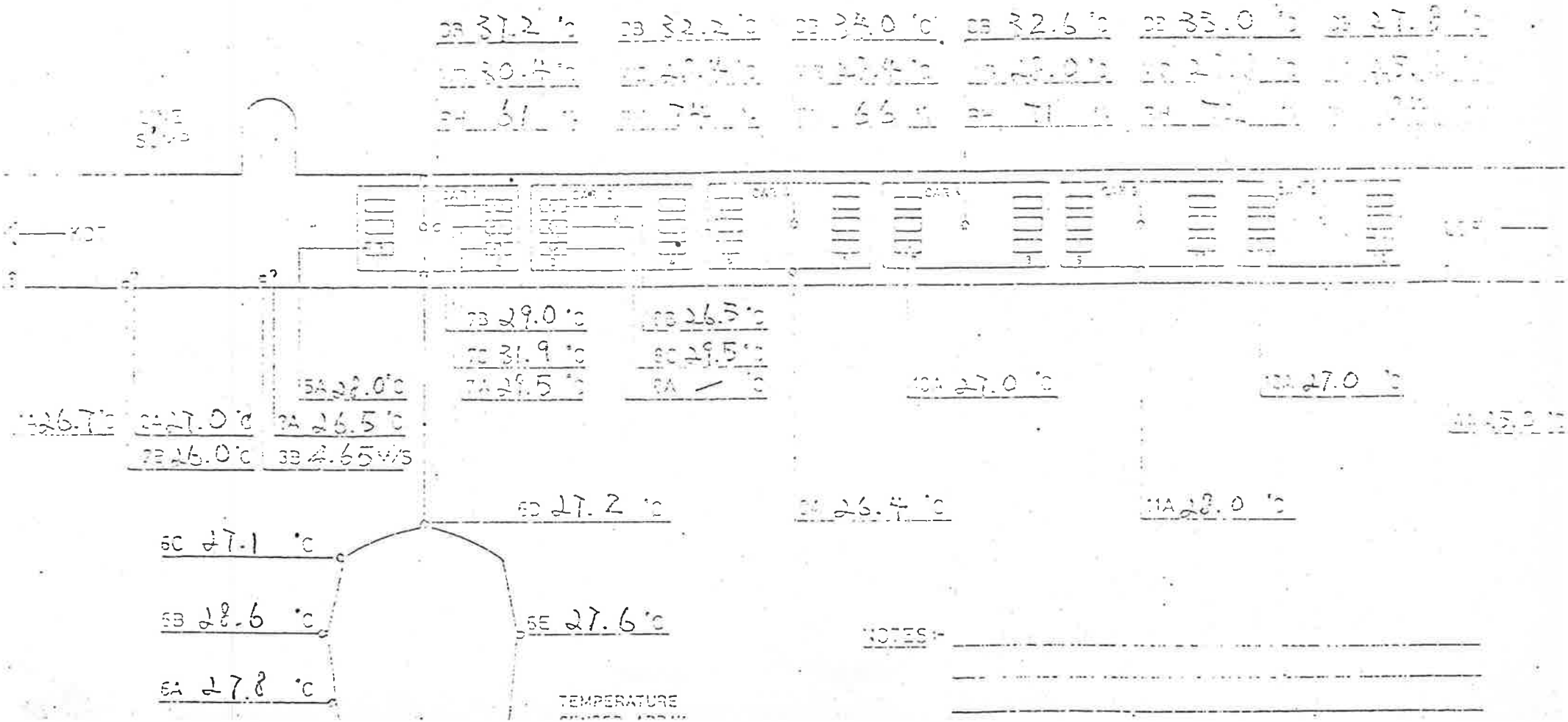
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 3B — LOSS OF TRACTION POWER CHECK —

TIME: 12:25 — TWO IMPULSE FANS



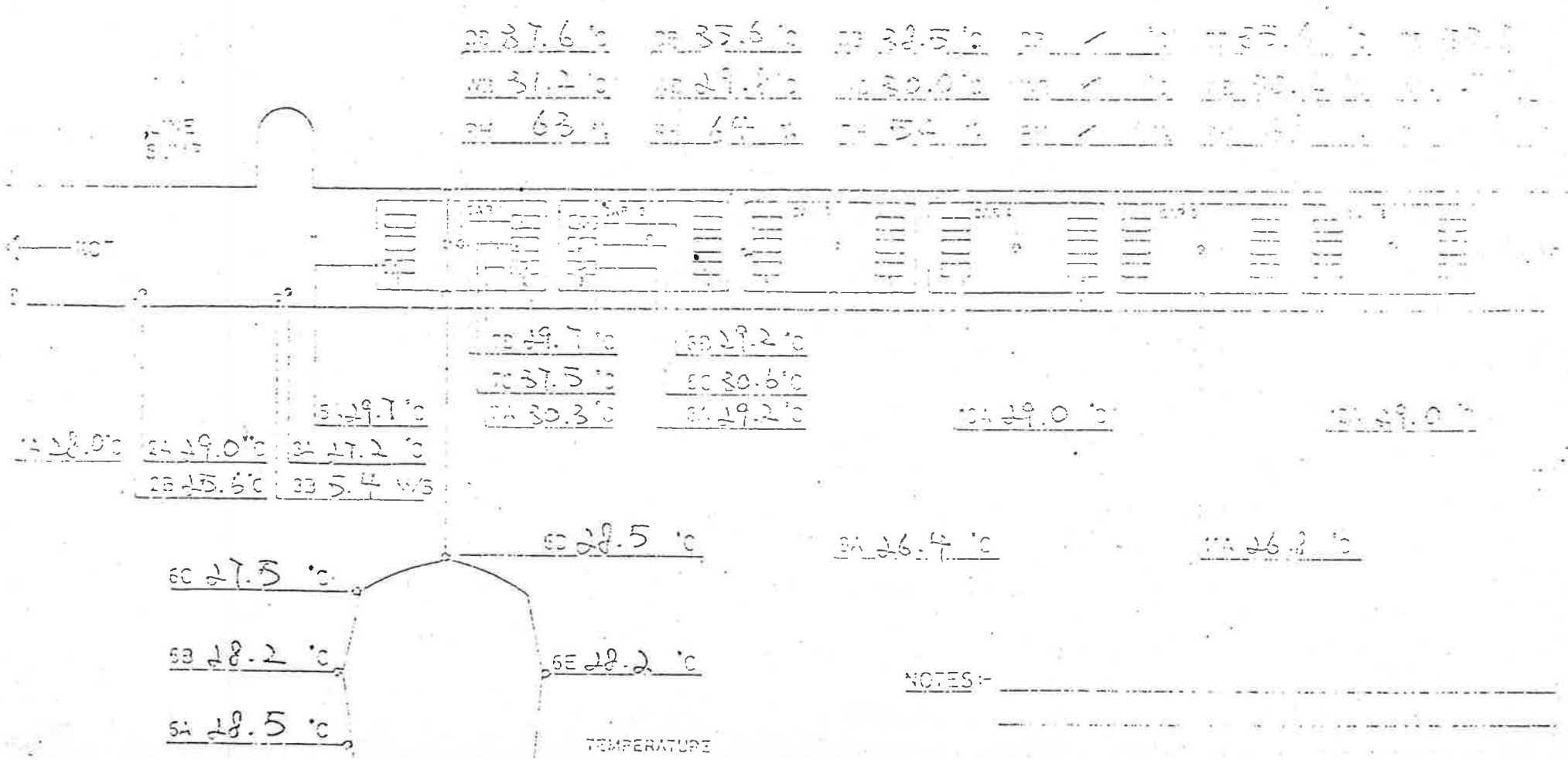
NOTES:

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 3BR — LOSS OF TRACTION POWER CHECK -

TIME: 13:05 — TWO IMPULSE FANS


2B 37.6 °C
2A 35.5 °C
2D 32.5 °C
2E 31.2 °C
2C 29.4 °C
2F 30.0 °C
2H 63 %
2G 64 %
2J 54 %
2K
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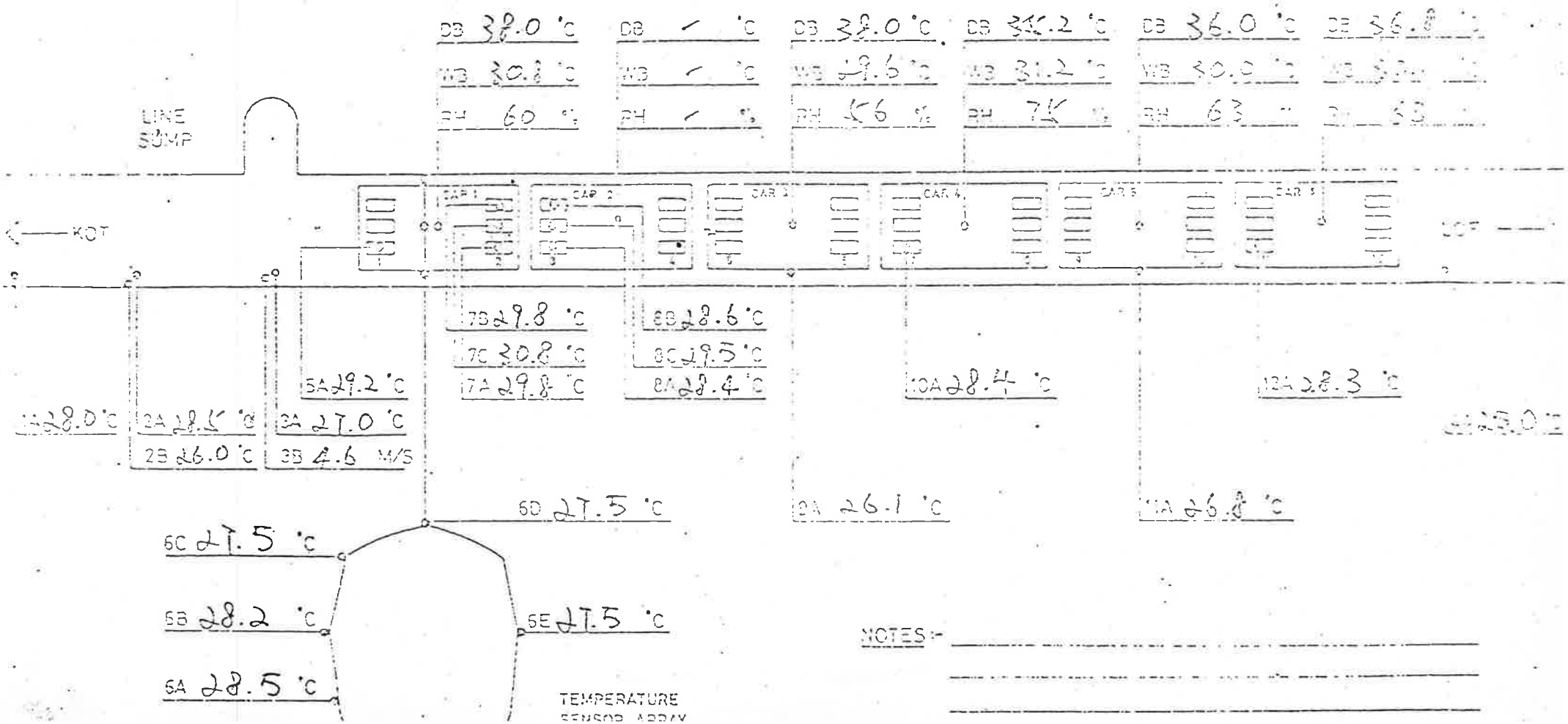
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 3 BR — LOSS OF TRACTION POWER CHECK –

TIME: 13:20 — TWO IMPULSE FANS



NOTES:-

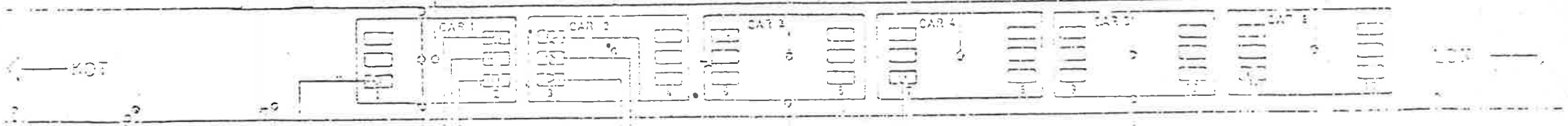
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 4 A RESTRICTED MANUAL RUNNING CHECK

TIME: 12:10

DB 31.4 °C	DB 30.4 °C	DB 33.2 °C	DB 32.6 °C	DB 27.0 °C	DB 27.6 °C
WB 28.8 °C	WB 27.5 °C	WB 27.6 °C	WB 26.6 °C	WB 22.8 °C	WB 24.0 °C
RH 82 %	RH 81 %	RH 66 %	RH 63 %	RH 65 %	RH 63 %



	DB 31.0 °C	DB 30.0 °C		
	WB 32.4 °C	WB 32.5 °C		
5A 36.5 °C	RH 13.5 %	8A 30.0 °C	10A 42.0 °C	12A 41.5 °C

6D 31.2 °C

9A 28.6 °C

11A 32.1 °C

6C 31.8 °C

6B 31.2 °C

6E 31.0 °C

6A 31.5 °C

TEMPERATURE SENSOR ARRAY ON CAR 1

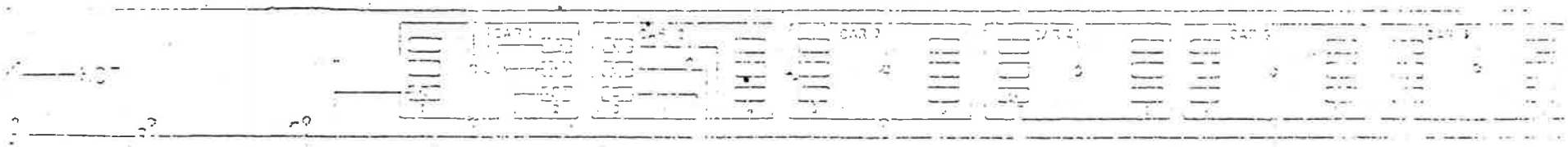
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 4B RESTRICTED MANUAL RUNNING CHECK

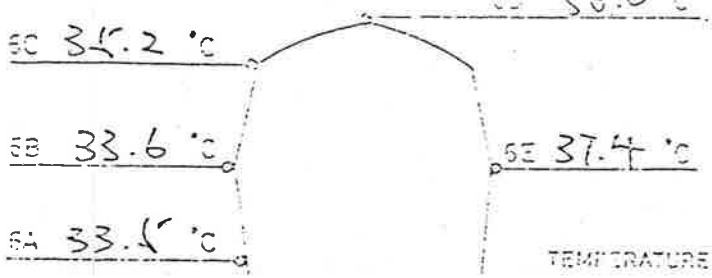
TIME: 12:52



TB 45.6 °C BB 40.4 °C

TC 54.0 °C BC 52.0 °C

BA 37.3 °C TA 43.1 °C BA 45.1 °C TBA 44.8 °C TBA 37.5 °C



BA 27.9 °C TBA 30.4 °C

NOTES:-

TUNNEL TEMPERATURE TESTS

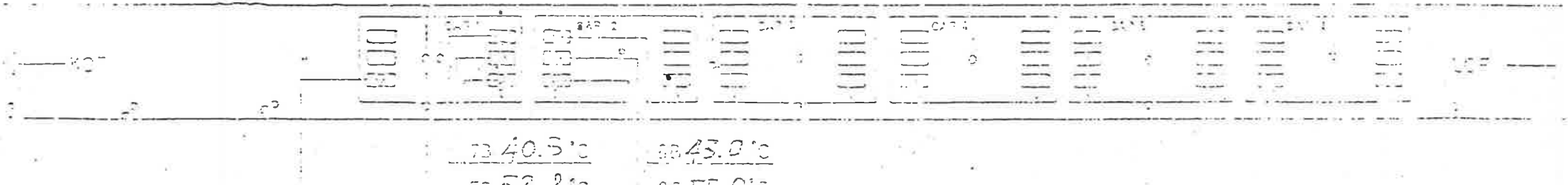
TEMPERATURE DISTRIBUTION

TEST: MIS- 4C

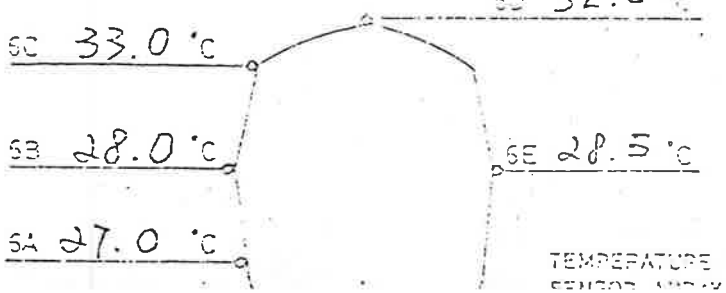
RESTRICTED MANUAL RUNNING CHECK

TIME: 14:18

2B 26.8 °C	2B 27.1 °C	2B 32.0 °C	2B 30.2 °C	2B 25.0 °C	2B 20.0 °C
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



	7B 40.5 °C	8B 43.0 °C		
	7C 52.8 °C	8C 55.0 °C		
5A 37.0 °C	7A 38.0 °C	8A 40.7 °C	10A 45.0 °C	12A 46.2 °C



3A 27.0 °C

11A 34.0 °C

NOTES:

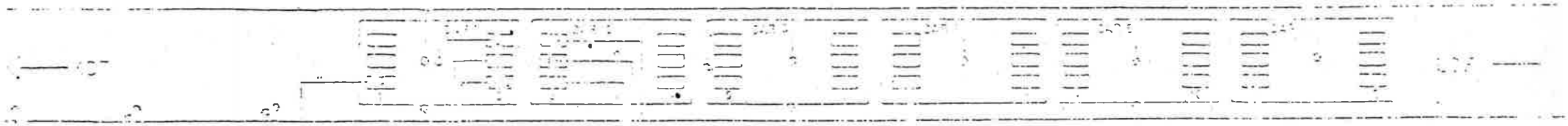
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

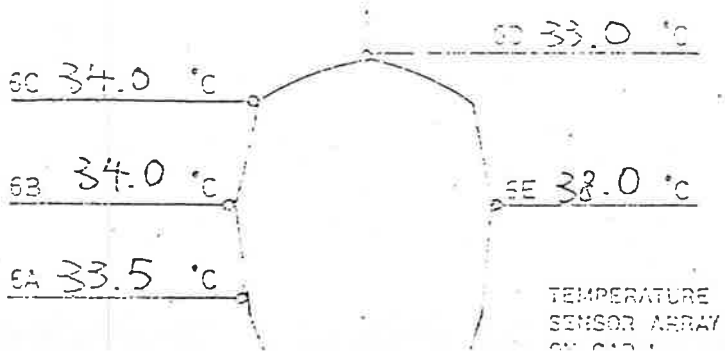
TEST: MIS- 4D RESTRICTED MANUAL RUNNING CHECK

TIME: 14:53

DB 26.9 °C	DB 29.0 °C	DB 32.2 °C	DB 30.8 °C	DB 28.2 °C	DB [illegible]
[illegible]	[illegible] 24.7 °C	[illegible]	[illegible] 26.8 °C	[illegible]	[illegible]
RH 71 %	RH 69 %	RH 65 %	RH 73 %	RH 69 %	[illegible]



	DB 46.0 °C	DB 41.8 °C		
	[illegible] 55.8 °C	[illegible] 44.0 °C		
5A 40.0 °C	[illegible] 43.0 °C	[illegible] 44.0 °C	[illegible] 40.0 °C	[illegible] 42.0 °C



9A 30.0 °C

11A 32.0 °C

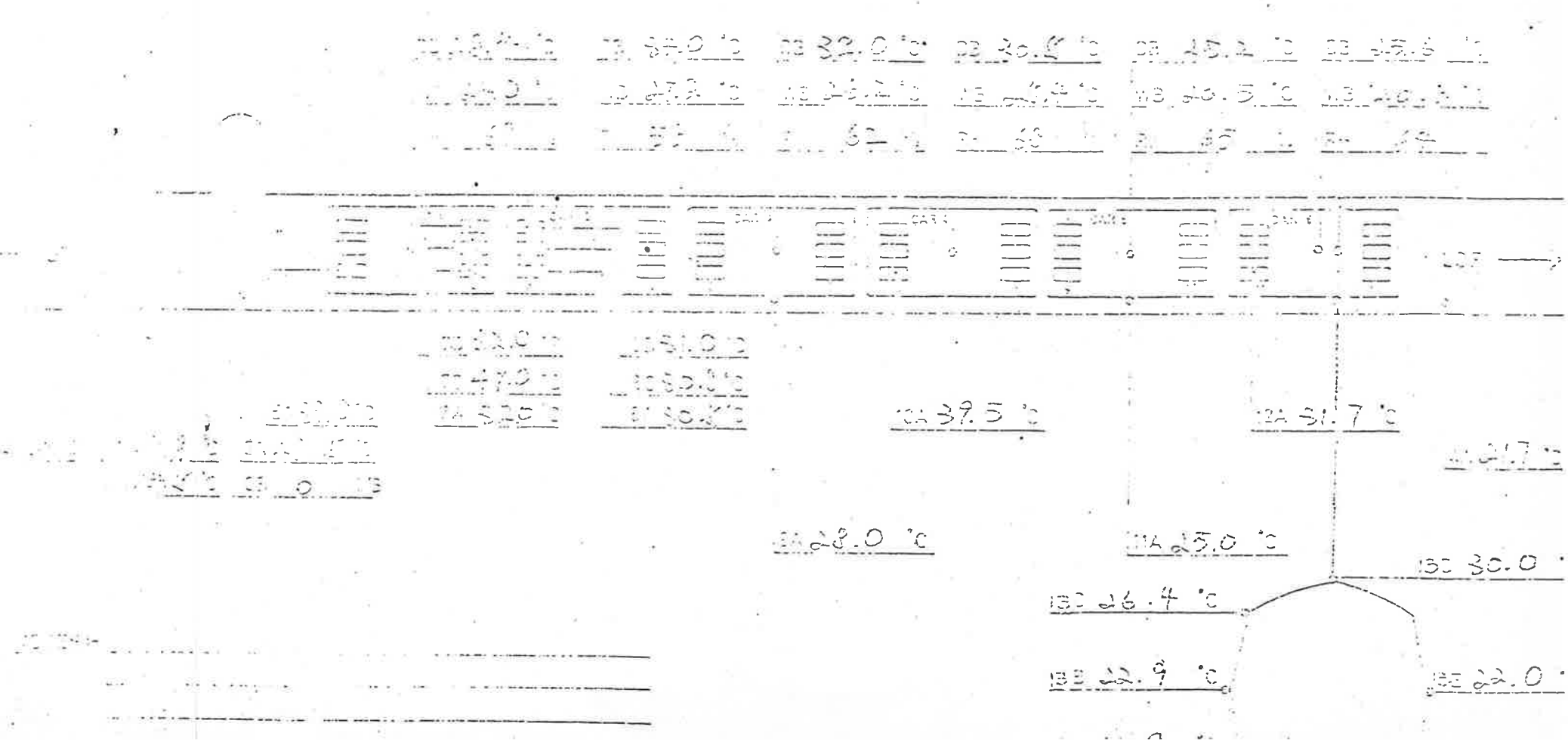
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 5 REVERSE AIR-FLOW CHECK

TIME: 12:45

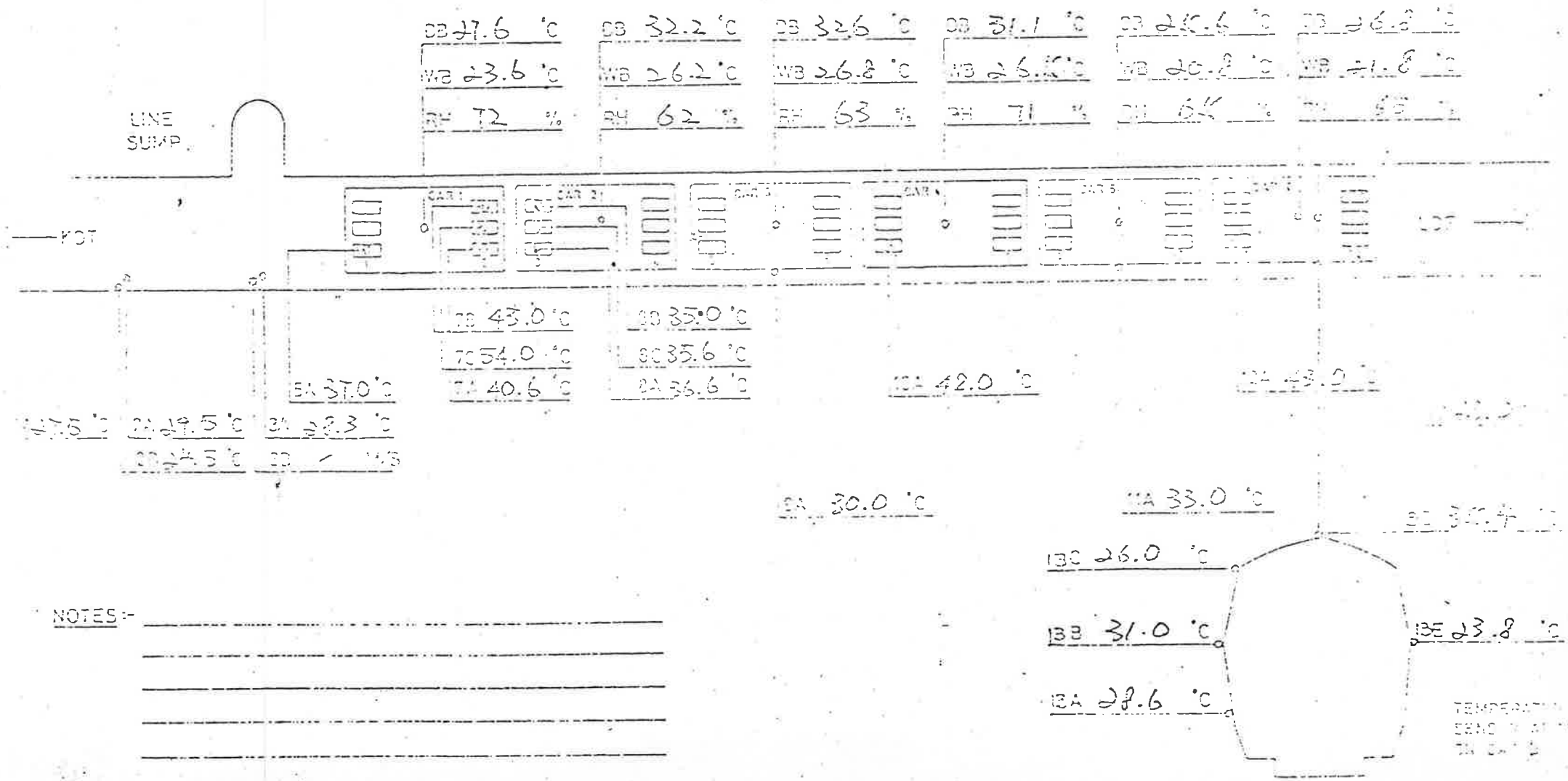


TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 5 REVERSE AIR-FLOW CHECK

TIME: 12:47



NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 5

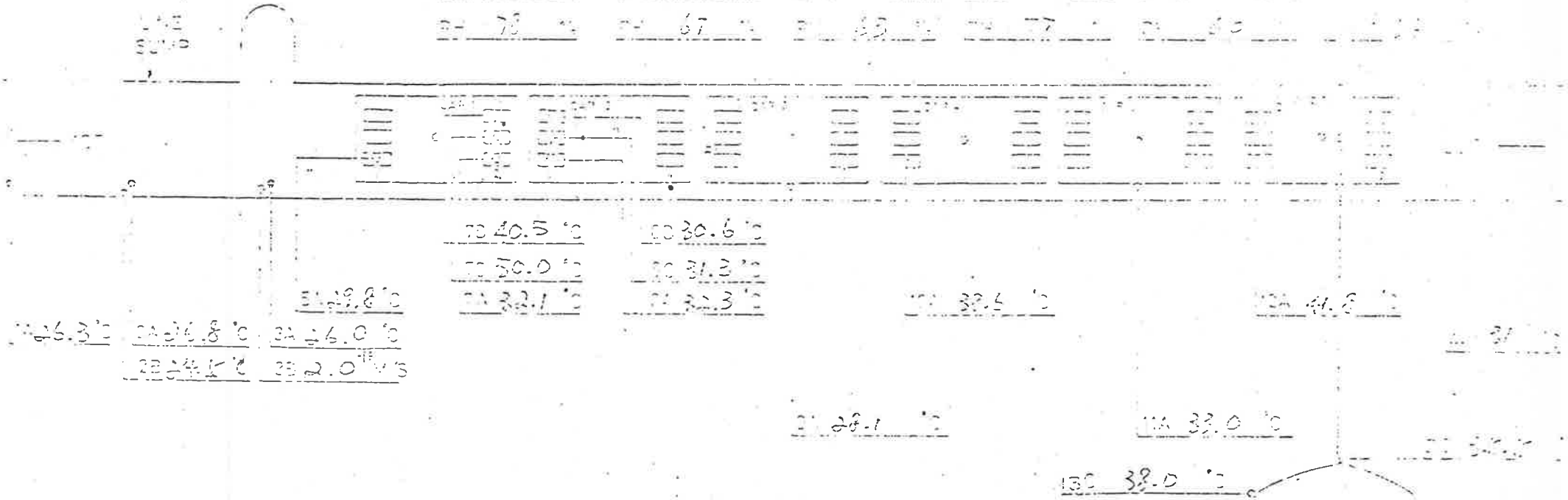
TIME: 12:50

REVERSE AIR-FLOW CHECK

DB 26.1 °C | DB 29.8 °C | DB 33.6 °C | DB 31.9 °C | DB 26.8 °C | DB 29.6 °C

WB 23.1 °C | WB 24.8 °C | WB 27.6 °C | WB 28.2 °C | WB 21.3 °C | WB [illegible]

RH 70 % | RH 67 % | RH 63 % | RH 77 % | RH 65 % | RH [illegible]



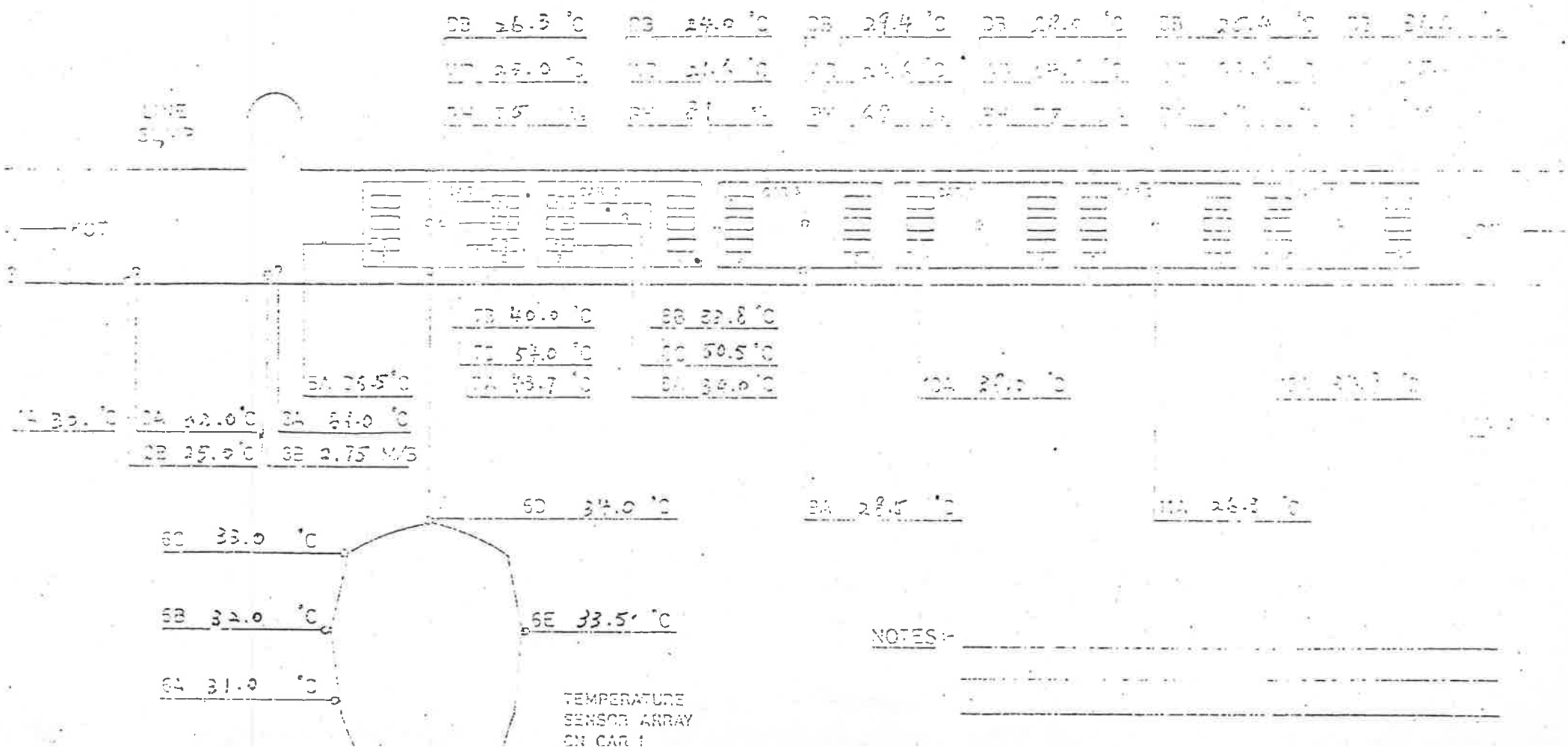
NOTES:- RECORDED BY A PORTABLE VANE TYPE ANEMOMETER 1.7 – 2.5 m/s

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 6 TRAIN PUSH-OUT TEST

TIME: 11:40



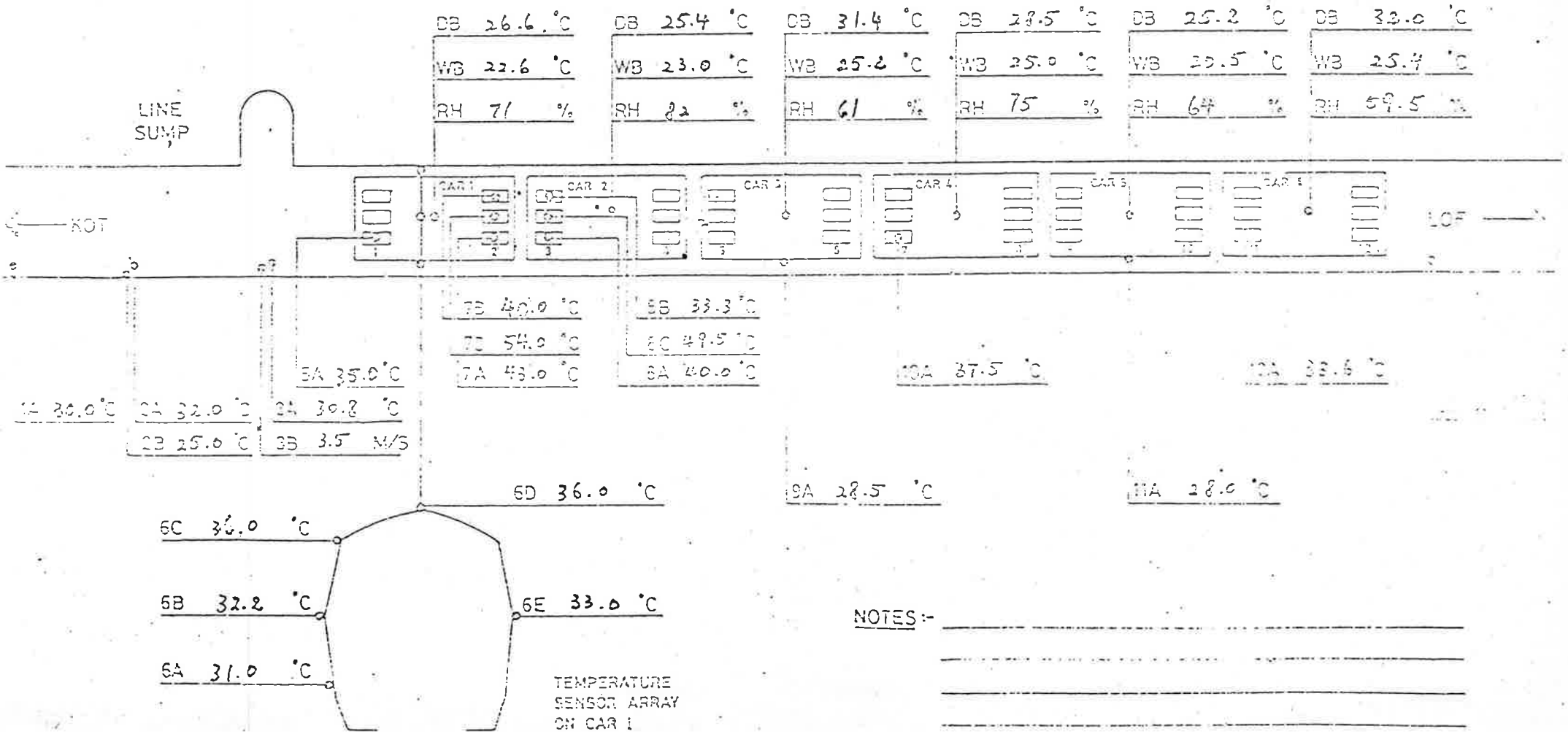
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 6 TRAIN PUSH-OUT CHECK

TIME: 11:55



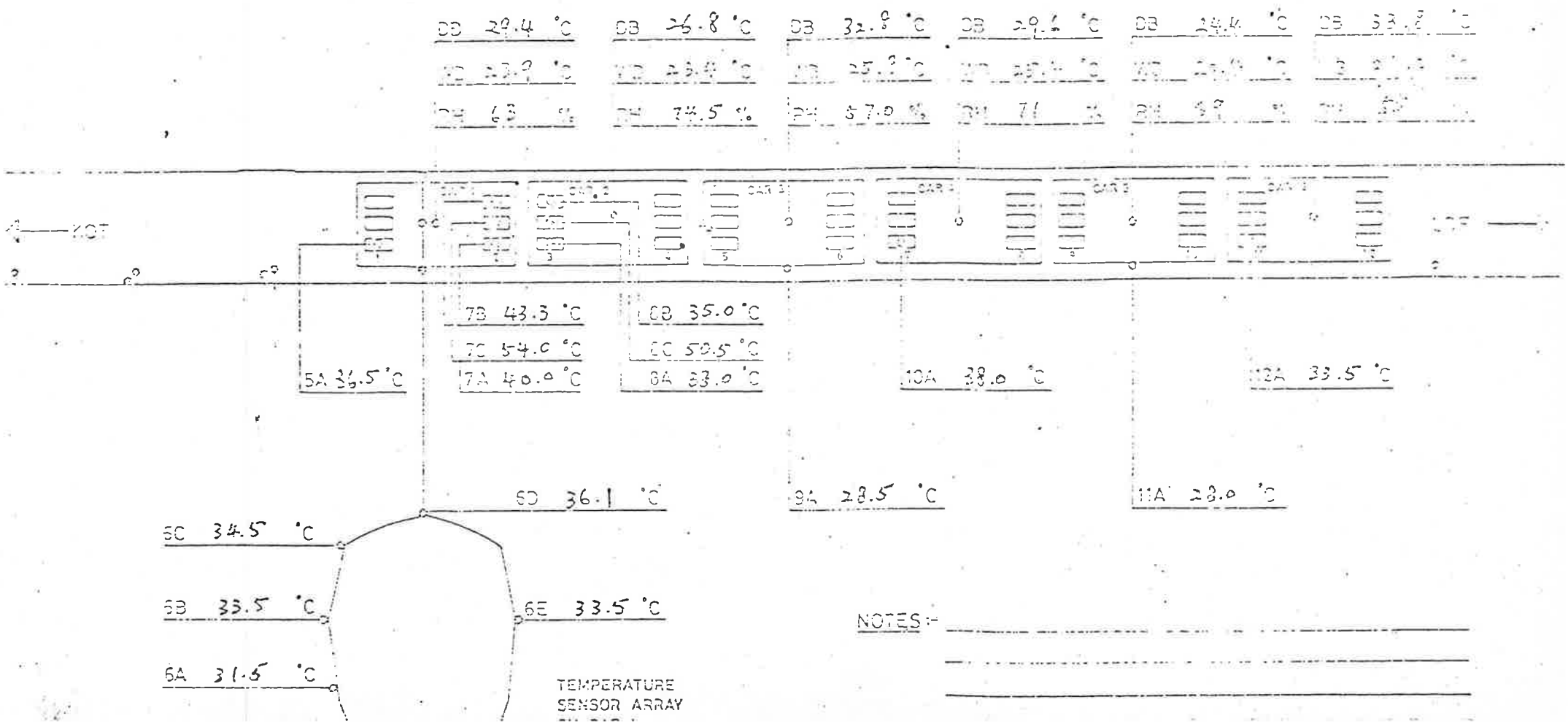
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 6 TRAIN PUSH - OUT CHECK

TIME: 12:10



NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

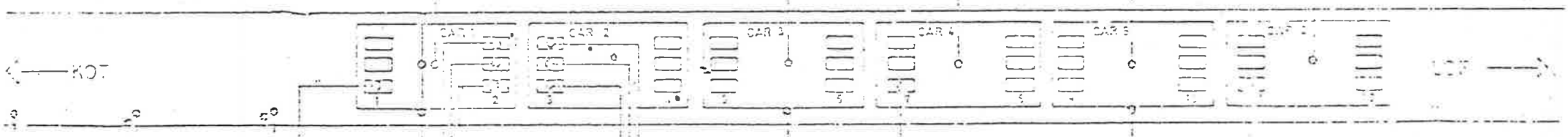
TEST: MIS- 7A

TIME: 15:42

RESTRICTED MANUAL CHECK

NO READINGS AVAILABLE

DB 24.2 °C	DB °C	DB °C	DB °C	DB 21.8 °C	DB 25.0 °C
WB 19.5 °C	WB °C	WB °C	WB °C	WB 17.8 °C	WB 19.4 °C
RH 63 %	RH %	RH %	RH %	RH 15 %	RH 16 %



7B 35.0 °C	8B 31.5 °C	
7C 45.0 °C	8C 41.5 °C	
5A 33.0 °C	7A 36.0 °C	8A 35.0 °C	10A 37.0 °C	12A 34.0 °C

6D 31.5 °C

9A 28.5 °C

11A 28.5 °C

5C 31.0 °C

6B 29.5 °C

6A 30.5 °C

6E 33.0 °C

TEMPERATURE SENSOR ARRAY ON CAR 1

NOTES:-

TUNNEL TEMPERATURE TESTS

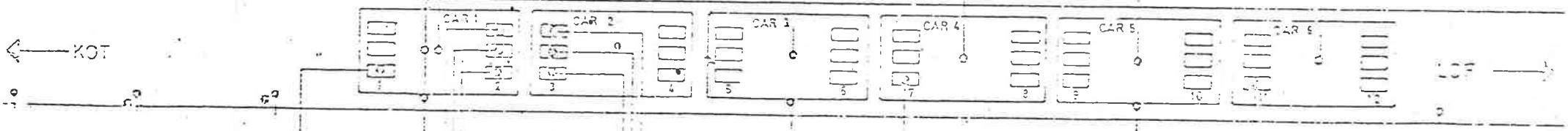
TEMPERATURE DISTRIBUTION

TEST: MIS- 7A

TIME: 15:45

RESTRICTED MANUAL CHECK

DB 23.4 °C	DB 25.2 °C	DB 28.4 °C	DB 27.4 °C	DB 22.9 °C	DB 26.1 °C
WB 18.6 °C	WB 21.0 °C	WB 22.6 °C	WB 21.5 °C	WB 18.2 °C	WB 21.5 °C
RH 64 %	RH 70 %	RH 60 %	RH 59 %	RH 65 %	RH 68 %



7B 41.5 °C
7C 54.0 °C
7A 42.0 °C

8B 38.0 °C
8C 53.5 °C
8A 41.5 °C

5A 35.0 °C

10A 39.0 °C

12A 35.0 °C

6D 32.5 °C

9A 28.0 °C

11A 25.0 °C

6C 32.0 °C

6B 30.0 °C

5A 30.0 °C

6E 32 °C

TEMPERATURE SENSOR ARRAY

NOTES:-

TUNNEL TEMPERATURE TESTS

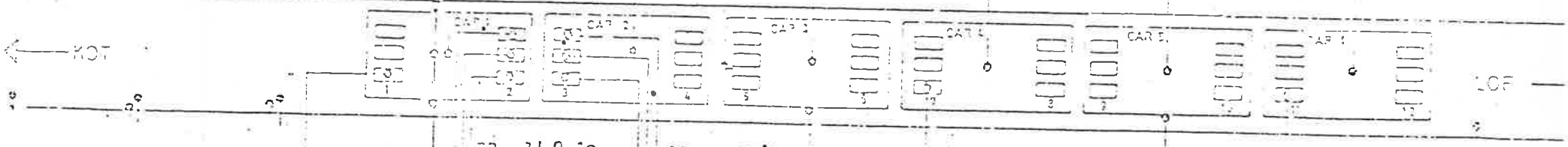
TEMPERATURE DISTRIBUTION

TEST: MIS- 78

TIME: 16:20

RESTRICTED MANUAL CHECK

DB 24.8 °C	DB 27.6 °C	DB 31.4 °C	DB 32.2 °C	DB 23.8 °C	DB 27.4 °C
WB 22.4 °C	WB 22.0 °C	WB 25.2 °C	WB 26.4 °C	WB 21.0 °C	WB 22.8 °C
RH 81 %	RH 62 %	RH 61 %	RH 62 %	RH 78 %	RH 62 %



7B 31.0 °C
7C 40.0 °C
7A 27.0 °C

8B 33.5 °C
8C 40.5 °C
8A 30.0 °C

5A 26.6 °C

10A 33.0 °C

12A 33.0 °C

5D 25.0 °C

9A 26.1 °C

11A 31.0 °C

6C 25.0 °C

6B 23.0 °C

6A 23.5 °C

6E 24.5 °C

TEMPERATURE SENSOR ARRAY

NOTES:-

TUNNEL TEMPERATURE TESTS

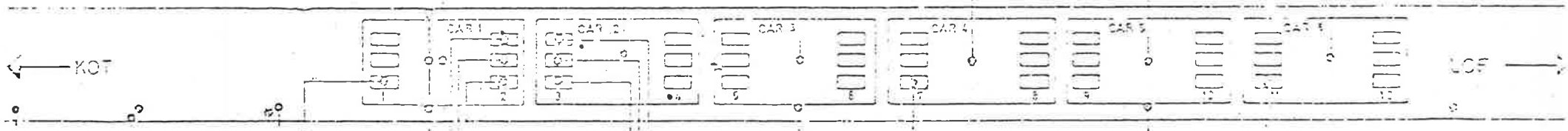
TEMPERATURE DISTRIBUTION

TEST: MIS- 7B

TIME: 16:25

RESTRICTED MANUAL CHECK

DB 26.8 °C	DB 28.6 °C	DB 31.2 °C	DB 32.3 °C	DB 26.2 °C	DB 28.4 °C
WB 22.8 °C	WB 23.7 °C	WB 25.4 °C	WB 27.8 °C	WB 20.4 °C	WB 24.3 °C
RH 71 %	RH 66 %	RH 62 %	RH 71 %	RH 58 %	RH 72 %



7B 33.0 °C	8B 32.0 °C	
7C 41.0 °C	8C 43.5 °C	
5A 30.5 °C	7A 29.5 °C	8A 32.5 °C	10A 36.0 °C	12A 38.0 °C

6D 28.5 °C

9A 29.5 °C

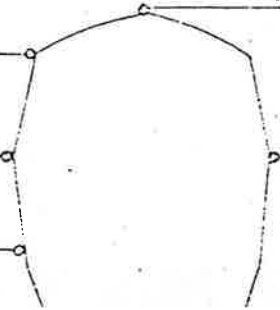
11A 32.0 °C

6C 28.5 °C

6B 26.0 °C

6A 26.2 °C

6E 26.2 °C



TEMPERATURE SENSOR ARRAY ON CAR 1

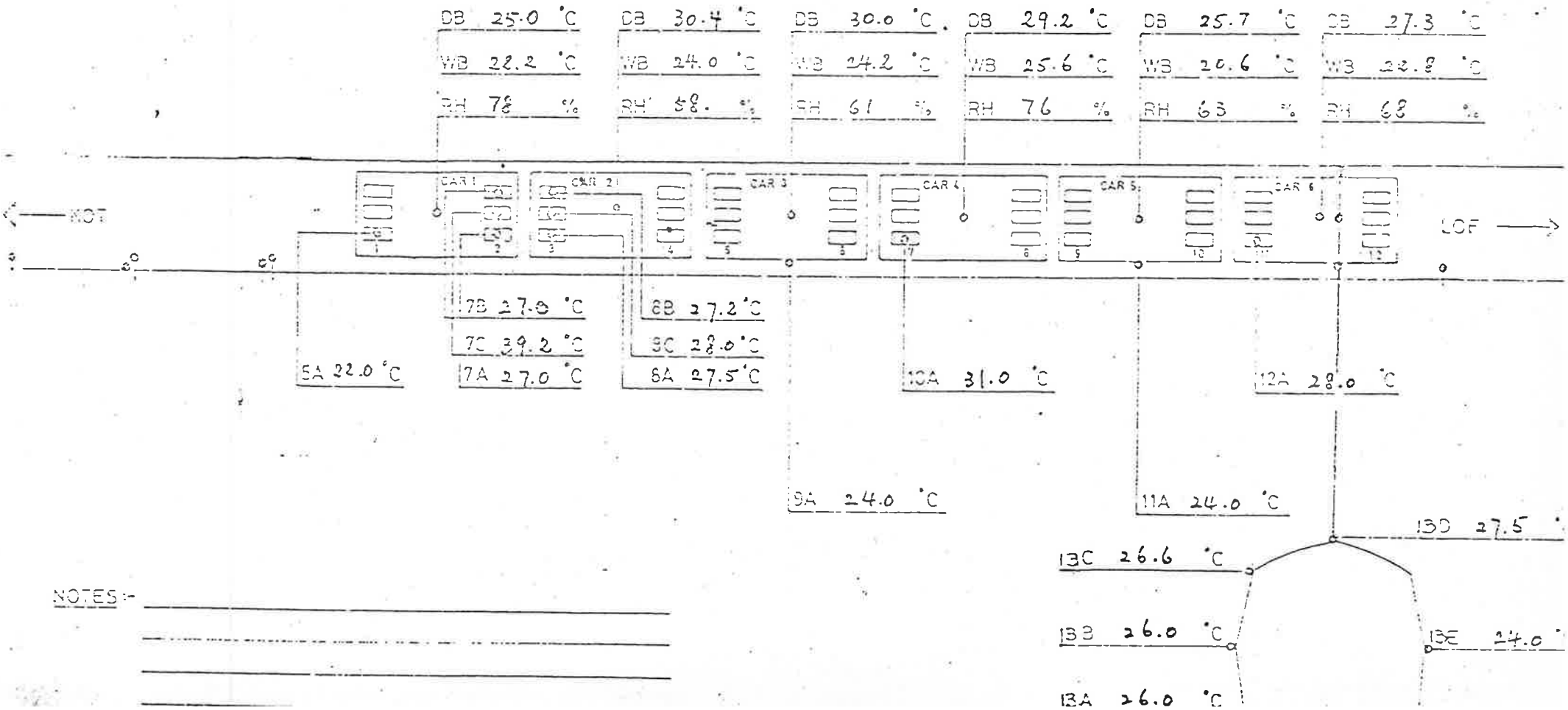
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 8 NORMAL OPERATIONS TEST

TIME: 15.00



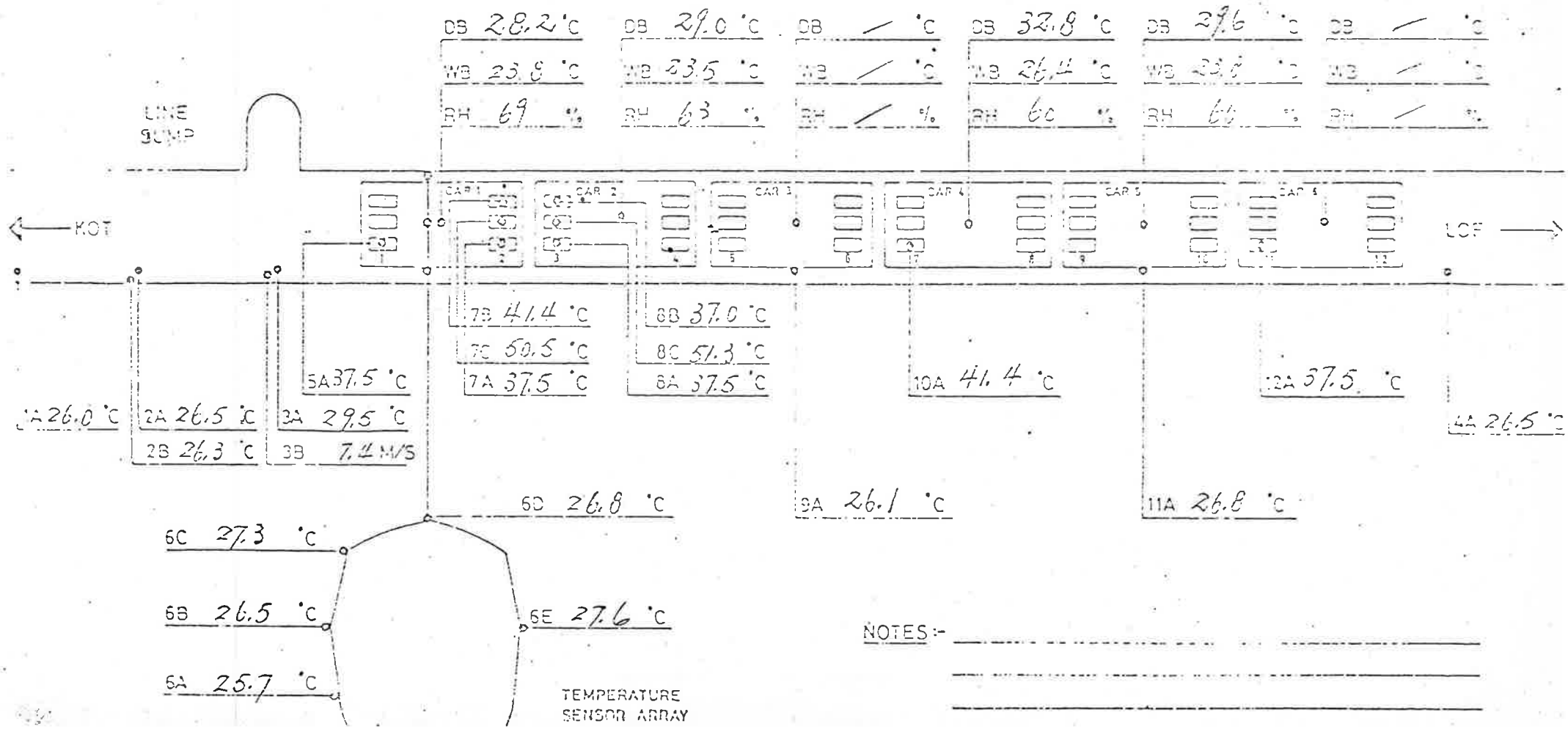
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 9 — IMPULSE FAN INTERRUPTION TEST

TIME: 15:31



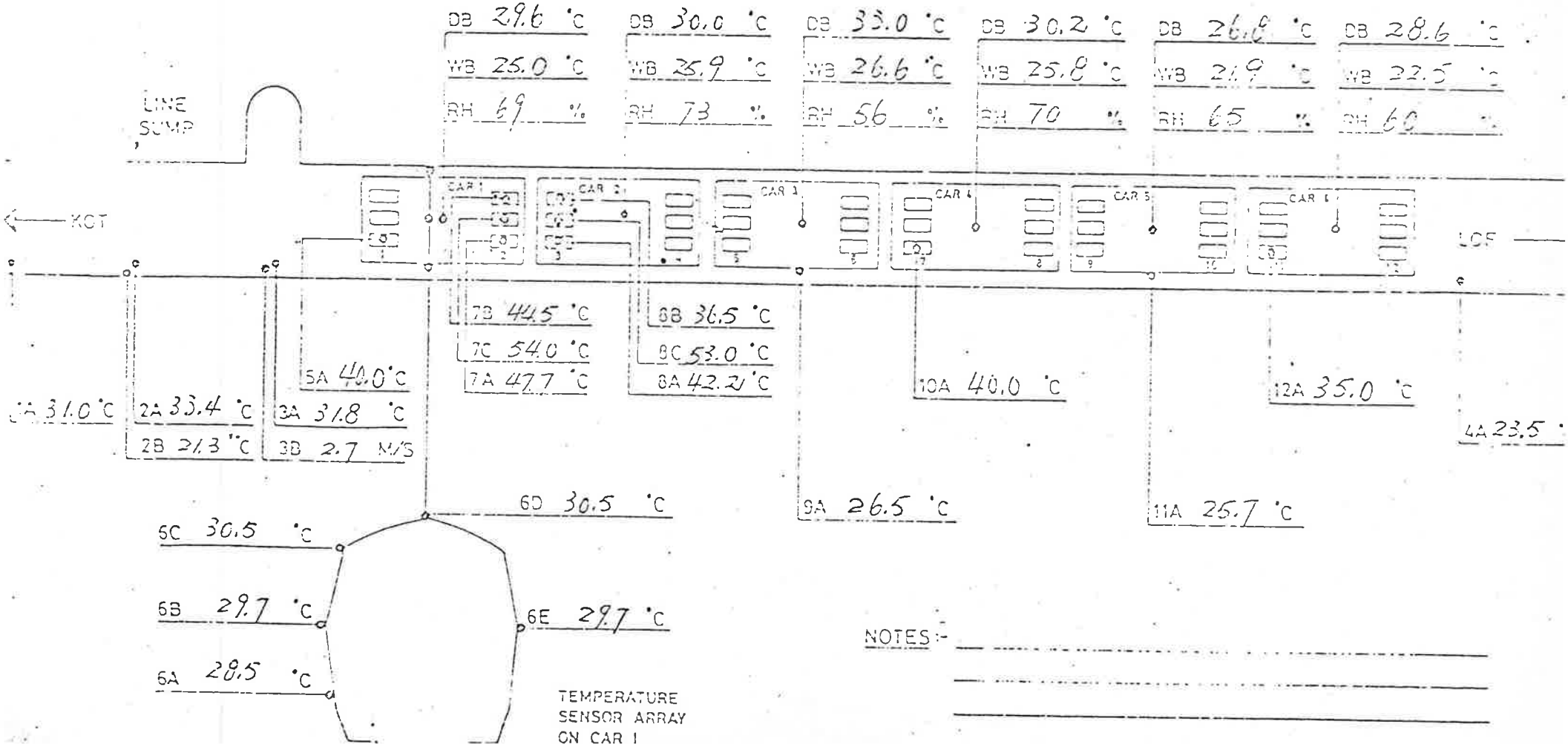
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 9 IMPULSE FAN INTERRUPTION TEST

TIME: 15:40



NOTES:-

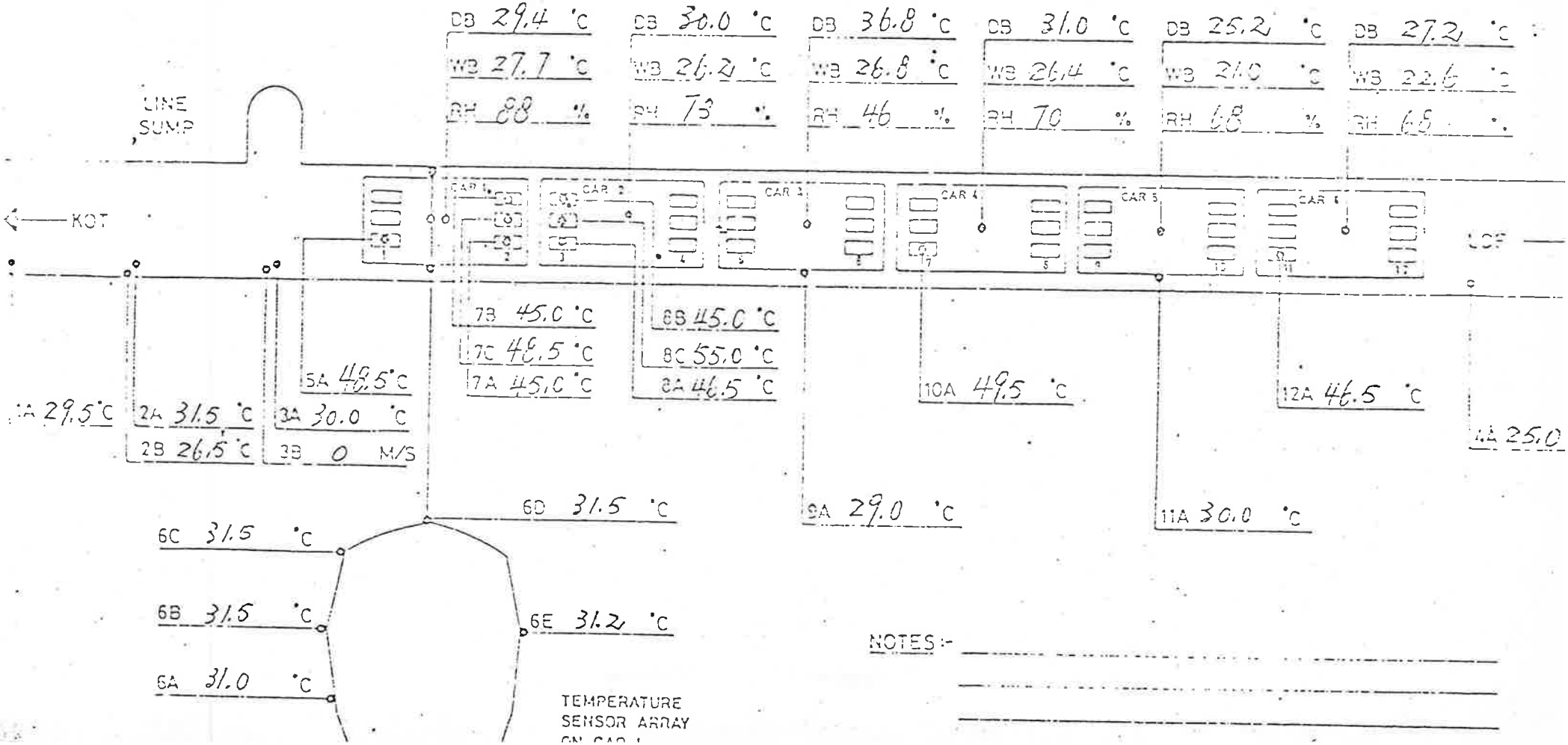
TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION.

TEST: MIS- 9

TIME: 15:50

IMPULSE FAN INTERRUPTION TEST



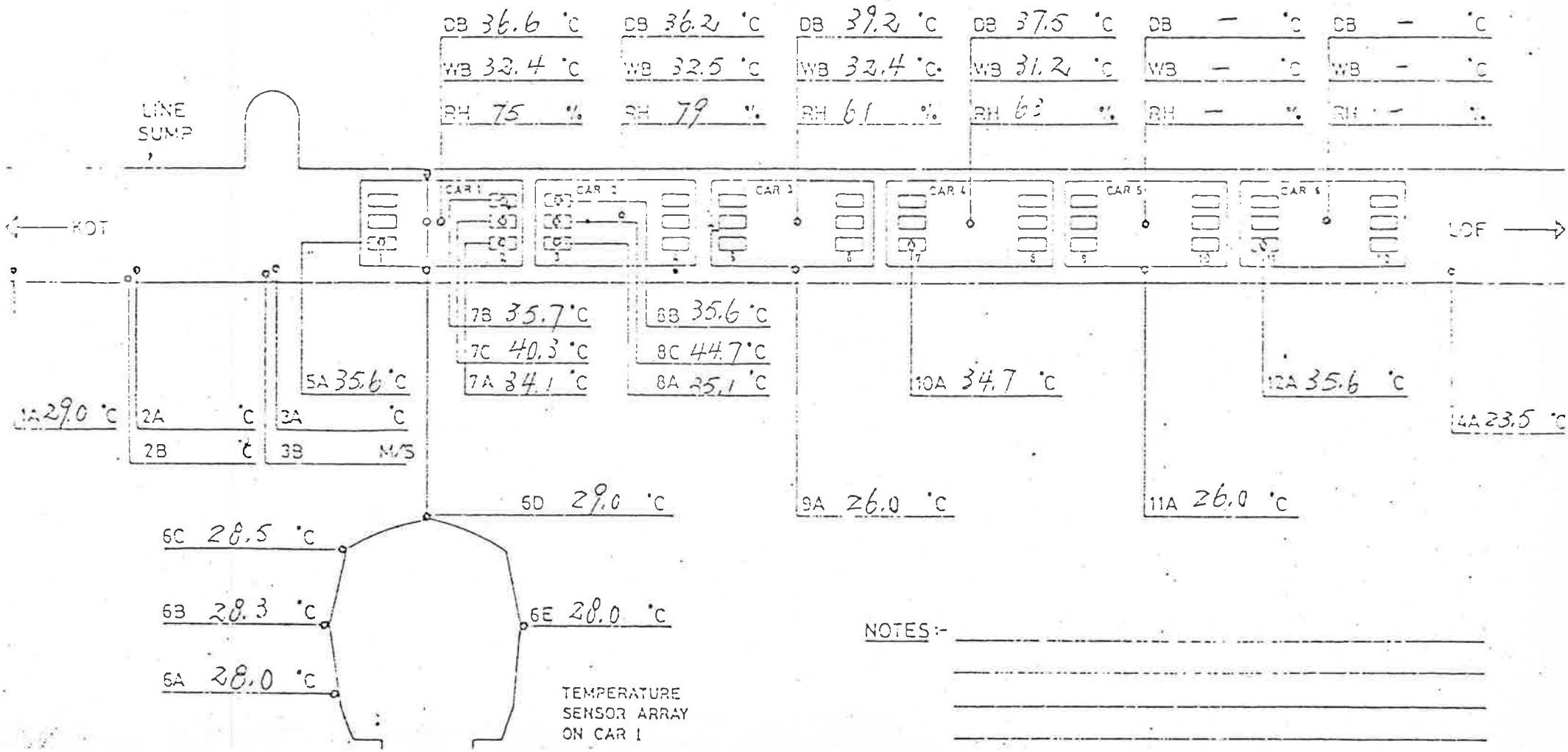
NOTES:-

TUNNEL TEMPERATURE TESTS

TEMPERATURE DISTRIBUTION

TEST: MIS- 9 — IMPULSE FAN INTERRUPTION TEST

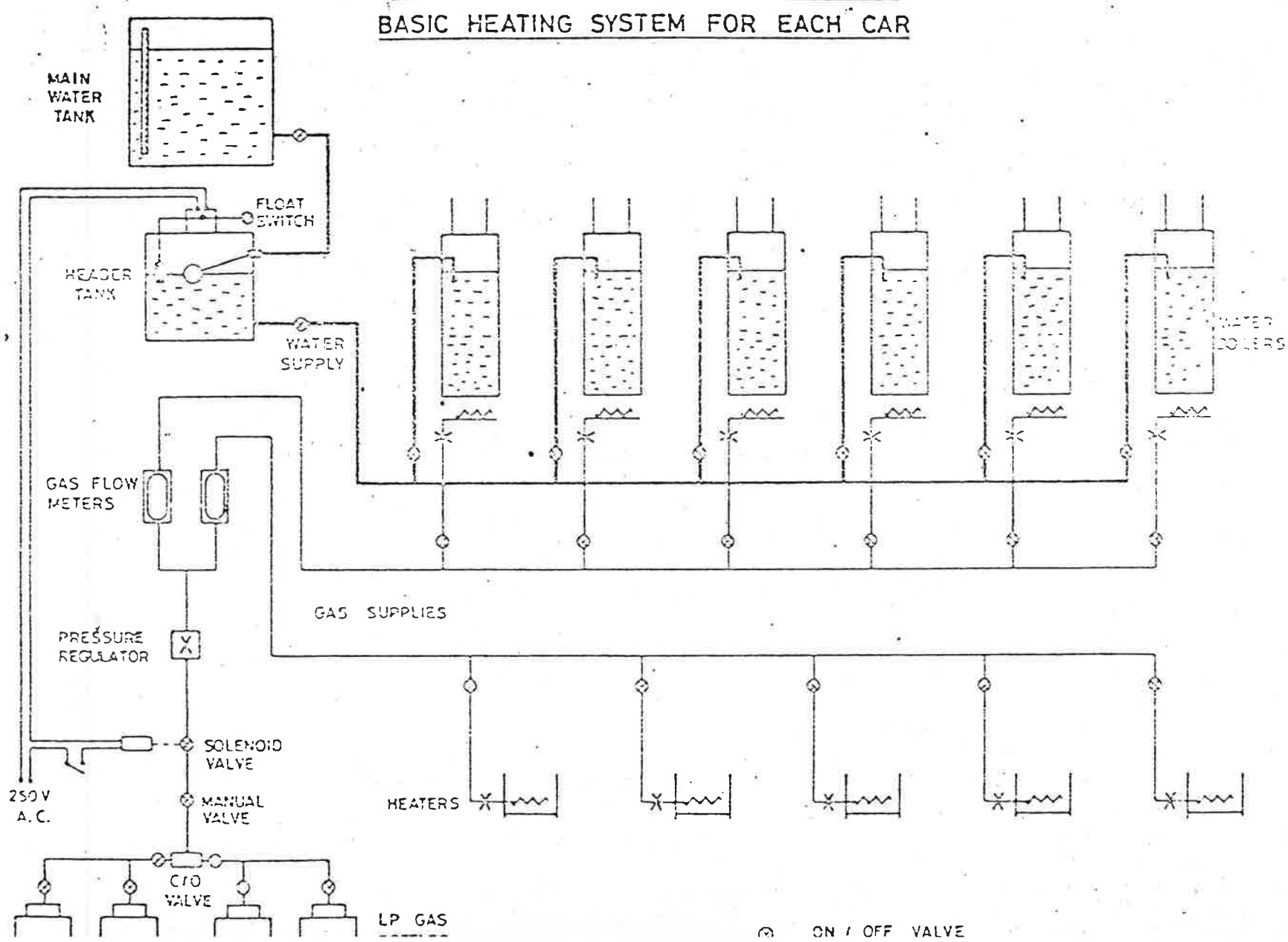
TIME: 16:15



NOTES:-

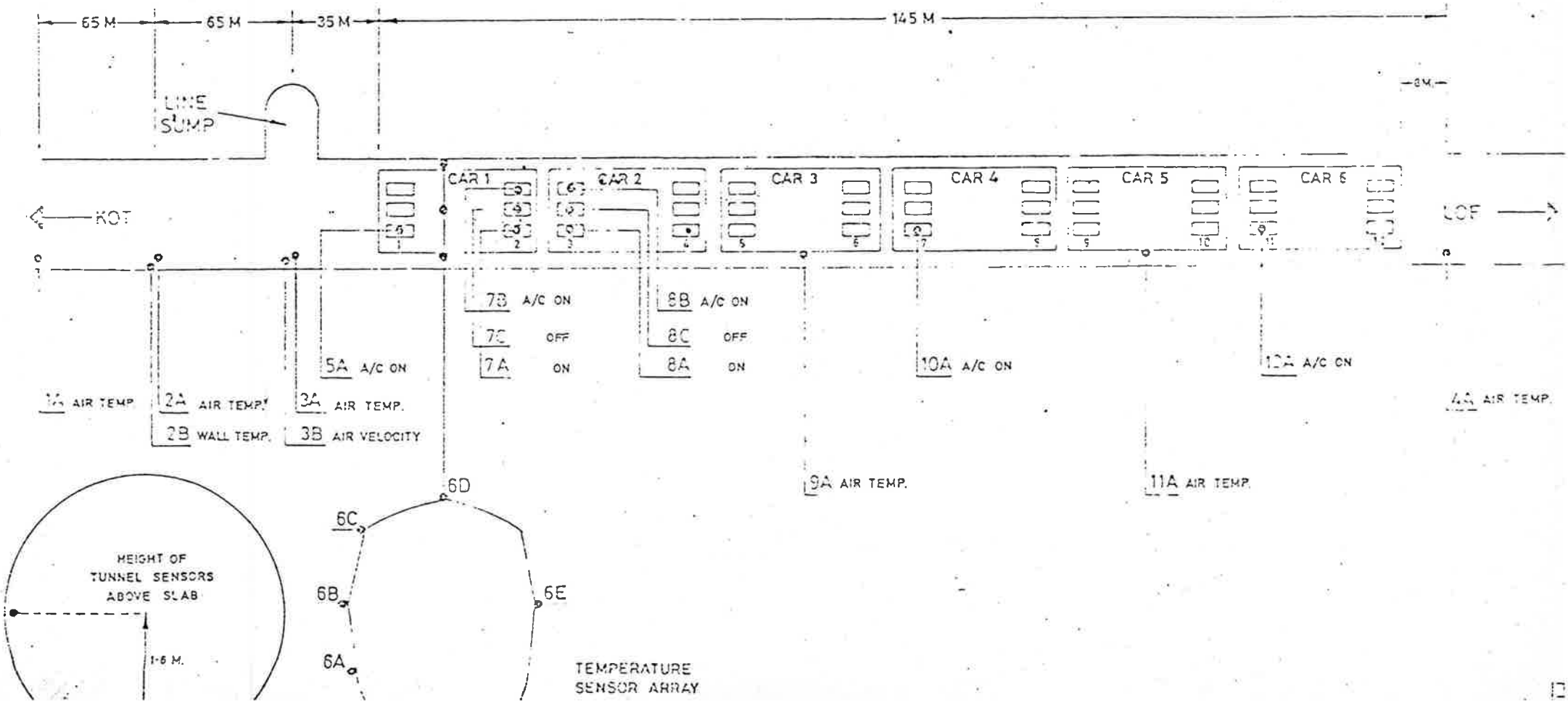
TUNNEL TEMPERATURE TESTS

BASIC HEATING SYSTEM FOR EACH CAR



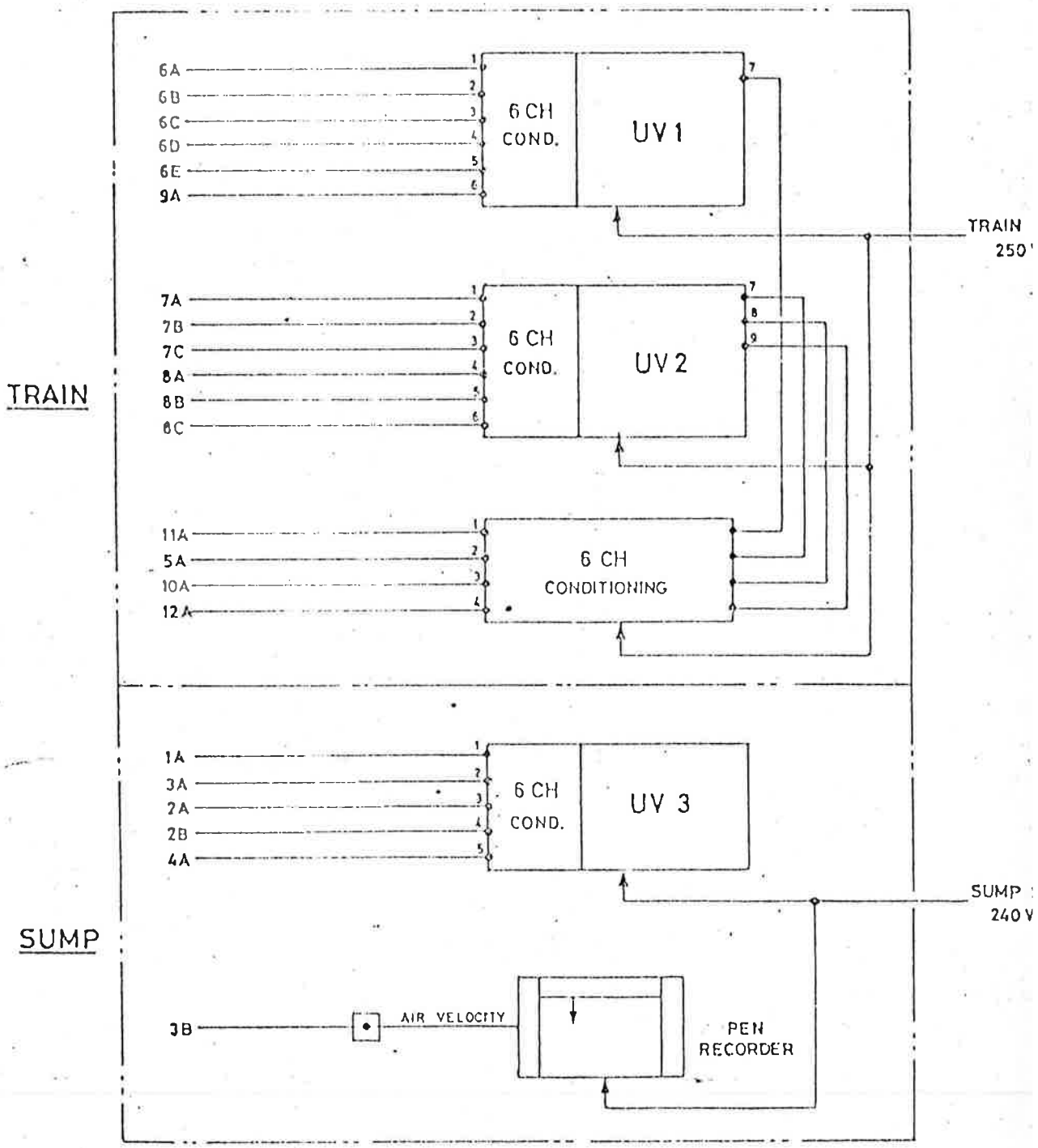
TUNNEL TEMPERATURE TESTS

LOCATION OF SENSORS



TUNNEL TEMPERATURE TESTS

BLOCK DIAGRAM RECORDING SYSTEM



UV1, UV2, UV3 ARE EACH 12 CHANNEL RECORDERS. ONLY 6 OF THE CHANNELS HAVE BUILT-IN CONDITIONING EQUIPMENT. HENCE THE NEED FOR A SEPARATE CONDITIONING UNIT ON THE TRAIN.

TUNNEL TEMPERATURE TESTS

PYSCHROMETRIC CHART

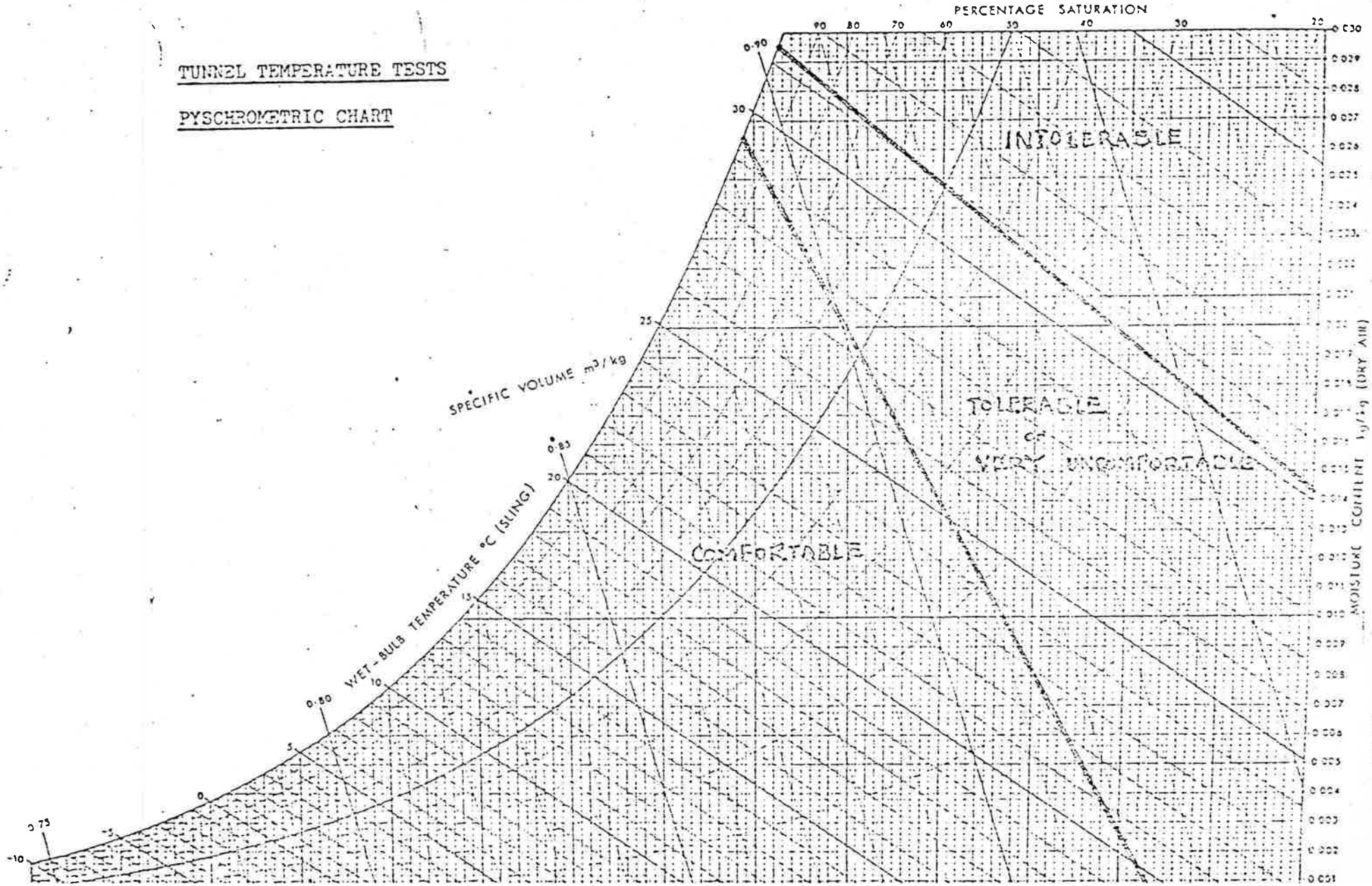


FIGURE 3

Temperature/Humidity Log

Location : _____ By : _____

Test No. : _____ Designation : _____

Date : _____

Time	Location			Temperature		RH (%)	Remarks
	F	C	R	Deg. C db	Deg. C wb		

MIS TUNNEL TEMPERATURE TESTS

FIGURE F

Heater/Boiler Log

Location : _____ By : _____

Test No. : _____ Designation : _____

Date : _____

Tank Level : _____

Time Heater/Boiler Ignition Completed : _____

Time Heater/Boiler Shut-down Completed : _____

Time	Water Tank Level (cm)	Consumption Rate (l/m)

Time	Gas Consumption Rate (l/m)	
	Heaters	Boilers

Notes

[illegible]
Train Air Conditioning Log

FIGURE G

Test No. : _____ By : _____

Date : _____ Designation : _____

Status Code	Lights		
A	*	*	*
B	Green	*	*
C	Green	Yellow	*
D	*	Yellow	*
E	Green	Yellow	Red

Unit No. / Time	1	2	3	4	5	6	7	8	9	10	11	12	Remarks