

Advanced Transport Systems Ltd

Summary Report

on

ULTra Passenger Trials



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Objectives

The objectives of the passenger trials were to obtain views, comments and reactions from members of the public to a number of aspects of the ULTra system including:

- Ease of use (for both able-bodied and disabled passengers), including:
 - entering a station, selecting a journey and entering a vehicle
 - giving the start command and riding in a vehicle to a set destination
 - disembarking from a vehicle and leaving a station
- Sense of security
- Comfort (seating and ride) and ambience (including colours and styling)
- The overall ULTra experience

Introduction

The passenger trials took place at the test track in Cardiff in January 2003 and are reported in full in ATS/TR/06.

The trials included use of a simple station, a functioning representation of the destination request panel, the “B” model vehicle and a typical journey comprising a number of circuits of the test track.

The general appearance of the Cardiff test track for the passenger trials is shown below.



The station used was of a type that would be suitable for a 'Park and Ride' situation where small stations need to be distributed around a large car park. A typical city centre station would be considerably larger with better access facilities, including lifts where the station is elevated.

Within the station a 'gate' allowed access to the vehicle for able bodied and those in a wheelchair, at which was situated a simplified demonstration model of an ULTra journey selection system, or 'Destination Panel'. Passengers could select from a choice of destinations displayed on a computer-generated map. As a passenger changed their choice of destination it updated the map display and the name was spoken automatically (to assist blind and partially sighted passengers).

Upon confirmation of a passenger's destination, the vehicle doors would open to admit them. Once the passengers had embarked and the vehicle doors were closed, the journey would commence under automatic control.

The journey comprised circuits of the test track and station loop giving a total trip length of 1.4 km. The test track is in a figure of eight arrangement and contains all the major features that are likely used in city centre applications including:

- Guideway at grade and elevation
- gradients (10% inclines and 6% declines)
- merges and diverges
- station



Safety

Prior to the commencement of the trials HMRI reviewed the 'Safety Case for the Passenger Trials', inspected the test track, travelled in the test vehicle and had the safety systems demonstrated. HMRI then issued a 'consent letter' that allowed the trials involving the public to go ahead, saying that they considered the Safety Case to be robust. The consent letter is reproduced on the final page of this report.

Trial Procedure

The trials were conducted over a two-day period, with a morning and afternoon session on each day. A total of 18 passengers took part in the trials, including both disabled and able-bodied persons. These passengers were organised into groups of two or three persons, with two groups being present in the morning and two in the afternoon on each day of the trials.

Each group of passengers made two trips on the ULTra vehicle:

- The first trip was accompanied by a member of the ATS staff, allowing the passengers to become familiarised with the ULTra system
- The second trip was unaccompanied (i.e. without an ATS staff member), allowing a realistic impression of the ULTra system to be obtained.

A short briefing was given to each group of passengers between the two trips, indicating the characteristics of the ULTra system that they were being asked to assess.

Results of Passenger Trials

Upon completion of their second trip, each passenger was invited to fill out the passenger trials' questionnaire by putting an 'x' against the characteristics that best described their view. The questions and each passenger's response to the questions have been analysed and the overall results are summarised in the table on the next page.

<i>How easy did you find the ULtra System to use?</i>	Very Easy	Easy	OK	Difficult	Very Difficult
<i>Response</i>	89%	11%	-	-	-

<i>Did you feel secure using the ULtra System?</i>	Very Secure	Secure	OK	Insecure	Very Insecure
<i>Response</i>	61%	39%	-	-	-

<i>How comfortable was the seating arrangement in the ULtra vehicle?</i>	Excellent	Good	Average	Poor	Very Poor
<i>Response</i>	35%	59%	6%	-	-

<i>How would you rate the quality of the ride (bumpiness/jerkiness)</i>	Excellent	Good	Average	Poor	Very Poor
<i>Response</i>	-	28%	50%	17%	5%

<i>How easy do you rate the destination panel to use?</i>	Excellent	Good	Average	Poor	Very Poor
<i>Response</i>	47%	41%	12%	-	-

<i>How do you rate the colours and styling of the vehicle exterior?</i>	Excellent	Good	Average	Poor	Very Poor
<i>Response</i>	47%	47%	6%	-	-

<i>How do you rate the colours and styling of the vehicle interior?</i>	Excellent	Good	Average	Poor	Very Poor
<i>Response</i>	17%	72%	11%	-	-

<i>How did you rate your experience using the ULtra System?</i>	Very pleasant	Pleasant	OK	Unpleasant	Very Unpleasant
<i>Response</i>	50%	50%	-	-	-

Analysis of Results

The responses were extremely positive, indicated by the high proportion of responses in the two left hand columns. However, the quality of the ride was considered poor or very poor by 22% of the passengers whilst 78% considered it to be average or good. The relatively poor results from the ride quality question require explanation.

The "B" model test vehicle used was controlled by the 'FROG' navigation system, which is to be upgraded for the production vehicles. This will improve the ride quality in terms of smoothness for acceleration, deceleration and steering. Also, a new chassis and suspension system will be used in the production vehicles, allowing the ride quality to be improved even further.

The test track surface is composed predominantly of poured concrete that has a slightly rough surface and most significantly, from the passengers perspective, short amplitude undulations on the inclined sections of the guideway. Some sections of the test track already have production standards of surface finish. These provide a smooth ride for passengers, even without improvements to the vehicles suspension and control system.



Conclusions

1. All the passengers found the system 'easy' or 'very easy' to use.
2. All the passengers found the system 'secure' or 'very secure', including running on the elevated bridge section.
3. 90% of the passengers found the seating arrangement and interior styling to be 'good' or 'excellent'.
4. 78% of the passengers found the quality of the ride to be 'average' or 'good'. However, 17% considered it 'poor' and 5% 'very poor'. (*Improvements to the track and vehicle control software are planned to remove these issues*)
5. Over 90% of the passengers considered the vehicle exterior colour and styling to be 'good' or 'excellent'.
6. All the passengers considered the ULTra experience to be 'pleasant' or 'very pleasant'.