Transport Research Laboratory
Impact Test Group

DYNAMIC RESTRAINT TEST REPORT

Customer: **Unwin Safety Systems/Radcliffe Rehabilitation Services**

test vehicle: Netti 3

test number: T0106

test type: ISO/CD 7176/19-1 DATE 15 JAN 1997

test speed: 48 (+2, – 0) km/h

test date: 9 December 1998

If you have any questions relating to this test please contact your Project Manager:
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DYNAMIC RESTRAINT TEST FACILITY TEST REPORT

test date:	9 December 1998
TRL reference number:	ITG 98095 (T0106)
report date:	14 December 1998
author:	J M Britchford
customer:	Unwin Safety Systems/ Radcliffe Rehabilitation Services

This is an unpublished report prepared for the customer named above and must not be referred to in any publication without the permission of the customer. The views expressed are those of the author(s) and not necessarily those of the customer.

Approvals	
Project Manager	
[illegible]	

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DYNAMIC RESTRAINT TEST FACILITY TEST REPORT

Test No.	T0106	Customer:	Unwin Safety Systems/Radcliffe Rehabilitation Services
Date:	9/12/98	Run No.:	RCR01
Time:	1104hrs		

Test To be Conducted

Pulse Specification	ISO/CD 7176-19-1(January 97), Frontal impact	
Wheel Chair	*Manufacturer:*	Alu Rehabilitation AS
	Model:	Netti 3
	Mass:	30.8kg
	Configuration:	Forward Facing
Wheel Chair TieDown	*Manufacturer:*	Unwin Safety Systems
	Model:	4pt tiedown WWR/ATF/K/R
	Anchorage Configuration:	Unwin Low Profile Rail
Occupant Restraint	*Manufacturer*	Unwin Safety Systems
	Model:	Double Inertia Reel QIR/3H/ATF/WH
ATD	Low Cost	
	Mass:	76kg
Sled Transducer	Endevco Uniaxle 723c No. EG10	
Photography	Redlake 1000 frames/sec video	

Test Data

Sled	Velocity at impact	48.6 (km/h)
	Stopping distance	465 (mm)
	Peak Deceleration	25.4 (g)
	Mean Deceleration	20 .0 (V^2/2gs)

For this test the results are in terms of the format defined in Section A.6 "Frontal Impact Performance Requirements" in ISO/CD 7176/19-1 draft working document dated 15/1/97.

REQUIREMENT of Section 6		RESULT
6.1/2	Did the ATD remain in the wheelchair and the wheelchair remain in an upright position on the sled?	Yes/Yes
6.3	Did any component with a mass in excess of 100gm detach?	No
6.4	Did any adjustable parts move from their pre-test positions?	No
6.5	Was there any leakage from the batteries?	N/A
6.6	Were the batteries retained in the W/C footprint?	N/A
6.7	Did any load bearing part of the wheelchair fracture completely?	No
6.8	Were any damaged surfaces less than 7mm wide?	No
6.9	Was the ATD released from the occupant restraint and removed from the wheelchair without the use of tools?	Yes
6.10	Was the tiedown system released from the sled without the use of tools?	Yes
6.11	Was the horizontal movement of the:	
	(i) wheelchair (X wc) < 200mm?	Yes - *119mm*
	(ii) dummy knee (X knee) < 375mm?	Yes - *267mm*
	(iii) dummy head (X head) < 650mm?	Yes - *512mm*
6.12	Was the ratio of X knee/X wc > 1.1?	Yes - *2.2*
6.13	Was the decrease of the mean H-point height < 20%?	Yes - 0%

Conclusion

The system did meet the requirements of 6.1/2 to 6.13 and hence the system gave a satisfactory impact performance.

Analysed by	
Date	14/12/98