EA12-005

**ISUZU** 

3-8-2013

Attachment 4

Sample Ft Page ET5-1244

Isuzu IR Response

Request No. Two Data

EA12-005

**ISUZU** 

3-8-2013

Attachment 4

TESTING INFORMATION, REPORTS, TrooperIsuzu IR Response

Request No. Two Data

# ISUZU ENGINEERING TEST REPORT 2001-0777

CERTIFICATION TEST REPORT

FMVSS 301

FUEL SYSTEM INTEGRITY

48km/h REAR MOVING BARRIER IMPACT
2002 ISUZU TROOPER

ISUZU MODEL NO.UBR/S26G
TEST NO. AA828

ISUZU MOTOR LIMITED

VEHICLE SAFETY ENGINEERING DEPT.

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## 1. SUMMARY DATA

## SUMMARY OF TEST CONDITION (1)

TYPE OF TEST
FRONTAL ( ) IMPACT OBLIQUE ( 30° ) IMPACT ON LEFT(DRIVER'S)SIDE RIGHT SIDE
LATERAL OR SIDE IMPACT ON LEFT(DRIVER'S)SIDE  X REAR IMPACT
TEST CONDITIONS   DATE OF TEST: Aug. 28, 2001 TIME OF TEST: 15:10   AMBIENT TEMPERATURE AT IMPACT AREA: 29℃   TEMPERATURE IN OCCUPANT COMPARTMENT: 29℃
TEST VEHICLE INFORMATION
MANUFACTURER : <u>ISUZU MOTORS LIMITED</u> MAKE / MODEL : <u>ISUZU / UBS26GLWR-BRCW</u>
BODY STYLE : MPV 4-DOOR MODEL YEAR: 2002
VIN. : <u>JACDJ58X827J00014</u>
TEST NO : AA828 BODY COLOR: EBONY BLACK
ENGINE DATA : 6 CYLINDERS ; 3.6 ; liters
TRANSMISSION DATA:5 SPEED , _ × MANUAL ,AUTOMATIC ,
FINAL DRIVE DATA : FWD , RWD , _ X 4WD
MAJOR OPTIONS : $\times$ A/C , $\times$ P/S , $\times$ P/B , $\times$ P/wdo ,
$\_$ $\times$ TILT WHEEL , $\_$ P/seats . $\_$ CRUISE CONTROL
TYPE OF OCCUPANT RESTRAINT: FRONT: airbag with type I belt
REAR : type II belt
TEST FLUID DATA
TEST FILUID TYPE : RED STODDARD SOLVENT
SPECIFIC GRAVITY : <u>0.777</u> KINEMATIC VISCOSITY : <u>1.39 CST</u>
NOMINAL FUEL CAPACITY: 85 Liters (NFC)
TEST VOLUME :_80 Liters (94% of NFC)
ELECTRICE FUEL POMP $\underline{\times}$ YES $\underline{-}$ NO FUEL INJECTION : $\underline{\times}$ YES $\underline{-}$ NO

## SAMMARY OF TEST CONDITION (2)

VEHICLE TIRE DATA
COLD TIRE PRESSIRE : FRONT <u>210</u> KPa
REAR <u>240</u> KPa
TIRES SIZE ON VEHICLE : 245/70R16
IS SPARE TIRE A "SPACE SAVER" : NO
IS SPARE TIRE STANDARD EQUIPMENT : YES
VEHICLE CAPACITY
NUMBER OF OCCUPANTS : 2 FRONT; 3 REAR; — 3rd seat
TYPE OF FRONT SEATS : $\times$ BUCKET; $-$ BENCH; $-$ SPLIT BENCH
TYPE OF FRONT SEAT BACK : _ FIXED × Adj.with × LEVER _ Rot.knob
RATED CARGO AND LUGGAGE
$WEIGHT (RCLW) = \underline{64.4} kg$
GVWR : <u>2500</u> kg
CALCULATION FOR TARGET TEST WEIGHT
UW = Unloaded Weight (Including OW) ( 2095.6 kg)
OW = Option Weight  ( $- kg$ )
DSC = Designated Seating Capacity (5)
$RCLW = \underline{64.4} kg$
TARGET TEST WEIGHT = $UW + OW + RCLW + (2 dummies \times 75.75 kg/dummy)$
TARGET TEST WEIGHT = $2311.6$ kg
WEIGHT OF TEST VEHICLE WITH RBQUIRED DUMMIES AND CARGO
$RIGHT FRONT = 585 \text{ kg} \qquad REGHT REAR = 569 \text{ kg}$
LEFT FRONT = $569$ kg LEFT REAR = $590$ kg
TOTAL FRONT WEIGHT = 1154 kg (49.9 % of Total vehicle weight)
TOTAL REAR WEIGHT = <u>1159</u> kg ( <u>50.1</u> % of Total vehicle weight)
TOTAL TEST WEIGHT = $2313$ kg

## 2.TEST DATA

## POST IMPACT SUMMARY (1)

Vehicle :	UBS260	GLWR-BRCW (JAC	DJ58X827J(	00014)	 
Test No. :	Aug. 28	, 2001	_		
Date :	AA828		_		
IMPACT VELOC	CITY : PRIMARY =	48.58 km/h (	30.18 MPH)	_	
VEHICLE STAT	TC CRUSEH:	Driver Side Passenger's Side Average	: 190 : 170 : 180	mm mm mm	

## **FUEL SYSTEM INTEGRITY (2)**

## $\underline{FUEL\ SYSTEM\ INTEGRITY\ -\ FMVSS\ 301\text{-}75}$

BARRIER CRASH

	Actual	Max. Allow.
Fuel spillage impact until vehicle motion ceases.	0	1 ounce
Fuel spillage for 5 minute period following cessation of vehicle motion after impact.	0	5 ounce
Fuel spillage for next 25 minute period	0	lounce 1 minute

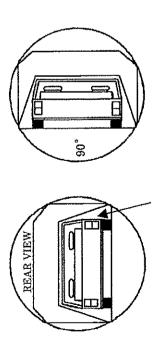
FUEL SPILLAGE LOCATION:	NONE	

# FUEL SYSTEM INTEGRITY - FMVSS 301-75

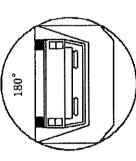
# STATIC ROLLOVER (1 st. Roll; Clockwise)

Vehicle: UBS26GLR-BRCW(VIN. JACDJ58X827J00014)

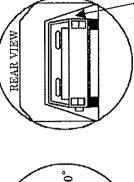
AA828 Test No.



FILLER CAP 0/360







	0/360	
•	FILLER CAP	

amma	l		_	l ounce
0 ounce	onno 0	onnce 0	ounce 0	1 ounce
0 ounce	onno 0	eouno 0	onno 0	eouno g
60 seconds	epuose 09	epucose 09	epuoses 09	1-3 minutes
06 - 0	90 - 180	180 - 270	270 - 360	Max. allowed
	60 seconds 0 ounce	60 seconds 0 ounce 60 seconds 0 ounce	60 seconds 0 ounce 60 seconds 0 ounce 0 ounce	60 seconds       0 ounce         60 seconds       0 ounce         60 seconds       0 ounce         60 seconds       0 ounce

FUEL SPILLAGE LOCATION:

NONE

# FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (2 nd. Roll; Counterclockwise)

Vehicle: UBS26GLR-BRCW(VIN. JACDJ58X827J00014)

AA828

Test No. \_

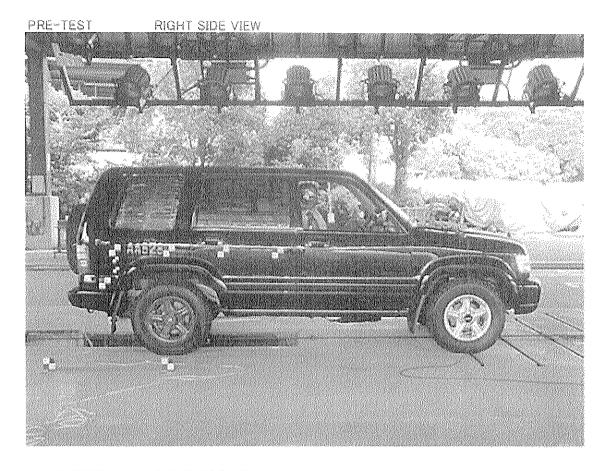
REAR VIEW  $180^{\circ}$  $^{\circ}06$ FILLER CAP 0/360 REAR VIEW

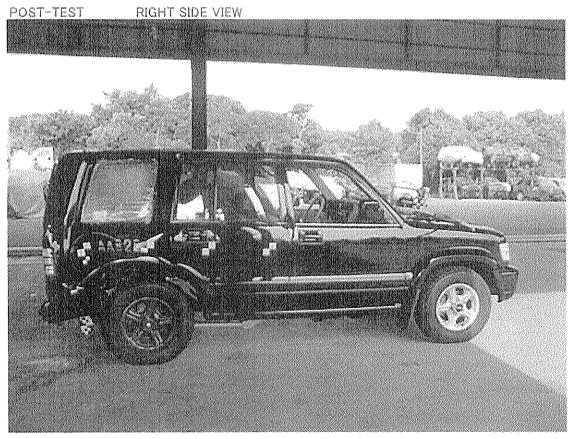
FILLER CAP 0 / 360

					· · · · · · · · · · · · · · · · · · ·
Fuel spillage during 7 minute period from onset of rotation	1		WHOME THE PROPERTY OF THE PROP	_	1 ounce
Fuel spillage during 6 minute period from onset of rotation	0 onnce	onnce 0	0 ounce	onnce 0	1 ounce
Fuel spillage during 5 minute period from onset of rotation	0 onnce	0 ounce	0 ounce	0 ounce	5 ounce
Rotation Time	epuoses 09	epucoes 09	60 seconds	60 seconds	1—3 minutes
Rotation Angle	06 — 0	90 - 180	180 - 270	270 - 360	Max. allowed

FUEL SPILLAGE LOCATION :

NONE





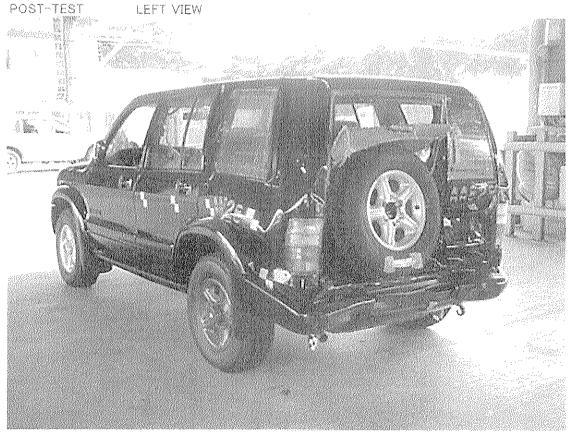




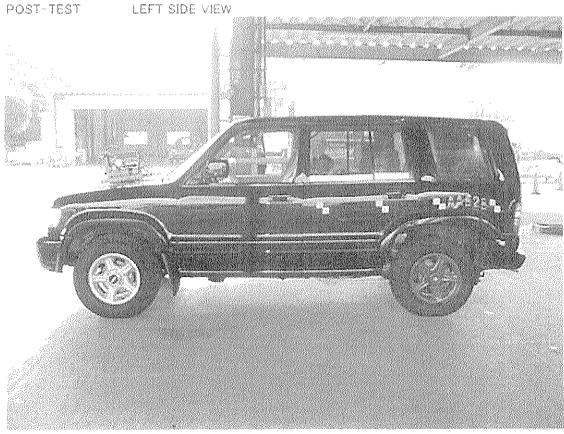


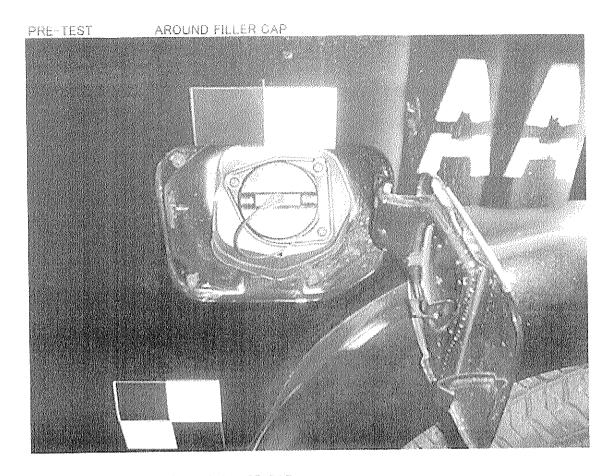


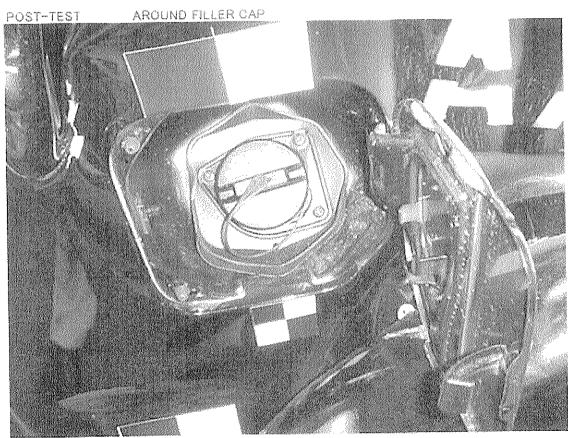


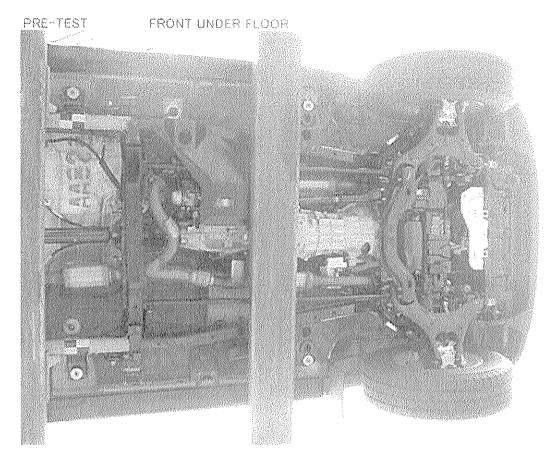




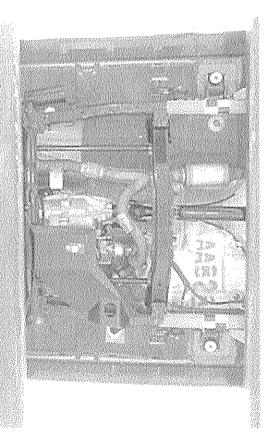






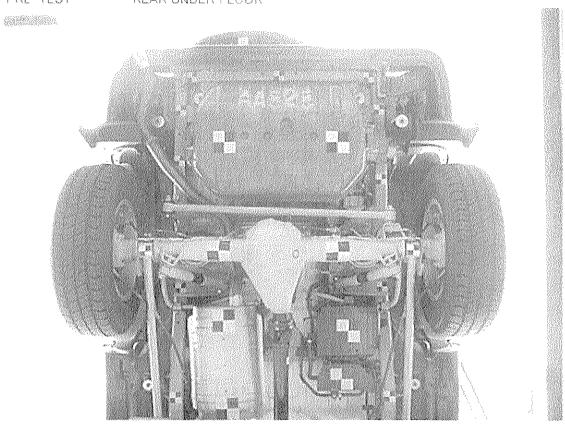






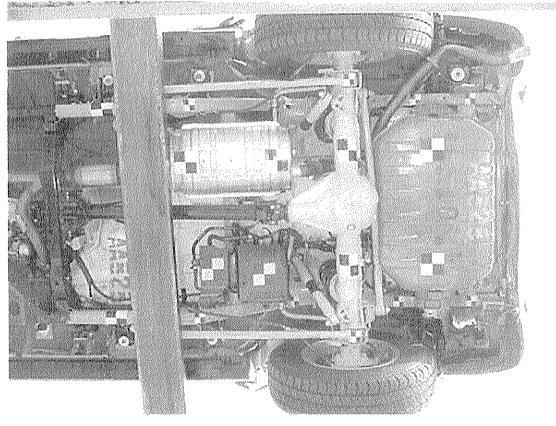
PRE-TEST

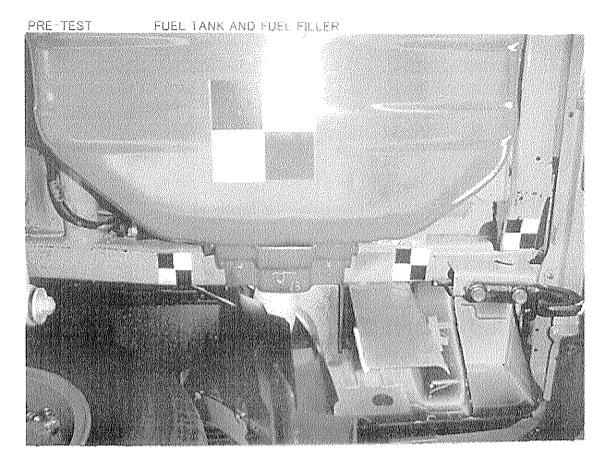
REAR UNDER FLOOR

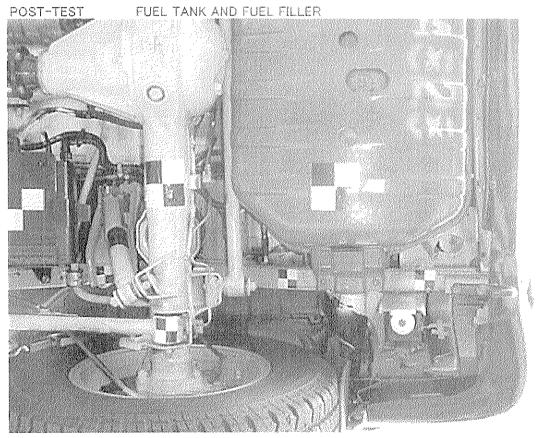


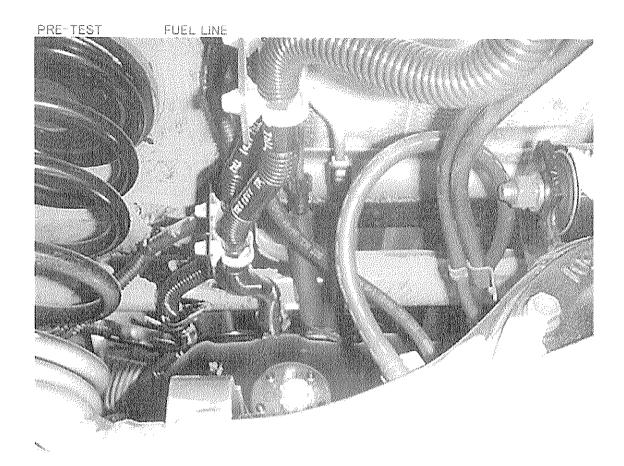
POST-TEST

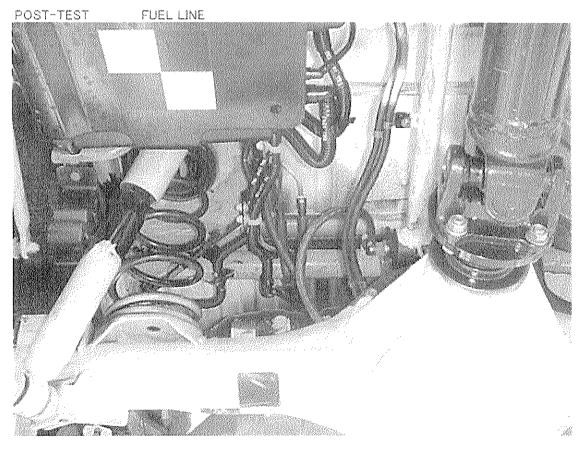
REAR UNDER FLOOR

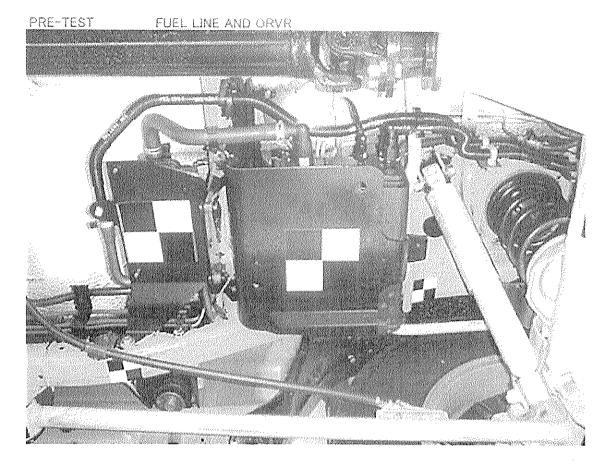


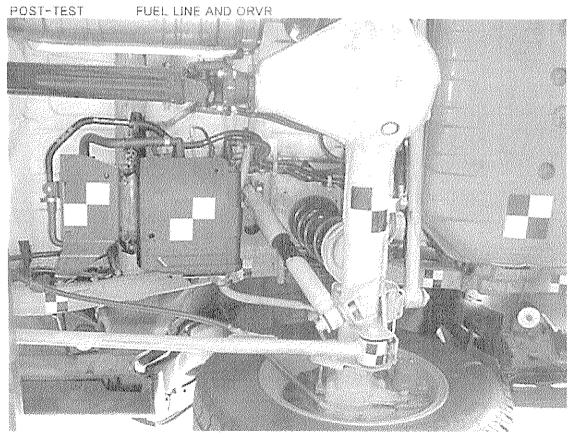


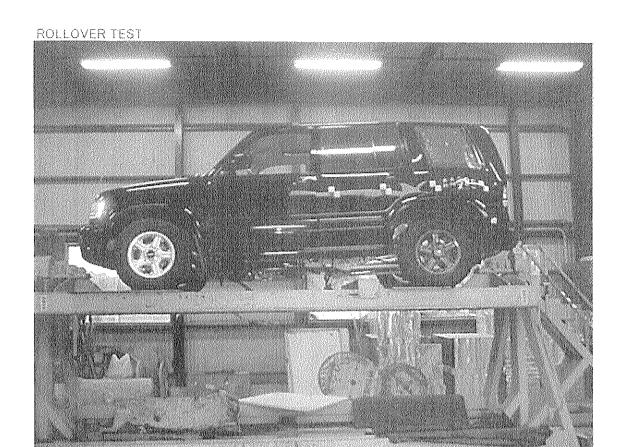


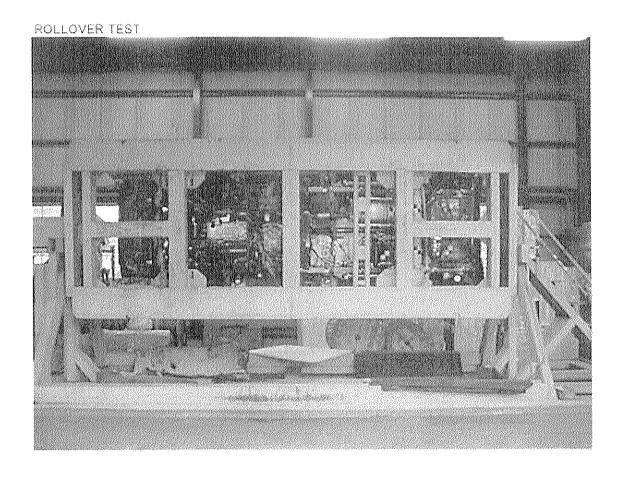


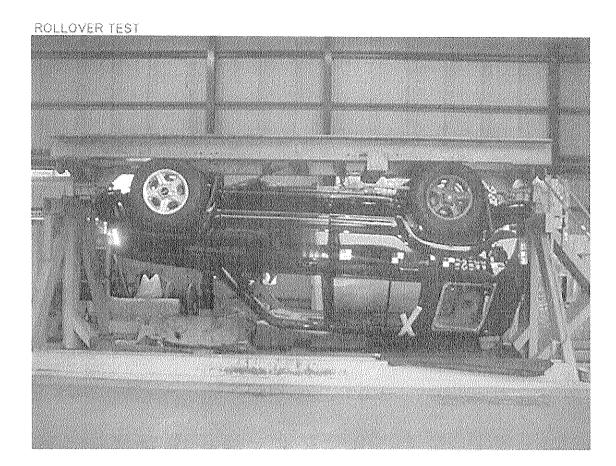


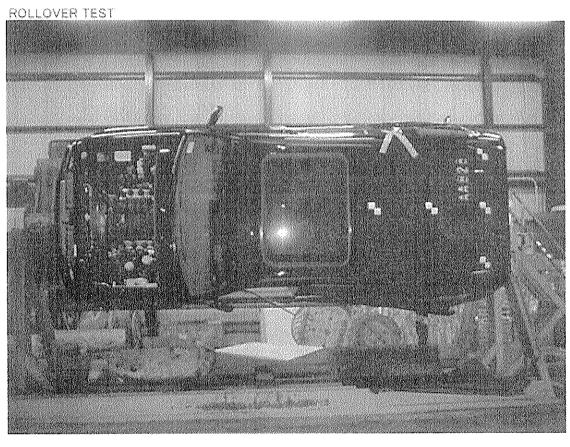












# ISUZU ENGINEERING TEST REPORT ET5 - 0700

CERTIFICATION TEST REPORT

FMVSS 301

FUEL SYSTEM INTEGRITY

48km/h REAR MOVING BARRIER IMPACT

1992 ISUZU TROOPER

ISUZU MODEL NO. UBS 25G TEST NO. A1151

ISUZU MOTORS LIMITED

VEHICLE SAFETY ENGINEERING DEPT.

## 1. SUMMARY DATA

## SUMMARY OF TEST CONDITION (1)

TYPE OF TEST
FRONTAL ( ) IMPACT
OBLIQUE ( ) IMPACT ON LEFT (DRIVER'S) SIDE
RIGHT SIDE
LATERAL OR SIDE IMPACT ON LEFT (DRIVER'S) SIDE
REAR IMPACT
TEST CONDITIONS
DATE OF TEST: Sep. 17, 1991 TIME OF TEST: 15:45
AMBIENT TEMPERATURE AT IMPACT AREA: 26 ° C
TEMPERATURE IN OCCUPANT COMPARTMENT: 26 ° C
TEST VEHICLE INFORMATION
MANUFACTURER : ISUZU MOTORS LIMITED
MAKE / MODEL :ISUZU / UBS25GLWT-DFAW
BODY STYLE : 4 DOOR WAGON MODEL YEAR: 1992
VIN. :JACDH58W4N7900039
TEST NO. : A-1151 BODY COLOR: RED
ENGINE DATA : 6 CYLINDERS ; 3,2 liters
<u>×</u> GASOLINE ; DIESEL ; TURBOCHARGED
LONGITUDINAL ; TRANSVERSE ;
TRANSMISSION DATA : $\_4$ SPERD , $\$ MANUAL , $\_ imes$ AUTOMATIC ,
FINAL DRIVE DATA : $\$ FWD , $\$ RWD , $\_ imes$ 4WD
MAJOR OPTIONS : $\underline{\hspace{1cm} \hspace{1cm} 1$
imes TILT WHEBL , $ extstyle -$ P/seats , $ imes$ CRUISE CONTROL
ODOMETER READING : <u>10</u> miles
MERCAN DAVIDA DAVIDA
TEST PLUID DATA
TEST FLUID TYPE : RED STODDARD SOLVENT SPECIFIC GRAVITY : 0.777
KINEMATIC VISCOSITY : 1.39 CST
NOMINAL FUEL CAPACITY: 85 Liters (NFC)
TEST VOLUMB : 80,75 Liters (95% of NFC)
ELECTRIC FUEL PUMP :YESNO FUEL INJECTION :YESNO

## SUMMARY OF TEST CONDITION (2)

kg / cnt
kg/cni
15
NO
YES
3 REAR: 3rd SEAT: 5. TOTAL
BENCH: SPLIT BENCH
× Adj, with × LEVER - Rot, Knob
s.
255 lbs. REAR 3085 lbs.
Too, KEAR 3900 IDS.
( <u>4285</u> 1bs.)
( <u>103</u> lbs.)
(5)
+ (2 dummies * 164 lbs./dummy)
ES AND CARGO
RIGHT REAR = 1310 lbs.
LEFT REAR = 1325 lbs.
( <u>47.5</u> % of Total vehicle Weight)
( <u>52,5</u> % of Total vehicle Weight)

# 2) Test Data POST IMPACT SUMMARY (1)

venicle:u	BS25GLWT-DFAW	(JACDH5	8W4N790	0039)	
Test No.:	A-1151		Date:	<u>Sep. 17,</u>	1991
IMPACT VELOCITY	<i>!</i> :				
	Trap 1 =	31.0	)	mph	
	Trap 2 =		<b>~</b>	mph	
	Average=	31.0	)	mph	
VEHICLE STATIC	CRUSH: Driver	Side	<b>=</b>	4.2	inches
	Passer	nger's S	ide =	4.3	inches
	Averag	ge	=	4.3	inches
FUEL SYSTEM IN	TEGRITY - FMVS	S 301-75		ual	Max. Allow.
Fuel spilla	TEGRITY - FMVSS ge from impact le motion ceas		Act	u a l	Max. Allow.
Fuel spilla until vehic	ge from impact	es.	A c t		•

FUEL SYSTEM INTEGRITY - FMVSS 301-75

STATIC ROLLOVER (1st Roll; Clockwise)

Test No.: A-1151

Vehicle: UBS25GLWT-DFAW (JACDH58W4N7900039)

360° 2700 180 80 Fuel filter Location ြ

<u></u>		Mary Maries	_ <b>B</b>	r! 5		2 ) (4 )
Fuel spillage during 7th minute period from onset of rotation	ченимания				1 ounce	
Fuel spillage during 6th minute period from onset of rotation	0 ounce	0 описе	0 ounce	0 onuce	1 ounce	
Fuel spillage during 5 minute period from onset of rotation	0 ounce	0 ounce	описе 0	0 · onnce	5 ounce	
Rotation Time	el seconds	60 seconds	spuose 09	econds 60	1-3 minutes	
Rotation Angle	06 - 0	087 - 06	180 - 270	270 - 360	Max. Allowed	

NONE

Fuel Spillage Location:

FUEL SYSTEM INTEGRITY - FMVSS 301-75

# STATIC ROLLOVER (2nd Roll; Clockwise)

Vehicle: UBS25GLWT-DFAW (JACDH58W4N7900039)

Test No.: A-1151

360
270° 11
180°
。    -
0 Location

ET (	<b>)</b> ( )		1 h	1111	
Fuel spillage during 7th minute period from onset of rotation				•	1 ounce
Fuel spillage during 6th minute period from onset of rotation	0 onnce	onuce 0	0 onuce	onno 0	l ounce
Fuel spillage during 5 minute period from onset of rotation	0 onuce	0 ounce	0 onuce	0 onnce	5 оппсе
Rotation Time	epuoses 09	60 seconds	60 seconds	60 seconds	1-3 minutes
Rotation Angle	06 - 0	90 – 180	180 - 270	270 - 350	Max. Allowed

NONE

Fuel Spillage Location:

ETH 0:00 - 617 TTO





ET 5 0700 - STORY

Photo. 3

PRE-TEST RIGHT SIDE VIEW

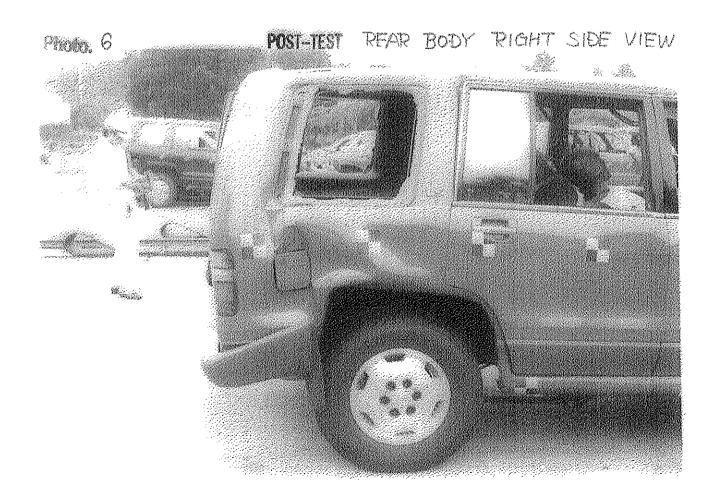


Marko, 4

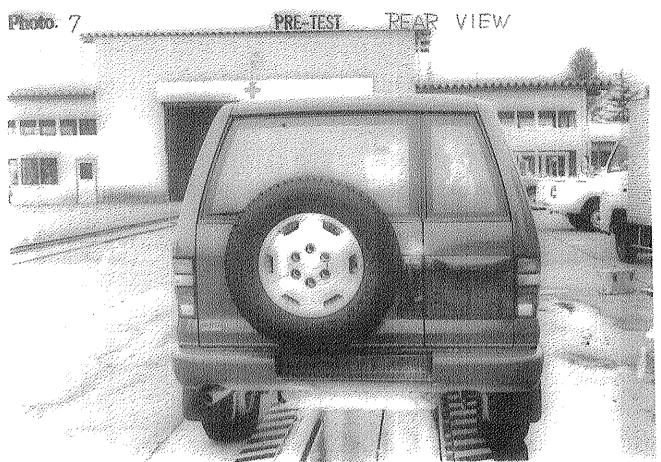
POST-TEST RIGHT SIDE VIEW







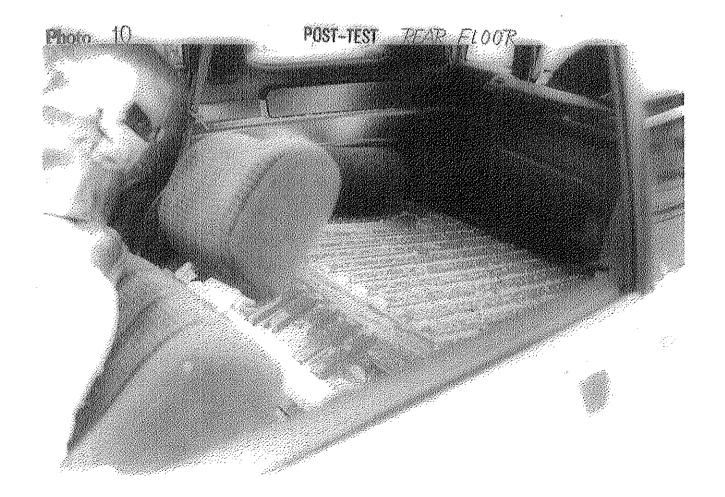
ET 5 0/00 - 84-4-66





boko. 9 PRE-TEST REAR FLOOR







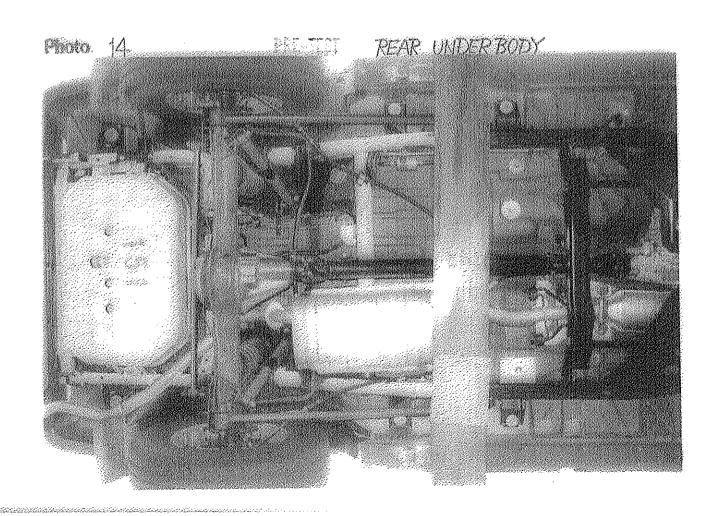


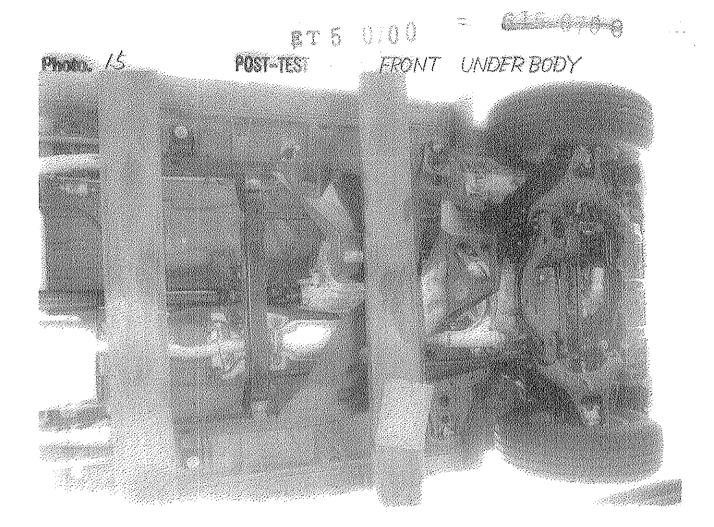
PRE-TEST FRONT UNDERBODY

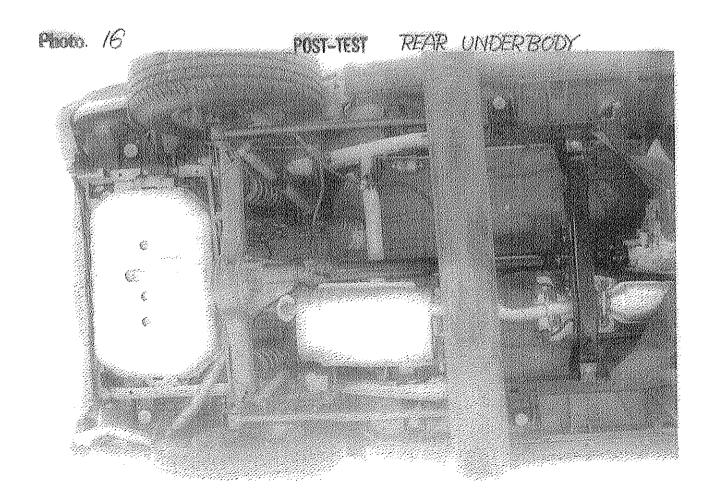
PRE-TEST FRONT UNDERBODY

PRE-TEST FRONT UNDERBODY

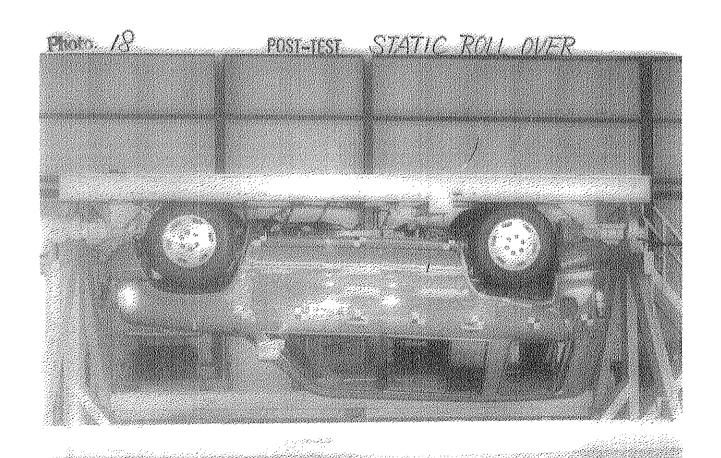
PRE-TEST FRONT UNDERBODY











## CONFIDENTIAL INFORMATION REDACTED

## ISUZU ENGINEERING TEST REPORT ET5 - 1145

CERTIFICATION TEST REPORT

FMVSS 301

FUEL SYSTEM INTEGRITY

REAR MOVING BARRIER IMPACT

1998 ISUZU TROOPER

ISUZU MODEL NO.UBS25G TEST NO. A7305P

ISUZU MOTORS LIMITED

VEHICLE SAFETY ENGINEERING DEPT.

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2.	TEST DATA (POST IMPACT SUMMARY)	 6
3.	PHOTOGRAGHS	 9

## SUMMARY OF TEST CONDITION (1)

TYPE OF TEST	
FRONTAL( ) IMPACT	
OBLIQUE ( ) IMPACT ON LEFT(DRIVER	SISIDE
RIGHT SIDE	•
LATERAL OR SIDE IMPACT ON LEFT(I	ORIVER'S)SIDE
× REAR IMPACT	3111 / 111 0 / 011 11
<del></del>	
TEST CONDITIONS	
DATE OF TEST: Mar. 5, 1997 TIME OF TEST	T· 11:30
AMBIENT TEMPERATURE AT IMPACT AREA: 1	
TEMPERATURE IN OCCUPANT COMPARTMENT: 1	2°C
	<u> </u>
TEST VEHICLE INFORMATION	
MANUFACTURER:ISUZU MOTORS LIMITED	
MAKE / MODEL : ISUZU / UBS25G	
BODY STYLE : MPV 4-DOOR MC	THE VEAR 1998
VIN. : <u>JACDJ58X7W7900020</u>	DEL TEAR
	DY COLOR: RED
ENGINE DATA : 6 CYLINDERS : 3.494 : liters	DI COLOR. RED
× GASOLINE:DIESEL:	THEROCHARGED
<u> </u>	
TRANSMISSION DATA: TRANSMISSION DATA: ASPEED MANUAL	
FINAL DRIVE DATA : — FWD . — RWD .	× AUD
MAJOR OPTIONS : X A/C . X P/S . X P/S	
× TILT WHEEL. — P/seats	Wao. ✓ CDITTED CONTROL
TYPE OF OCCUPANT RESTRAINT: Driver and passeng	row nighog with type. II helt
THE OF OCCUPANT KESTRAINT. Driver and passeng	ger airoag with type II beit
•	
TEST FLUID DATA	
TEST FLUID TYPE : RED STODDARD SOLVENT	SPECIFIC GRAVITY: <u>0.78</u>
KINEMATIC VISODSITY : 1.39CST	
NOMINAL FUEL CAPACITY: 85 Liters (NFC)	
TEST VOLUME : 80 Liters (94% of NFC)  FLECTRICE FUEL POMP : X VES - NO FUEL I	NITO CONTO NECESTRAL SECTION AND ASSESSMENT OF THE CONTO NECESTRAL SECTION ASSES
FIRCTRICK RIBEL POMP + X VES - NO RIBEL	NURCETURN X VES *** NG

VERTICLE TIRE DATA
COLD TIRE PRESSIRE : FRONT <u>206</u> KPa
REAR <u>235</u> KPa
TIRES SIZE ON VEHICLE : P245/70R16
IS SPARE TIRE A "SPACE SAVER" : NO
IS SPARE TIRE STANDARD EQUIPMENT : YES
VEHICLE CAPACITY
NUMBER OF OCCUPANTS : 2 FRONT: 3 REAR: - 3rd seat
TYPE OF FRONT SEATS : × BUCKET: - BENCH: - SPLIT BENCH
TYPE OF FRONT SEAT BACK: — FIXED × Adj.with × LEVER — Rot.knol
RATED CARGO AND LUGGAGE
$WEIGHT (RCLW) = \frac{70}{4} kg$
GVWR: 2499.28 kg
GV 1711 Kg
CALCULATION FOR TARGET TEST WEIGHT
UW = Unloaded Weight (Including OW) ( 2090 kg)
OW = Onto a test weight (Including OW) (2050 kg) $OW = Option Weight (- kg)$
DSC = Designated Seating Capacity (5)
RCLW= 70 kg
TARGET TEST WEIGHT = UW + OW + RCLW + (2 dummies \$\fmathbf{7} 74.0kg/dummy)
TARGET TEST WEIGHT = 0W + OW + RCLW + (2 dummies \( \chi \) 74.0kg/dummy)  TARGET TEST WEIGHT = 2308 kg
1/1/1/101 1E31 WEIGHT - <u>2500</u> kg
WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO
TOTAL REAR WEIGHT = 1147 kg (50 % of Total vehicle weight)
$TOTAL TEST WEIGHT = \underline{2308}_kg$

## 2.Test Data

## (1) POST IMPACT SUMMARY

Vehicle : UBS25	G (JACDJ58X7W7900020)	
Test No. : Mar.	5. 1997	
Date : <u>A73051</u>		
IMPACT VELOCITY : PRIMARY =	48.9 km/h (30.4 MPH)	_
VEHICLE STATIC CRUSH:	Driver Side : 189 Passenger's Side : 222 Average : 204	mm mm mm
FUEL SYSTEM INTEGRITY - FM		
Fuel spillage impact until vehicle motion ceases.	Actual 0	Max. Allow.
Fuel spillage for 5 minute period following cessation of vehicle motion after impact.	0	5 ounce
Fuel spillage for next 25 minuperiod	ote 0	1ounce 1 minute
FUEL SPILLAGE LOCATION :	NONE	

## ET 5-1145

## FUEL SYSTEM INTEGRITY - FMVSS 301-75

## STATIC ROLLOVER (1 st. Roll ;Clockwise)

o. A7305P	REAR VIEW 0 / 360	Fuel spillage during 7 minute period from onset of rotation	*****		ı	-	1 ounce	
Test. No.	FILLER CAP 0/360	Fuel spillage during 6 minute period from onset of rotation	0 onnce	eouno ()	eauno ()	onnce ()	l ounce	
/IN. JAC DJ58X7W7900020)	180°	Fuel spillage during 5 minute period from onset of rotation	eouno ()	eouno ()	eouno ()	oance ()	5 ounce	
UES25F (VIN. JAC I	006	Rotation Time	60 seconds	60 seconds	60 seconds	60 seconds	1-3 minutes	
Vehicle :	REAR VIEW PILLER CAP 0/360	Rotation Angle	06 - 0	90 - 180	180 - 270	270 - 360	Max, allowed	

NONE

FUEL SPILLAGE LOCATION

er 5-1145

NONE

FUEL SPILLAGE LOCATION:

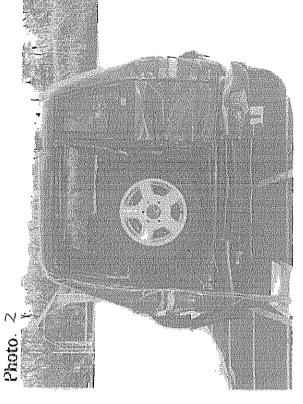
## FUEL SYSTEM INTEGRITY - PMVSS 301-75

# STATIC ROLLOVER (2 nd. Roll; Clockwise)

Test No. A7305P	REAR VIEW FILLER CAP 0/360
	5.00
(VIN. JAC DJ58X7W7900020)	1800
UES25F (VIN. JAC D	008
Vehicle :	REAR VIEW FILLER CAP 0/360
	FILE CAP

				E.	r 5-
Fuel spillage during 7 minute period from onset of rotation		ļ	l	-	l ounce
Fuel spillage during 6 minute period from onset of rotation	onuce ()	oonno 0	oouno ()	onnce 0	l ounce
Fuel spillage during 5 minute period from onset of rotation	eauno ()	eouno ()	aouno ()	eouno ()	eouno g
Rotation Time	60 seconds	60 seconds	60 seconds	econds 60	1 – 3 minutes
Rotation Angle	06 - 0	90 - 180	180 - 270	270 - 360	Max. allowed

## 3. PHOTOGRAGHS



試験後POST-TEST

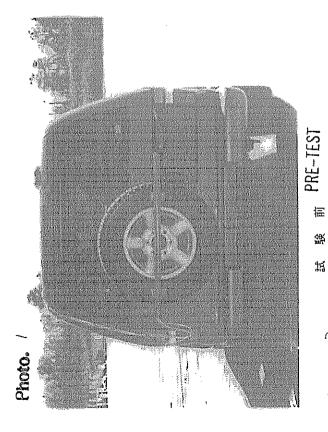
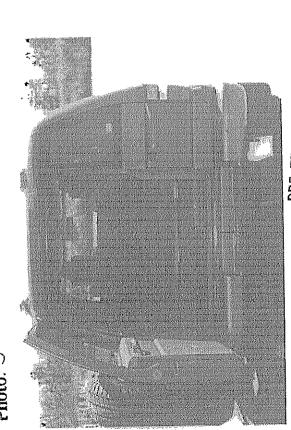
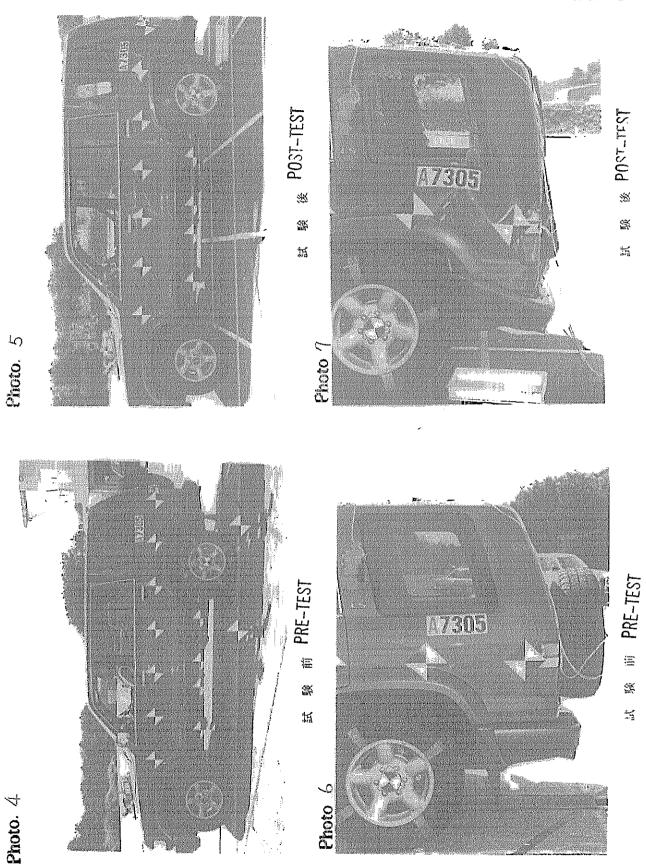


Photo. 3



RE-TEST W W W



**®** POST-TEST

試驗

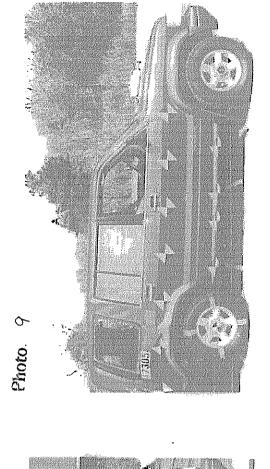
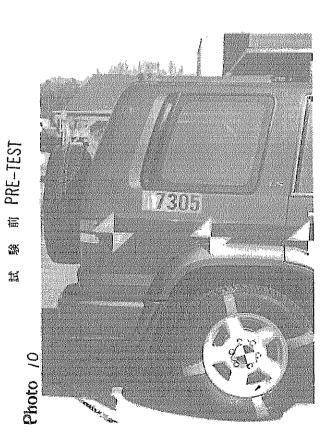
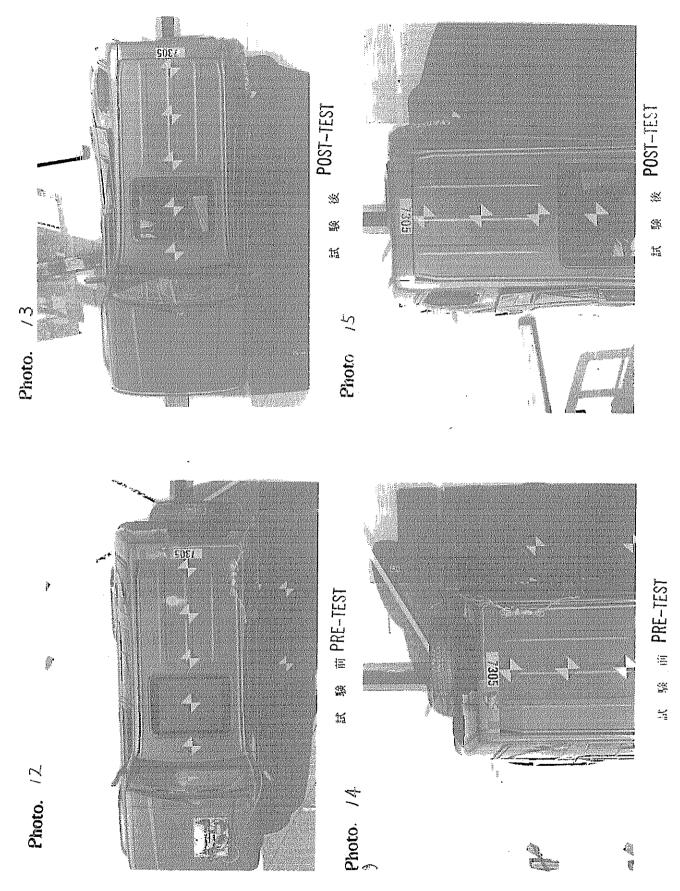


Photo. // A State of the state

Photo. 8



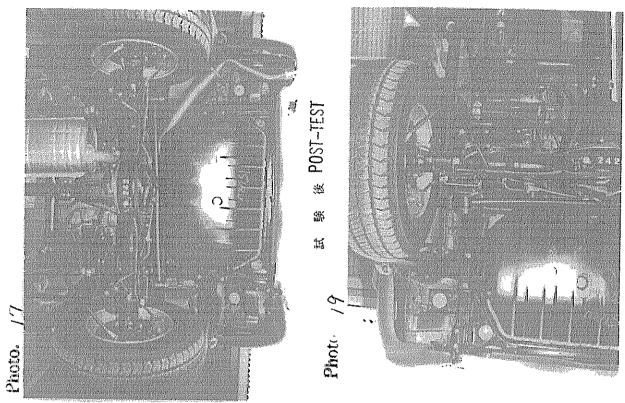
試 駿 前 PRE-TEST

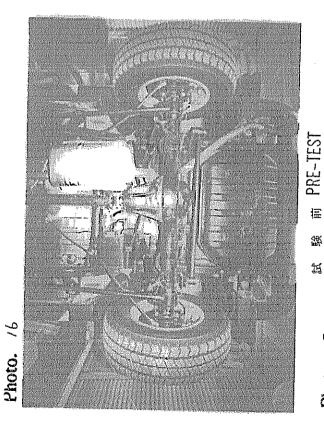


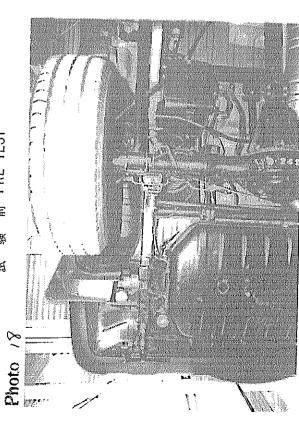
R POST-TEST

经

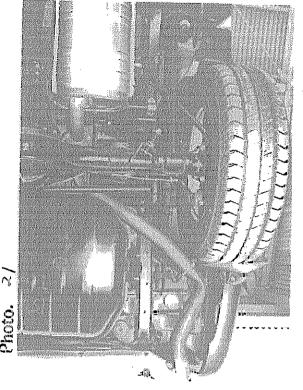
1



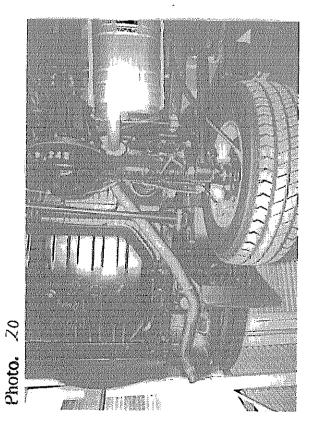




AL WALL PRE-TEST

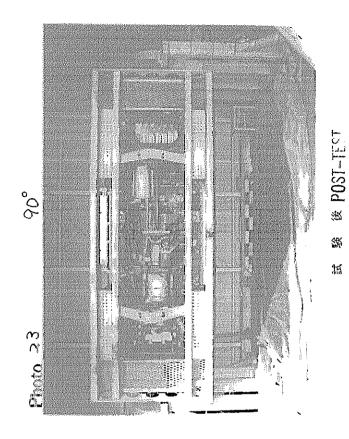


試験後 POST-TEST



試験前 PRE-TEST

非典前



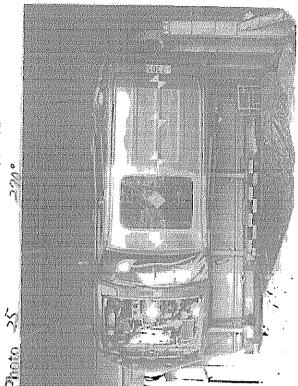
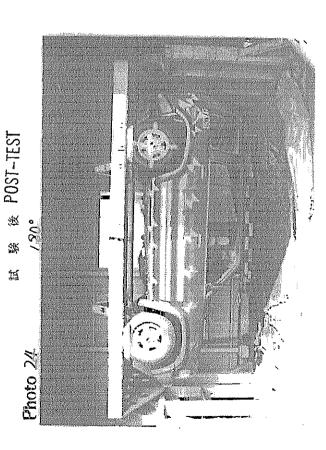


Photo. 22 STATIC ROLL-OVER VEST 0°



AL MR OF POST-TEST

POST-TEST

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<u>ب</u>يد

## CONFIDENTIAL INFORMATION REDACTED

## DESIGN VALIDATION REPORT

REPORT NO. V-UBS-330 ISSUED DATE October 10, 1991

Vehicle Model:

UBS25G

Model Year

1992

Subject:

FMVSS No. 301, Fuel System Integrity

**FMVSS** 

Section

Item

Method of

Validation

Conclusion

\$5.5

Fuel Spillage:

Barrier Crash

Test

Comply

(cf. Attachment B to J)

\$5,6

Fuel Spillage:

Rollover

Test

Comply

(cf. Attachment B to J)

This certifies that FMVSS Nc.301.

UBS25G

meet the applicable requirements of

N. TAKEDA

General Manager

1 7 Jakadan

Car & Light Duty Truck Research & Experiment Dept.

## SELECTION OF TEST VEHICLE

O: Test

-: Substitute by other vehicle

	UBS25	G
Test Item	DOHC	SOHC
Perpendicular Frontal Barrier	○ Attachment B	Attachment C
Right Side Oblique Frontal Barrier	O Attachment D	O Attachment E
Left Side Oblique Frontal Barrier	O Attachment F	O Attachment G
Right-hand Side Lateral Moving Barrier	O Attachment H	— (by DOHC)
Left-hand Side Lateral Moving Barrier	O Attachment I	- (by DOHC)
Rear Moving Barrier	O Attachment J	(by DOHC)

Vehicle Model: UBS25G (DOHC MODEL)	
Model Year: 1992	
Subject: Compliance for S5.5 & S5.6 of FMVS  ( Perpendicular Frontal Barrier Cr	S No.301, Fuel System Integrity ash & Static Rollover )
Introduction: To determine if the fuel system repuirements of S5.5 and S5.6	
Method of validation: Test	
Vehicle Identification No.: JACDH58W2N790003	8 (UBS25GLWT-DFAW)
Explanation of reason why the test was condu	cted on the vehicle stated above;
and fuel system.	l design concerning the front body structure not less than the maximum vehicle weight in
Test Date: Sep. 26, 1991	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.8 MPH
Vehicle Weight less Dummies	4690 lbs
Occupants Driver Right Front passenger	Hybrid II (164 lbs) Hybrid II (164 lbs)
Percent of Fuel Tank Capacity Used	95 %
2. Rollover Test	·
Is roll duration time at each increment minutes?	of 90 degrees between 1-3 × YES NO

Test Results:

## 1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5. 0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

## 2. Rollover Test Results (clockwise);

Rotation	Rotation	During first 5 minutes	During any 1 minutes interval	During any 1 minutes interval
angle	time	(ounce by weight)	(ounce by weight)	(ounce by weight)
0° ~ 90°	minute	0	0	
90° ~180°	minute	0	0	
180° ∼270 °	minute	0	0	
270° ~360°	minute	0	. 0	
Max. Allow	1-3 minute	5.0	1.0	1.0

## 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ∼180 °	minute	0	0	_
180° ∼270 °	minute	0	0	
270° ~360°	minute	0	0	_
Max. Allow	I-3 minute	5.0	1.0	1.0

Do	the	above	test	results	satisfy	the	requirements?			
								X	_YES	 _NO

Reference Report:	ISUZU Research	Engineering	Report 1		ET5-0698
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K. Yamana ka

K. YAMANAKA Safety & Human Engineering Section Car & Light Duty Truck Research & Experiment Dept. S. Mada

Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Vehicle Model: UBS25G (SOHC MODEL)	
Model Year: 1992	
Subject: Compliance for S5.5 & S5.6 of FMVSS  ( Perpendicular Frontal Barrier Cra	
Introduction: To determine if the fuel system repuirements of S5.5 and S5.6 c	
Method of validation: Test	
Vehicle Identification No.: JACDH58V7N7900026	G (UBS25GWF-STA·FA)
Explanation of reason why the test was conduc	cted on the vehicle stated above;
and fuel system.	l design concerning the front body structure not less than the maximum vehicle weight in
Test Date: Sep. 10, 1991	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.3 MPH
Vehicle Weight less Dummies	4456 lbs
Occupants Driver Right Front passenger	Hybrid II (164 lbs) Hybrid II (164 lbs)
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment	of 90 degrees between 1-3
minutes?	<u>×                                    </u>

Test Results:

## 1. Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

## 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ~180°	minute	0	0	
180° ∼270 °	minute	0	0	
270° ~360°	minute	0	0	,
Max. Allow	1-3 minute	5.0	1.0	1.0

## 3. Rollover Test Results (Counterclockwise)

Rotation	Rotation	During first 5 minutes	During any 1 minutes interval	During any 1 minutes interval
angle	time	(ounce by weight)	(ounce by weight)	(ounce by weight)
0° ~ 90°	minute	0	0	
90° ∼180°	minute	0	0	_
180° ∼270 °	minute	0	0	<u> </u>
270° ~360°	minute	0	0	<del>-</del>
Max. Allow	1-3 minute	5.0	1.0	1.0

Do	the	above	test	results	satisfy	the	require	ments?				
									<del></del>	×	_YES	 NO
Re	ferei	nce Re	port:	ISUZU	Research	Eng	ineering	Report	No	ET 5	-0683	 <del>-</del>
									1			

K.YAMANAKA
Safety & Human Engineering Section
Car & Light Duty Truck
Research & Experiment Dept.

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck

Reseach & Experiment Dept.

Vehicle Model: UBS25G (DOHC MODEL)	
Model Year: <u>1992</u>	
Subject: Compliance for S5.5 & S5.6 of FMVSS (Right Side Oblique Prontal Barrier	
Introduction: To determine if the fuel system requirements of \$5.5 and \$5.6 or	
Method of Validation: Test	
Vehicle Identification No.: JACDH58WXN7900028	(UBS25GLWT-DFAW)
Explanation of reason why the test was conduc	ted on the vehicle stated above;
<ol> <li>All vehicle models of UBS25G are identical and fuel system.</li> <li>The test vehicle was set on the weight of in all vehicle models of UBS25GLWT-DFAW.</li> </ol>	
Test Date: Oct. 3, 1991	
Test Conditions: 1. Front Barrier Crash Test Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30,5 MPH
Vehicle Weight less Dummies	4692 lbs
Occupants Driver Right Front passenger	Hybrid II ( 164 lbs) Hybrid II ( 164 lbs)
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment minutes?	of 90 degrees between 1-3

Test Results:

1. Right Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5	0	5,0
Per minutes for subsequent 25 minutes period	0	1.0 / I minute

## 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)	
0° ~ 90°	minute	0	0		
90°~180°	minute	0	0		
180° ~270 °	minute	0	0	_	
270° ~360°	minute	0	. 0	_	
Max. Allow	1-3 minute	_ 5, 0	1.0	1.0	

## 3. Rollover Test Results (Counterclockwise)

Rotation	Rotation	During first 5 minutes	During any 1 minutes interval	During any 1 minutes interval
angle	time	(ounce by weight)	(ounce by weight)	(ounce by weight)
0° ~ 90°	minute	0	0	
90° ~180 °	minute	0	0	_
180° ~270 °	minute	0	0	_
270° ~360°	minute	0	0	<del>-</del>
Max. Allow	1-3 minute	5.0	1,0	1.0

)o	the	above	test	results	satisfy	the	requirements?			
								×	YES	ио

Reference Report:	ISUZU Research	Engineering	Report	No <u>.</u>	ET5-0687
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K.YAMANAKA Safety & Human Engineering Section Car & Light Duty Truck Research & Experiment Dept.

E. Simone ka

S. MAEDA
Manager
Safety & Human Engineering Section
Car & Light Duty Truck
Reseach & Experiment Dept.

Vehicle Model: UBS25G (SUHC MUDEL)						
Model Year: 1992						
Subject: <u>Compliance for \$5.5 &amp; \$5.6 of FMVSS</u> (Right Side Oblique Frontal Barrier	No.301, Fuel System Integrity Crash & Static Rollover)					
Introduction: To determine if the fuel system requirements of S5.5 and S5.6 c						
Method of Validation: Test						
Vehicle Identification No.: JACDH58V1N7900023	3 (UBS25GWF-STA·FA)					
Explanation of reason why the test was conduc	cted on the vehicle stated above;					
<ol> <li>All vehicle models of UBS25G are identical and fuel system.</li> <li>The test vehicle was set on the weight of in all vehicle models of UBS25GWP-STA · PA.</li> </ol>	l design concerning the front body structure not less than the maximum vehicle weight					
Test Date: Sep. 25, 1991						
Test Conditions: 1. Front Barrier Crash Test Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle					
Vehicle Impact Speed	30.7 MPH					
Vehicle Weight less Dummies	4458 lbs					
Occupants Driver Right Front passenger	Hybrid II ( 164 lbs) Hybrid II ( 164 lbs)					
Percent of Fuel Tank Capacity Used	94 %					
2. Rollover Test						
Is roll duration time at each increment of 90 degrees between 1-3 minutes?						

Test Results:
1. Right Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5	0	5,0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

# 2. Rollover Test Results (clockwise):

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	446.4
90° ~180°	minute	0	0	
180° ∼270 °	minute	0	0	
270° ~360°	minute	0	0	_
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test results satisfy the requirements?

Rotation	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval
angle	time	(ounce by weight)	(dulice by weight)	(ounce by weight)
0° ~ 90°	minute	0	0	_
90° ∼180°	minute	0	0	· <u>-</u>
180° ~270°	minute	0	0	_
270° ~360°	minute	. 0	0	<del></del>
Max. Allow	1-3 minute	5.0	1.0	1.0

						>	Χ	YES .	 NO
Reference	Report:	LSUZU	Research	Engineering	Report	No.	ET	5-0682	

K. Yannakaka

K.YAMANAKA Safety & Human Engineering Section Car & Light Duty Truck Research & Experiment Dept.

S. MAEDA Manager Safety & Human Engineering Section Car & Light Duty Truck Reseach & Experiment Dept.

I. Macda

Vehicle Model: UBS25G (DUHC MUDEL)	
Model Year: <u>1992</u>	
Subject: Compliance for S5.5 & S5.6 of FMVSS (Left Side Oblique Frontal Barrier	
Introduction: To determine if the fuel system requirements of \$5.5 and \$5.6 c	
Method of validation: Test	
Vehicle Identification No.: JACDH58W8N7900044	(UBS25GLWT-DFAW)
Explanation of reason why the test was conduc	cted on the vehicle stated above;
<ol> <li>All vehicle models of UBS25G are identical and fuel system.</li> <li>The test vehicle was set on the weight of all vehicle models of UBS25GLWT-DFAW.</li> </ol>	
Test Date: Oct. 4, 1991	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.5 MPII
Vehicle weight less Dummies	4688 lbs
Occupants Driver Right Front passenger	Hybrid II (164 lbs) Hybrid III (164 lbs)
Percent of Fuel Tank Capacity Used 2	94 %
. Rollover Test	
Is roll duration time at each incremen minute?	t of 90 degress between 1-3
Willings	× YESNO

Test Results:

1. Left Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

# 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0°~90°	minute	0	0	~
90° ~ 180°	minute	0	0	_
180° ~ 270°	minute	0	0	_
270° ~ 360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ∼180°	minute	0	0	yum,
180° ∼270°	   minute	0	0	whods
270°~360°	minute	0	0	-
Max. Allow	1-3 minute	5, 0	1.0	1.0

Do	the	above	test	results	satisfy	the	requirements?			
								×	YES	NO

Reference Report:	ISUZU Research	Engineering	Report No.	. ET5-0681
••••			-	

K. YAMANAKA

Safety & Human Engineering Section

Car & Light Duty Truck

Research & Experiment Dept.

S. MAEDA Manager

Safety & Human Engineering Section

Car & Light Duty Truck

Reseach & Experiment Dept.

# Attachment G (1 of 3)

Aeurore Woder: AR2522 (2040 WANTER)	
Model Year: <u>1992</u>	
Subject: Compliance for S5.5 & S5.6 of PMVSS (Left Side Oblique Frontal Barrier	No.301, Fuel System Integrity Crash & Static Rollover)
Introduction: To determine if the fuel system requirements of S5.5 and S5.6 c	
Method of validation: Test	
Vehicle Identification No.: JACDH58V9N7900030	) (UBS25GWF-STA · FA)
Explanation of reason why the test was conduc	cted on the vehicle stated above;
<ol> <li>All vehicle models of UBS25G are identica and fuel system.</li> <li>The test vehicle was set on the weight of all vehicle models of UBS25GWF-STA · FA.</li> </ol>	
Test Date: Sep. 26, 1991	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	30.7 MPH
Vehicle weight less Dummies	4458 lbs
Occupants Driver Right Front passenger	Hybrid III (164 lbs) Hybrid III (164 lbs)
Percent of Fuel Tank Capacity Used 2	94 %
. Rollover Test	
Is roll duration time at each incremen minute?	t of 90 degress between 1-3  X YES NO

Test Results:

1. Left Side Oblique Prontal Barrier Crash Test Results :

	Results (ounce by weight)	Max. Allow (ounce by Weight)	
During impact	0	1.0	
During first 5 minutes after impact	0	5.0	
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute	

# 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0°~90°	minute	0	0	_
90° ~ 180°	minute	0	0	_
180° ~ 270°	minute	0	0	_
270° ~ 360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute '	0	0	*****
90° ~180°	minute	0	0	, Accord
180° ∼270 °	minute	0	0	<del>-</del> .
270° ~360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

Do	the	above	test	results	satisfy	the	requirements?			
								X	_YES	NO NO

Reference Report:	ISUZU Research	Engineering	Report No.	ET5-0684	
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K. Jam. M. Kit.

K.YAMANAKA Safety & Human Engineering Section Car & Light Duty Truck Research & Experiment Dept. S.MAEDA Manager Safety & Human Engineering Section Car & Light Duty Truck Reseach & Experiment Dept.

S. Maeda

Vehicle Model: UBS25G	
Model Year: 1992	
Subject: Compliance for S5.5 & S5.6 of PMVSS (Right-hand Side Lateral Moving Barr	No.301, Fuel System Integrity ier Crash & Static Rollover)
Introduction: To determine if the fuel system requirements of S5.5 and S5.6 of	
Method of Validation: Test	
Vehicle Identification No.: JACDH58W7N7900035	(UBS25GLWT-DFAW)
Explanation of reason why the test was conduct	ed on the vehicle stated above;
<ol> <li>All vehicle models of UBS25G are identical and fuel system.</li> <li>The test vehicle was set on the weight of mall vehicle models of UBS25G.</li> </ol>	
Test Date: Sep. 11, 1991	
Test Conditions: 1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Moving Barrier Impact Speed Vehicle Weight less Dummies	Left-hand Side 20.9 MPH 4690 lbs
Occupants Driver Right Front passenger	Hybrid II ( 164 lbs) Hybrid II ( 164 lbs)
Moving Barrier Weight	4000 lbs
Percent of Fuel Tank Capacity Used	95 %
2. Rollover Test	
Is roll duration time at each increment minutes?	of 90 degrees between 1-3

Test Results:

1.Right-hand Side Lateral Moving Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)	
During impact	0	1.0	
During first 5 minutes after impact	0	5, 0	
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute	

## 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90°~180°	minute	0	0	
180° ∼270 °	minute	0	0	
270° ~360°	minute	0	0	
Max. Allow	1-3 minute	5. 0	1.0	1.0

Rotation angle	Rotation time	During first 5 minutes (ounce hy weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	Market .
90° ~180°	minute	0	0	<del></del>
180° ∼270 °	minute	0	0	_
270° ~360°	minute	0	0	
Max, Allow	1-3 minute	5.0	1.0	1.0

Do	the	above	test	results	satisfy	the	requirements?			
								×	YES	 NO

Reference Report:	ISUZU Research	Engineering Re	eport No <u>.                                    </u>	ET5-0701
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L' Yanaraka.

K.YAMÁNAKA Safety & Human Engineering Section Car & Light Duty Truck Research & Experiment Dept. S.MAEDA Manager Safety & Human Engineering Section Car & Light Duty Truck Reseach & Experiment Dept.

S. Mueda

# Test Results:

1. Left-hand Side Lateral Moving Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)	
During impact	0	1.0	
During first 5	0	F 0	
minutes after impact	U	5.0	
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute	

# 2. Rollover Test Results (clockwise):

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ~180°	minute	0	0	_
180° ∼270 °	minute	0	0	<del>-</del> .
270° ~360 °	minute	0	0	
Max. Allow	1-3 minute	5. 0	1,0	1.0

Subject: Compliance for \$5.5 & \$5.6 of FMVSS No. 301, Fuel System Integrity (Left-hand Side Lateral Moving Barrier Crash & Static Rollover)  Introduction: To determine if the fuel system of UBS25G meets the requirements of \$5.5 and \$5.6 of FMVSS No. 301.  Method of Validation: Test  Vehicle Identification No.: JACDH58WXN7900031 (UBS25GLWT-DFAW)  Explanation of reason why the test was conducted on the vehicle stated above;  1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Left-hand Side Moving Barrier Impact Speed 20, 9 MPH Vehicle Weight less Dummies 4690 lbs  Occupants	
(Left-hand Side Lateral Moving Barrier Crash & Static Rollover)  Introduction: To determine if the fuel system of UBS25G meets the requirements of S5.5 and S5.6 of FMVSS No.301.  Method of Validation: Test  Vehicle Identification No.: JACDH58WXN7900031 (UBS25GLWT-DFAW)  Explanation of reason why the test was conducted on the vehicle stated above;  1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Left-hand Side Moving Barrier Impact Speed 20.9 MPH Vehicle Weight less Dummies 4690 lbs	
requirements of S5.5 and S5.6 of FMVSS No.301.  Method of Validation: Test  Vehicle Identification No.: JACDH58WXN7900031 (UBS25GLWT-DFAW)  Explanation of reason why the test was conducted on the vehicle stated above;  1. All vehicle models of UBS25G are identical design concerning the front body structuand fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Left-hand Side Moving Barrier Impact Speed 20.9 MPII Vehicle Weight less Dummies 4690 lbs	
Vehicle Identification No.: JACDH58WXN7900031 (UBS25GLWT-DFAW)  Explanation of reason why the test was conducted on the vehicle stated above;  1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Woving Barrier Impact Speed 20.9 MPII Vehicle Weight less Dummies 4690 lbs	
Explanation of reason why the test was conducted on the vehicle stated above;  1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Left-hand Side Moving Barrier Impact Speed 20.9 MPH Vehicle Weight less Dummies 4690 lbs	
1. All vehicle models of UBS25G are identical design concerning the front body structure and fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Left-hand Side Moving Barrier Impact Speed 20.9 MPH Vehicle Weight less Dummies 4690 lbs	
and fuel system.  2. The test vehicle was set on the weight of not less than the maximum vehicle weight all vehicle models of UBS25G.  Test Date: Sep. 11, 1991  Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Left-hand Side Moving Barrier Impact Speed 20.9 MPH Vehicle Weight less Dummies 4690 lbs	
Test Conditions:  1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Moving Barrier Impact Speed Vehicle Weight less Dummies  Left-hand Side 20.9 MPH 4690 lbs	
1. Lateral Moving Barrier Crash Test Impacted Face of the vehicle Moving Barrier Impact Speed Vehicle Weight less Dummies  Left-hand Side 20.9 MPH 4690 lbs	
Occupante	•
Driver Hybrid II (164 lbs) Right Front passenger Hybrid II (164 lbs)	
Moving Barrier Weight 4000 lbs	
Percent of Fuel Tank Capacity Used 95 %	
2. Rollover Test	
Is roll duration time at each increment of 90 degrees between 1-3 minutes?	

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ~180°	minute	0	0	-
180° ∼270 °	minute	0	. 0	
270° ~360°	minute	0	0	_
Max. Allow	1-3 minute	5.0	1.0	1.0

Do	the	above	test	results	satisfy	the	requires	ments?						
			*						•	×	YE	S _		_NO
												0649	Correce	Mar. 27, 2001
Ref	ere	nce Re	port:	ISUZU	Research	Eng	ineering	Report	No <u>.                                    </u>		<u>ET5-</u>	<del>0701</del>		····

K. Yamanaka

Safety & Human Engineering Section

Car & Light Duty Truck

Research & Experiment Dept.

S. MABDA

Manager

Safety & Human Engineering Section Car & Light Duty Truck

Reseach & Experiment Dept.

Vehicle Model: UBS25G	
Model Year: 1992	
Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel (Rear Moving Barrier Crash & Static Rollover)	System Integrity
Introduction: To determine if the fuel system of UBS25G requirements of S5.5 and S5.6 of FMVSS No.30	meets the 1.
Method of Validation: Test	
Vehicle Identification No.: JACDN58W4N7900039 (UBS25GLWT-D	PAW)
Explanation of reason why the test was conducted on the ve	chicle stated above;
<ol> <li>All vehicle models of UBS25G are identical design conceand fuel system.</li> <li>The test vehicle was set on the weight of not less than all vehicle models of UBS25G.</li> </ol>	
Test Date: Sep. 17, 1991	
Test Conditions: 1. Rear Moving Barrier Crash Test Moving Barrier Impact Speed 31.0 MPH Vehicle Weight less Dummies 4690 lbs	
Occupants Driver Hybrid II ( 16 Right Front passenger Hybrid II ( 16	
Moving Barrier Weight 4000 lbs	
Percent of Fuel Tank Capacity Used 95%	
2. Rollover Test	
Is roll duration time at each increment of 90 degree	s between 1-3
minutes?	YESNO

#### Test Results:

1. Rear Moving Barrier Crash Test Results:

	Results (ounce by weight)	Max, Allow (оилсе by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5. 0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

# 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	<del></del>
90° ~180°	1 minute	0	0 .	
180° ∼270 °	1 minute	0	0	<u>-</u> -
270° ~360 °	1 minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ~180°	minute	0	0	_
180° ~270°	minute	. 0	0	
270° ~360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	. 1.0

Do	the	above	test	results	satisfy	the	requirements?			
								X	_YES	 NO

Reference Report:	ISUZU Research Engineering Rep	port No <u>. ET5</u>	0700 - <del>0702</del>	Corrett	Mar. 27, 2001 -
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2. Yananska

K.YAMANAKA Safety & Human Engineering Section Car & Light Duty Truck Research & Experiment Dept. S. MAEDA Manager Safety & Human Engineering Section Car & Light Duty Truck Reseach & Experiment Dept.

S. Macda

# CONFIDENTIAL INFORMATION REDACTED

# ISUZU ISUZU MOTORS LIMITED

#### DESIGN VALIDATION REPORT

REPORT NO. V-UBS-410

Vehicle Model:

UBS25G, UBS25D

Model Year

1995

Subject:

FMVSS No. 301, Fuel System Integrity

**FMVSS** Section

Item

Method of Validation

Conclusion

\$5.5

Fuel Spillage:

Barrier Crash

Test

Test

Comply

(cf. Attachment A to E)

\$5.6

Fuel Spillage: Rollover

Comply

(cf. Attachment A to E)

This certifies that UBS25G, UBS25D meet the applicable requirements of FMVSS No. 301.

S. MAEDA

General Manager

L/D Vehicle Research &

Experiment Dept.

Attachment A

SELECTION OF TEST VEHICLE

- O: Fest

- : Substitute by other vehicle

Vehicle Models	UBS 2	3 2 5 G	UBS25D
Test Items	DOHC	SOHC	ронс
Perpendicular Frontal Barrier	O Attachment B	(by UBS25G DOHC)	
Right Side Oblique Frontal Barrier	O Attachment C	(by UB\$25G DOHC)	(by UBS25G DOHC)
Left Side Oblique Frontal Barrier	(by UB\$25D)	— (by UBS25D)	O Attachment D
Right-hand Side Lateral Moving Barrier	Attachment B	Attachment E	Attachment B
Left-hand Side Lateral Moving Barrier	Attachment B	Attachment B	Attachment B
Rear Moving Barrier	Attachment E	Attachment B	Attachment E

# Attachment B (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model Year: 1995	
Subject: Compliance for S5.5 & S5.6 of PMVSS  ( Perpendicular Frontal Barrier Cra	
Introduction: To determine if the fuel system the requirements of S5.5 and S5	
Method of validation: Test	
Vehicle Identification No.: JACDJ58WXS7900062	2 (UB\$25G)
Explanation of reason why the test was conduc	cted on the vehicle stated above;
All vehicle models of UBS25G, UBS25D are the front body structure and fuel system.	
Test Date: July 18, 1994	
Test Conditions: 1. Prontal Barrier Crash Test Barrier Pace Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.11 km/h ( 30.52 MPH )
Vehicle Weight less Dummies	2182.2 kg
Occupants Driver Right Front passenger	Hybrid Ⅲ ( 74.4 kg ) Hybrid Ⅲ ( 74.4 kg )
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment minutes?	of 90 degrees between 1-3  X YESNO

Test Results: 1.Perpendicular Prontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

## 2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ~180°	1	0	0	_
180° ∼270 °	1	1 0	0	_
270° ~360°	1	0	0	
Max. Allow	1 - 3	5.0	1.0	1.0

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	+
90°~180°	1	0	0	
180° ∼270 °	1	0	0	_
270° ~360°	1	0	0	_
Max. Allow	1 - 3	5.0	1.0	1.0

Do	the	above	test	results	satisfy	the	requirements?			
								X	_YES	NO

Reference	Report:	LSHZII	Research	Engineering	Report	No	ET5-0960	
1(01 01 01100	HOPOL C.	10000	1700001 011	D110 111001 1110	HOPOTE	110,	טטטט טוע	

T. Tahada

T. TAKADA
Safety Engineering Test Sect.
L/D Vehicle Research &
Experiment Dept.

A. MATSUSHITA

Manager

Safety Engineering Test Sect. L/D Vehicle Research &

\* 1 09 A 3

Experiment Dept.

# Attachment C (1 of 3)

Vehicle Model: UBS25G, UBS25D

Model	Year: 1995	
Subjec	ct: Compliance for S5.5 & S5.6 of FMVSS N (Right Side Oblique Frontal Barrier C	o.301, Fuel System Integrity Trash & Static Rollover)
Intro	duction: To determine if the fuel system of the requirements of S5.5 and S5.6	
Metho	d of Validation: Test	
Vehic	le Identification No.: JACDJ58W6S7900026	(UBS25G)
Expla	nation of reason why the test was conducte	ed on the vehicle stated above;
	ll vehicle models of UBS25G, UBS25D are in the front body structure and fuel system.	dentical in design concerning
Test	Date: Aug. 2, 1994	
	Conditions: Front Barrier Crash Test Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
	Vehicle Impact Speed	48.85 km/h (30.35 MPH)
	Vehicle Weight less Dummies	2182.2 kg
	Occupants Driver Right Front passenger	Hybrid II (74.4 kg) Hybrid II (74.4 kg)
	Percent of Fuel Tank Capacity Used	94 %
2.	Rollover Test	
	Is roll duration time at each increment ominutes?	of 90 degrees between 1-3  ———————————————————————————————————

# Test Results: 1.Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

1.7 09 4 3

# 2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	time minutes minute interval		During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ~180°	1	0	0	<del>-</del> .
180° ∼270°	1	" 0	0	_
270° ~360°	1	0	0	
Max. Allow	1 - 3	5.0	1.0	1.0

# Attachment C (3 of 3)

# 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ∼180 °	1	0	0	
180° ∼270 °	1	0	0	*****
270° ~360°	1	0	0	
Max. Allow	1 - 3	5.0	1.0	1.0

00	the	above	test	results	satisfy	the	requirem	ents?				
										X	YES	 _NO
Re	fere	nce Re	port:	ISUZU	Research	Eng	ineering	Report	No	ET5	-0966	 _

T. TAKADA
Safety Engineering Test Sect.
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T. Tahada

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A. MATSUSHITA
Manager

Safety Engineering Test Sect. L/D Vehicle Research &

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# Attachment D (1 of 3)

Vehicle Model: UBS25G, UBS25D	
Model Year: 1995	
Subject: Compliance for S5.5 & S5.6 of FMVSS (Left Side Oblique Frontal Barrier	
Introduction: To determine if the fuel system the requirements of S5.5 and S5	
Method of validation: Test	
Vehicle Identification No.: JACDJ57W0S7900055	(UBS25D)
Explanation of reason why the test was conduc	ted on the vehicle stated above;
All vehicle models of UBS25G, UBS25D are the front body structure and fuel system.	
Test Date: Aug. 1, 1994	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	49.98 km/h (30.43 MPH)
Vehicle weight less Dummies	2026. 2 kg
Occupants Driver Right Front passenger	Hybrid II (74.4 kg) Hybrid III (74.4 kg)
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each incremen	t of 90 degress between 1-3
minute?	

## Test Results:

# 1.Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

# 2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ~180°	1	0	0	_
180° ∼270 °	1	. 0	0	
270° ~360°	1	0	0	_
Max. Allow	1 - 3	5.0	1.0	1.0

#### Attachment D (3 of 3)

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	W100
90° ~180°	1	0	0	*****
180° ~270°	1	0	0	
270° ~360°	1	0	0	_
Max. Allow	1 - 3	5.0	1.0	1.0

Do	the	above	test	results	satisty	tne	requirem	ients?					
									***************************************	<u>×</u>	YES	**************************************	NC
										\$			
				1011011	B 1	<b>n</b>	,	ъ.	11	7707			
Кe	feren	ice Re	port:	ISUZU	Research	Eng	ineering	Keport	No.	ET	5-0965		

T. TAKADA Safety Engineering Test Sect. L/D Vehicle Research &

T. Tahada

Experiment Dept.

A. MATSUSHITA Manager Safety Engineering T

Safety Engineering Test Sect. L/D Vehicle Research & Experiment Dept. Vehicle Model: UBS25G, UBS25D

Model Year: 1995

Subject: Compliance for S5.5 & S5.6 of FMVSS No. 301, Fuel System Integrity ( Right and Left-hand Side Lateral and Rear Moving Barrier Crash & Static Rollover )

#### Basis of Validation

1) The rear body structure and the fuel tank of '95 UBS25G & UBS25D are the same as those of '92 UBS25G.

2) The frame structure is changed for '92 UBS25G, but the changed section is front side only, which is no deformation area.

3) The fuel systems are changed for '92 UBS25G, but the changed section is the layout in engine compartment only, which is no deformation area.

The following Design Validation Report is applicable.

Applicable Design Validation Report No. V-UBS-330

Reference Report: ISUZU Research Engineering Report No. ET5-0699, ET5-0700

T. Tahada

T. TAKADA Safety Engineering Sect. L/D Vehicle Research & Experiment Dept.

A. MATSUSHITA

& Malaust

Manager

Safety Engineering Sect. L/D Vehicle Research &

Experiment Dept.

# CONFIDENTIAL INFORMATION REDACTED

# DESIGN VALIDATION REPORT

REPORT NO.

V-UBS-439

ISSUED DATE August 31, 1995

Vehicle Model:

UBS25G, UBS25D

Model Year

:\_\_1996

Subject:

FMVSS No. 301, Fuel System Integrity

FMVSS

Section

Item

Method of

Validation

Conclusion

S5. 5

Fuel Spillage:

Barrier Crash

Test

Comply

(cf. Attachment A to F)

\$5.6

Fuel Spillage:

Rollover

Test

Comply

(cf. Attachment A to F)

This certifies that UBS25G, UBS25D meet the applicable requirements of FMVSS No. 301.

Authorized by

General Manager

L/D Vehicle Research &

Experiment Dept.

Attachment A

SELECTION OF TEST VEHICLE

☐ O : Test

— . Substitute by other vehicle

	***************************************	····-				
UBS25D	— (by UBS25G)	— (by UBS25G)	— (by UBS25G)	Attachment E	Attachment B	Attachment E
UBS25G	O Attachment B	O Attachment C	O Attachment D	 Attachment E	— Attachment B	Attachment E
Vehicle Models Test Items	Perpendicular Frontal Barrier	Right Side Oblique Frontal Barrier	Left Side Oblique Frontal Barrier	Right-hand Side Lateral Moving Barrier	Left-hand Side Lateral Moving Barrier	Rear Moving Barrier

# Attachment B (1 of 3)

Vehicle Model: UBS25G, UBS25D	
Model Year: 1996	
Subject: Compliance for S5.5 & S5.6 of FMVS ( Perpendicular Frontal Barrier Cr	S No.301, Fuel System Integrity ash & Static Rollover )
Introduction: To determine if the fuel system the requirements of S5.5 and S	n of UBS25G, UBS25D meets 5.6 of PMVSS No.301.
Method of validation: Test	
Vehicle Identification No.: JACDJ58VXT790000	6 (UBS25G)
Explanation of reason why the test was conduc	cted on the vehicle stated above;
All vehicle models of UBS25G, UBS25D are the front body structure and fuel system.	identical in design concerning
Test Date: Jun. 3, 1995	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.97 km/h (30.43 MPH)
Vehicle Weight with Dummies	2311.0 kg
Dummies Driver Right Front passenger	Hybrid Ⅲ (75.7 kg) Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment minutes?	

# Test Results: 1.Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

# 2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ~180°	1	0	0	_
180° ∼270 °	1	0	0	<del>-</del>
270° ~360°	1	0	0	Manager .
Max. Allowance	1 - 3	5.0	1.0	1.0

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ∼180°	1	0	0	
180° ∼270 °	1	0	0	_
270° ~360°	1	0	0	
Max. Allow	1 - 3	5. 0	1.0	1.0

Do the ab	ove test	results	satisfy	the requi	rements?					
						×	YES		NO	
Reference	Report:	ISUZU R	esearch	Engineer	ing Report	No <u>. E</u>	70.32 T5- <del>1017</del>	Correct	Mar. 26,200	/
erared by	m.	Sakam	oto	·	Approved	by <u></u>	Mati	whi	<u>(c</u>	
	M. SAKAMO	110				A. MA				

Prerared by

M. SAKAMOTO Crashworthiness & Safty Sec. L/D Vehicle Research &

Experiment Dept.

Manager

Crashworthiness & Safty Sec. L/D Vehicle Research & Experiment Dept.

# Attachment C (1 of 3)

Vehicle Model: UBS25G

Mode.	l Year:1996	
Subje	ect: Compliance for S5.5 & S5.6 of FMVS  ( Right Side Oblique Frontal Barri	S No.301, Fuel System Integrity er Crash & Static Rollover )
Intro	oduction: To determine if the fuel syste the requirements of S5.5 and S	
Metho	od of validation: Test	
Vehic	cle Identification No.: JACDJ58V8T790001	9
Expla	anation of reason why the test was condu	cted on the vehicle stated above;
	All vehicle models of UCR25G are identic the front body structure and fuel system	
Test	Date: Ful. 29, 1995	
	Conditions: Frontal Barrier Crash Test Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
	Vehicle Impact Speed	48.71 km/h (30.26 MPH)
	Vehicle Weight with Dummies	2312.0 kg
	Dummies Driver Right Front passenger	Hybrid Ⅲ (75.7 kg) Hybrid Ⅲ (75.7 kg)
	Percent of Fuel Tank Capacity Used	94 %
2.	Rollover Test	
	Is roll duration time at each increment minutes?	of 90 degrees between 1-3  X YES NO

Test Results:

1. Right Side Oblique Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

# 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ∼180 °	1	0	0	-
180° ∼270 °	1	0	0	_
270° ~360°	1	0	0	_
Max. Allowance	1 - 3	5.0	1.0	1.0

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	_
90° ∼180°	1	0	0	_
180° ∼270 °	1	0	0	<del></del>
270° ~360°	1	0	0	<b>Quality</b>
Max. Allow	1 - 3	5.0	1.0	1.0

Do the above test	results satisfy	the requirem	nents?		×YES	 NO
Reference Report:	ISUZU Research	Engineering	Report	No <u>.</u>		Har.zb,zool _

Prerared by

M. SAKAMOTO

Crashworthiness & Safty Sec. L/D Vehicle Research & Experiment Dept.

Approved by

A. MATSUSHITA
Manager

Manager

Crashworthiness & Safty Sec. L/D Vehicle Research &

# Attachment D (1 of 3)

Vehicle Model: UBS25G, UBS25D	
Model Year: 1996	
Subject: Compliance for S5.5 & S5.6 of PMVSS  ( Left Side Oblique Frontal Barrier	S No.301, Fuel System Integrity Crash & Static Rollover)
Introduction: To determine if the fuel systements of S5.5 and S	n of UBS25G, UBS25D meets 5.6 of FMVSS No.301.
Method of validation: Test	
Vehicle Identification No.: JACDJ58V3T790003	9 (UBS25G)
Explanation of reason why the test was conduc	cted on the vehicle stated above;
All vehicle models of UBS25G, UBS25D are the front body structure and fuel system.	identical in design concerning
Test Date: Aug. 10, 1995	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	30 degrees in the left direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.38 km/h (30.06 MPH)
Vehicle Weight with Dummies	2311.0 kg
Dummies Driver Right Front passenger	Hybrid Ⅲ (75.7 kg) Hybrid Ⅲ (75.7 kg)
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment minutes?	of 90 degrees between 1-3 × YES NO

Test Results: 1.Left Side Oblique Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

## 2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ~180°	1	0	0	<del></del>
180° ~270°	1	0	0	Branch 1
270° ~360°	1	0	0	
Max. Allowance	1 - 3	5, 0	1.0	1.0

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time (minutes)	During first 5 minutes (ounce by weight)	During any 1 minute interval (ounce by weight)	During any 1 minute interval (ounce by weight)
0° ~ 90°	1	0	0	
90° ~180°	1	0	0	
180° ∼270°	1	0	0	<del></del>
270° ~360°	1	0	0	_
Max. Allow	1 - 3	5, 0	1.0	1.0

Do the above test	results satisfy	the requireme	ents?	× YES		NO
Reference Report:	ISUZU Research	Engineering )	Report No <u>.</u>	/o33 ET5 <del>-1018</del>	Correct	Mar. 26, 2001 

Prerared by

M. SAKAMOTO Crashworthiness & Safty Sec. L/D Vehicle Research & Experiment Dept.

Approved by 2 Malsuntite

A. MATSUSHITA

Manager

Crashworthiness & Safty Sec. L/D Vehicle Research &

Á	tta	chment	R	
п	ıııa	CHREH		

Vehicle Model: UBS25G, UBS25D

Model Year: 1996

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity ( Right and Left-hand Side Lateral and Rear Moving Barrier Crash & Static Rollover )

#### Basis of Validation

- 1) The frame structure of '96 UBS is changed for '92 UBS but the changed section
- is front side only, which is no deformation area.

  2) The fuel systems of '96 UBS are changed for '92 UBS concerning the layout in engine compartment, which is no deformation area.
- 3) The rear body structure and the fuel tank of '96 UBS25G & UBS25D are the same as those of '92 UBS25G.

The following Design Validation Report is applicable.

Applicable Design Validation Report No. V-UBS-330

Reference Report : ISUZU Research Engineering Report No. ET5-0699, ET5-0700

Prerared by

Crashworthiness & Safty Sec. L/D Vehicle Research & Experiment Dept.

Approved by

Manager Crashworthiness & Safty Sec. L/D Vehicle Research & Experiment Dept.

# CONFIDENTIAL INFORMATION REDACTED

#### VALIDATION DESIGN

REPORT
REPORT NO. V-UBS-452
ISSUED DATE May 31, 1996

Vehicle Model:

UBS25G, UBS25D

Model Year

: 1997

Subject:

FMVSS No. 301, Fuel System Integrity

FMVSS Section	<u>Item</u>	Method of Validation	Conclusion
<b>S5.</b> 5	Fuel Spillage: Barrier Crash	Test	Comply (cf. Attachment A to D)
S5. 6	Puel Spillage: Rollover	Test	Comply (cf. Attachment A to D)

This certifies that FMVSS No. 301.

UBS25G, UBS25D

meet the applicable requirements of

Authorized by

General Manager L/D Vehicle Research &

# SELECTION OF TEST VEHICLE

O: Test

-: Substitute by other vehicle

	U B S 2 5 G	U B S 2 5 D
Perpendicular Frontal Barrier	O Attachment B	 (by UBS25G)
Right Side Oblique Frontal Barrier	O Attachment C	(by UBS25G)
Left Side Oblique Prontal Barrier	(Attachment D)	(Attachment D)
Right-hand Side Lateral Moving Barrier	(Attachment D)	 (Attachment D)
Left-hand Side Lateral Moving Barrier	 (Attachment D)	(Attachment D)
Rear Moving Barrier	(Attachment D)	(Attachment D)

Aeutote Modet: DR2526 DR252D	
Model Year: 1997	
Subject: Compliance for S5.5 & S5.6 of FMVS  ( Perpendicular Frontal Barrier Cr	S No.301, Fuel System Integrity ash & Static Rollover )
Introduction: To determine if the fuel syste repuirements of S5.5 and S5.6	em of UBS25G, UBS25D meets the of FMVSS No.301.
Method of validation: Test	
Vehicle Identification No.: JACDJ58V2V790000	4 (UBS25G)
Explanation of reason why the test was condu	cted on the vehicle stated above;
All vehicle models of UBS25G, UBS25D are the front body structure and fuel system.	identical in design concerning
Test Date: May. 10, 1996	
Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.4 km/h (30.1 MPH)
Vehicle Weight less Dummies	2311 kg
Occupants Driver Right Front passenger	Hybrid Ⅲ ( 75.7 kg ) Hybrid Ⅲ ( 75.7 kg )
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment minutes?	of 90 degrees between 1-3  ———————————————————————————————————

Test Results:

# 1.Perpendicular Frontal Barrier Crash Test Results

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5	Λ	5.0
minutes after impact	V	3.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

,

# 2. Rollover Test Results (clockwise):

Rotation	Rotation	During first 5	During any 1	During any 1 minutes interval (ounce by weight)	
angle	time	minutes (ounce by weight)	minutes interval (ounce by weight)		
0° ~ 90°	minute	0	0	<u>—</u>	
90° ∼180 °	minute	0	0	_	
180° ∼270 °	minute	0	0		
270° ∼360°	minute	0	0	_	
Max. Allow	1-3 minute	5.0	1.0	1.0	

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	
90° ∼180 °	minute	0	0	
180° ∼270 °	minute	0	0	
270° ~360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above test	results satisfy	the require	ments?				
				×	YE	is _	NO
	Sec.						
Reference Report:	ISUZU Research	Engineering	Report	No <u>.</u>	ET5-10	49	****

Prepared by

Crashworthness & Safety Sec. L/D Vehicle Research &

Experiment Dept.

Approved by J. Ohkami
Y. OHKAMI

Crashworthness & Safety Sec. L/D Vehicle Research &

# Attachment C ( 1 of 3)

Vehicle Model: UBS25G, UBS25D	
Model Year: 1997	
Subject: Compliance for S5.5 & S5.6 of FMVSS (Right Side Oblique Prontal Barrier	No.301, Fuel System Integrity Crash & Static Rollover)
Introduction: To determine if the fuel system requirements of S5.5 and S5.6 of	of UBS25G, UBS25D meets the FMVSS No.301.
Method of Validation: Test	
Vehicle Identification No.: JACDJ58V7T7910038	(UBS25G)
Explanation of reason why the test was conduct	ed on the vehicle stated above:
All vehicle models of UBS25G, UBS25D are id the front body structure and fuel system.	entical design concerning
Test Date: Mar. 25, 1996	
Test Conditions: 1. Front Barrier Crash Test Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed	48.98 km/h (29.43 mph)
Vehicle Weight less Dummies	2311 kg
Occupants Driver Right Front passenger	Hybrid Ⅲ ( 75.7 kg ) Hybrid Ⅲ ( 75.7 kg )
Percent of Fuel Tank Capacity Used	94 %
2. Rollover Test	
Is roll duration time at each increment o minutes?	f 90 degrees between 1-3  X YESNO

#### Test Results:

1. Right Side Oblique Frontal Barrier Crash Test Results:

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 / 1 minute

ν,

#### 2. Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	•
90° ∼180 °	minute	0	0	_
180° ∼270°	minute	0	0	_
270° ~360°	minute	0	0	_
Max. Allow	1-3 minute	5, 0	1.0	1.0

#### Attachment C (3 of 3)

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes (ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval (ounce by weight)
0° ~ 90°	minute	0	0	_
90° ~180°	minute	0	0	_
180° ∼270 °	minute	0	0	_
270° ~360°	minute	0	0	_
Max. Allow	1-3 minute	5.0	1.0	1.0

Do the above	test res	sults satis	fy the requ	uirements?			
					<u>×</u>	YES _	NO
		•	Ç.				
Reference Re	port: IS	SUZU Resear	ch Enginee	ring Report	No.	ET5-1050	

Prepared by  $\mathcal{L}$ 

Crashworthness & Safety Sec. L/D Vehicle Research & Experiment Dept.

Approved by

Manager

Crashworthness & Safety Sec. L/D Vehicle Research &

# CONFIDENTIAL INFORMATION REDACTED

#### ISUZU MOTORS LIMITED

#### DESIGN VALIDATION REPORT

V-UBS-464 REPORT No.

ISSUED DATE \_\_Aug. 31, 1997

Vehicle Model:

UBS25G

Model Year

1998

Subject:

FMVSS No.301.Fuel System Integrity

**FMVSS** 

Method of

Section

Item

Validation

Conclusion

S5.5

Fuel Spillage:

Test & Examination

(cf. Attachment B to F)

S5.6

Fuel Spillage:

Rollover

Barrier Crash

Test &

Examination

Comply

Comply

(cf. Attachment B to F)

This certifies that UBS25G meet the applicable requirements of FMVSS No.301

Authorized by

Τ. ΥΛΜΛΟΑ

General Manager Vehicle Research & Experiment Dept.

## SELECTION OF TEST VEHICLE

O: Test

C/O: Carry-over

-: Substitute by other vehicle

Test Item	UBS25G
Perpendicular	O
Frontal Barrier	Attachment B
Right side Oblique	O
Frontal Barrier	Attachment C
Left Side Oblique	O
Frontal Barrier	Attachment D
Left-hand Side	C/O Attachment F
Lateral Moving Barrier	(See Validation Report No. V-UBS-330)
Right-hand Side	C/O Attachment F
Lateral Moving Barrier	(See Validation Report No. V-UBS-330)
Rear Moving Barrier	O Attachment E

## Attachment B (1 of 3)

Vehicle Model:: UBS25G

Model Year: <u>1998</u>	
Subject: Compliance for S5.5 & S5.6 of I (Perpendicular Frontal Barrie	FMVSS No.301. Fuel System Integrity r Crash & Static Rollover )
Introduction: To determine if the fuel sy and S5.6 of FMVSS No. 30	stem of UBS25G meet the requirements of S5.5
Method of validation: Test	
Vehicle Identification No. JACDJ58X5W	7900016
Explanation of reason why the tests was c	onducted on the vehicle stated above:
structure and fuel system.	entical in design concerning the front body of not less than the maximum vehicle weight
Test Date : May 12. 1997	
Test Conditions: 1.Frontal Barrier Crash Test Barrier Face Angle	Perpendicular to the line of travel of the vehicle
Vehicle Impact Speed Vehicle Weight with Dummies	49.2km/h (30.56mph) 2308kg
Occupants Driver Right Front passenger	Hybrid III Hybrid III
Percent of Fuel Teak capacity Used	94 %
2.Rollover Test Is roll duration time at each incremen	nt of 90 degrees between 1-3 minutes?NO

Test Results

1. Perpendicular Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

#### 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	
90° ~ 180°	1 minute	0	0	-
180° ~ 270°	1 minute	0	0	
270° ~ 360°	1 minute	0	0	_
Max. Allowance	1-3 minute	5.0	1.0	1.0

#### Attachment B (3 of 3)

### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	**************************************
270° ~ 360°	1 minute	0	0	- Millione
Max. Allowance	1-3 minute	5.0	1.0	1.0

	×	YES	NO
Reference Report:	ISUZU Research Engineering Report No	ET5-1142	?

A Jamazala K. YAMASAKI

Y.OKAMI Manager

Crashworthiness &

Crashworthiness &

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Safety Performance Sec.

Safety Performance Sec.

Vehicle Research &

Vehicle Research &

Experiment Dept.

#### Attachment C (1 of 3)

Vehicle Model:: UBS25G Model Year: 1998 Subject: Compliance for S5.5 & S5.6 of FMVSS No.301. Fuel System Integrity (Right Side 30° Oblique Frontal Barrier Crash & Static Rollover) Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301. Method of validation: Test Vehicle Identification No. JACDJ58X9W7900018 Explanation of reason why the tests was conducted on the vehicle stated above: 1.All vehicle models of UBS25G are identical in design concerning the front body structure and fuel system. 2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBS25G. Test Date: May 26, 1997 Test Conditions: 1. Frontal Barrier Crash Test Barrier Face Angle 30 degrees in the right direction from the perpendicular to the line of travel of the vehicle Vehicle Impact Speed 48.7 km/h (30.27 mph) Vehicle Weight with Dummies 2309 kgOccupants Driver Hybrid III Right Front Passenger Hybrid III Percent of Fuel Teak Capacity Used 94 % 2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

NO

 $\underline{\hspace{1cm}}$  YES $\underline{\hspace{1cm}}$ 

Test Results

1.Right Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

# 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	_
270° ~ 360°	1 minute	0	0	
Max. Allowance	J-3 minute	5.0	1.0	1.0

\_\_\_\_×\_\_YES\_\_\_\_NO

#### Attachment C (3 of 3)

Experiment Dept.

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	
180° ~ 270°	1 minute	0	0	_
270° ~ 360°	1 minute	0	0	
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the requirements?

Reference Report:	ISUZU Research Engineering Report No. <u>ET5-1143</u>
H. Yamayalm	y. Okami
K. YAMASAKI	Y.OKAMI
	Manager
Crashworthiness &	Crashworthiness &
Safety Performance Sec.	Safety Performance Sec.
Vehicle Research &	Vehicle Research &

# Attachment D (1 of 3)

Model Year: <u>1998</u>			
Subject: Compliance for S5.5 & S5.6 of FN (Left Side 30° Oblique Frontal	MVSS No.301. Fuel System Integrity Barrier Crash & Static Rollover)		
Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5 and S5.6 of FMVSS No. 301.			
Method of validation: Test			
Vehicle Identification No. JACDJ58X1W79	900028		
Explanation of reason why the tests was con	aducted on the vehicle stated above:		
structure and fuel system.	entical design concerning the front body f not less than the maximum vehicle weight		
Test Date: June 24, 1997			
Test Conditions: 1.Frontal Barrier Crash Test Barrier Face Angle	30 degree in the left direction from the Perpendicular to the line of travel of the vehicle		
Vehicle Impact Speed Vehicle Weight with Dummies	48.8km/h (30.3MPH) 2307kg		
Occupants Driver Right Front passenger	Hybrid III Hybrid III		
Percent of Fuel Teak capacity Used	94 %		
2.Rollover Test Is roll duration time at each increment	of 90 degrees between 1-3 minutes?		

Test Results  $1. Left \ Side \ 30^{\circ} \quad Oblique \ Frontal \ Barrier \ Crash \ Test \ Results.$ 

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

#### 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	
90° ~ 180°	1 minute	0	0	
180° ~ 270°	1 minute	0	0	_
270° ~ 360°	I minute	0	0	**************************************
Max. Allowance	1-3 minute	5.0	1.0	1.0

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	_
270° ~ 360°	1 minute	0	0	_
Max. Allowance	1-3 minute	5.0	1.0	1.0

		×	_YES	NO
Reference Report:	ISUZU Research Engineering Report	No	ET	5-1144

Do the above results of examination satisfy the requirements?

A Gamuzaki K. YAMASAKI

Crashworthiness &

Safety Performance Sec.

Vehicle Research &

Experiment Dept.

J. Okami Y.OKAMI

Manager

Crashworthiness &

Safety Performance Sec.

Vehicle Research &

# Attachment E (1 of 3)

Vehicle Model: UBS25G	
Model Year: 1998	
Subject: Compliance for S5.5 & S5.6 of FMV (Rear Moving Barrier Crash & Sta	
Introduction: To determine if the fuel system and S5.6 of FMVSS No. 301.	of UBS25G meet the requirements of S5.5
Method of validation: Test	
Vehicle Identification No. JACDJ58X7W7900	0020
Explanation of reason why the tests was condu	acted on the vehicle stated above:
<ul><li>1.All vehicle models of UBS25G are iden structure and fuel system.</li><li>2.The test vehicle was set on the weight of no in all vehicle models of UBS25G.</li></ul>	·
Test Date: Mar. 5. 1997	
Test Conditions: 1.Rear Moving Barrier Crash Test	
Moving Barrier Impact Speed Vehicle Weight with Dummies	48.9km/h (30.4MPH) 2308g
Occupants Driver Right Front passenger	llybrid II Hybrid II
Percent of Fuel Teak capacity Used	94 %
2.Rollover Test Is roll duration time at each increment of	90 degrees between 1-3 minutes?  × YESNO

Test Results

1. Rear Moving Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

## 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	_
270° ~ 360°	1 minute	0	0	**************************************
Max. Allowance	1-3 minute	5.0	1.0	1.0

#### Attachment E (3 of 3)

### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes ( ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	
90° ~ 180°	1 minute	0	0	-
180° ~ 270°	1 minute	0	0	_
270° ~ 360°	1 minute	0	()	
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above resu	Its of examination satisfy the requirements?		
	×	_YES	_NC
Reference Report:	ISUZU Research Engineering Report No.	ЕТ5-1145	

K. YAMASAKI

Y.OKAMI Manager

Crashworthiness &

Crashworthiness &

J. Aleani

Safety Performance Sec.

Safety Performance Sec.

Vehicle Research &

Vehicle Research &

Experiment Dept.

Vehicle Model: UBS25G

Model Year: <u>1998</u>

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

(Left and Right Side Lateral Impact & Static Rollover)

Introduction: To determine if the fuel system of UBS25G meet the requirements of S5.5

and S5.6 of FMVSS No. 301.

Basis of validation

The following Design Validation Report is applicable as following reasons.

The fuel system and the body structure of both the vehicle sides on 1998 year model UBS25G have not been changed from 1992 year model UBS25G.

Therefore the Design Validation Report of 1992 year model is applicable.

Applicable Design Validation Report No. V-UBS-330

K. YAMASAKI

Crashworthiness &

( )amazala

Safety Performance Sec.

Vehicle Research &

Experiment Dept.

Y.OKAMI

Manager

Crashworthiness &

y. Oleans

Safety Performance Sec.

Vehicle Research &

# CONFIDENTIAL INFORMATION REDACTED

### ISUZU MOTORS LIMITED

#### DESIGN VALIDATION REPORT

REPORT No. V-UBS-495

ISSUED DATE Aug. 27, 1999

Vehicle Model:

UBR26

Model Year

2000

Subject:

FMVSS No.301.Fuel System Integrity

**FMVSS** 

Method of

Section

<u>Item</u>

Conclusion

S5.5

**Validation** 

Comply

Fuel Spillage: Barrier Crash Test & Examination

(cf. Attachment B to F)

S5.6

Fuel Spillage:

Test &

Comply

Rollover

Examination

(cf. Attachment B to F)

This certifies that UBR26 meet the applicable requirements of FMVSS No.301

Authorized by -

General Manager Vehicle Safety

Engineering Dept.

### SELECTION OF TEST VEHICLE

O: Test

C/O: Carry-over

-: Substitute by other vehicle

Test Item	UBR26
Perpendicular	O
Frontal Barrier	Attachment B
Right side Oblique	O
Frontal Barrier	Attachment C
Left Side Oblique	O
Frontal Barrier	Attachment D
Left-hand Side Lateral Moving Barrier	<ul> <li>Attachment E</li> <li>(See Validation Report No. V-UBS-330 )</li> </ul>
Right-hand Side	– Attachment E
Lateral Moving Barrier	(See Validation Report No. V-UBS-330)
Rear Moving Barrier	– Attachment F (See Validation Report No. V-UBS-464)

#### Attachment B (1 of 3)

Vehicle Model:: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

(Perpendicular Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5

and S5.6 of FMVSS No. 301.

Method of validation: Test

Vehicle Identification No. JACDJ58X0X7914648

Explanation of reason why the tests was conducted on the vehicle stated above;

1.All vehicle models of UBR26 are identical in design concerning the front body structure and fuel system.

2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBR26.

Test Date: Mar. 16, 1999

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle

Perpendicular to the line of travel

of the vehicle

Vehicle Impact Speed

57.1 km/h ( 35.5 mph)

Vehicle Weight with Dummies

2281 kg

Occupants

Driver

Hvbrid II

Right Front passenger

Hybrid III

Percent of Fuel Teak capacity

Used

94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

\_\_\_×\_\_YES\_\_\_\_NO

Test Results
1.Perpendicular Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

## 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	****
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	
270° ~ 360°	1 minute	0	0	<del></del>
Max. Allowance	1-3 minute	5.0	1.0	1.0

## 3. Rollover Test Results (Countercleckwise)

Rotation angle	Rotation time	Amount of fuel lakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	
270° ~ 360°	1 minute	0	0	_
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the require	ements?		
-	×	_YES	NO

Reference Report: ISUZU Research Engineering Report No. <u>ET5-1246</u>

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D. Yamnzaki

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## Attachment C (1 of 3)

Model Year: 2000	
Subject: Compliance for S5.5 & S5.6 of F (Right Side 30° Oblique Front	MVSS No.301, Fuel System Integrity tal Barrier Crash & Static Rollover)
Introduction: To determine if the fuel sy and S5.6 of FMVSS No. 303	stem of UBR26 meet the requirements of S5.5
Method of validation: Test	
Vehicle Identification No. JACDJ58X7X79	14789
Explanation of reason why the tests was co	onducted on the vehicle stated above;
structure and fuel system.	ntical in design concerning the front body of not less than the maximum vehicle weight
Test Date: Mar. 25, 1999	
Test Conditions:	
1.Frontal Barrier Crash Test Barrier Face Angle	30 degrees in the right direction from the perpendicular to the line of travel of the vehicle
Vehicle Impact Speed Vehicle Weight with Dummies	49.9 km/h ( 31.0 mph) 2281 kg
Occupants Driver Right Front Passenger	Hybrid III Hybrid III
Percent of Fuel Teak Capacity Used	94 %
2. Rollover Test Is roll duration time at each increment	t of 90 degrees between 1-3 minutes?

Test Results 1.Right Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

## 2. Rollover Test Results (Clockwise);

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	О	_
270° ~ 360°	1 minute	0	0	
Max. Allowance	1-3 minute	5.0	1.0	1.0

### Attachment C (3 of 3)

## 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	
90° ~ 180°	1 minute	0	0	_
180° ~ 270°	1 minute	0	0	
270° ~ 360°	1 minute	0	0	
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above results of examination satisfy the require	ments?		
_	×	YES	NO

Reference Report: ISUZU Research Engineering Report No. <u>ET5-1247</u>

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#### Attachment D (1 of 3)

Vehicle Model:: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

(Left Side 30° Oblique Frontal Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5

and S5.6 of FMVSS No. 301.

Method of validation: Test.

Vehicle Identification No. JACDJ58X5X7914791

Explanation of reason why the tests was conducted on the vehicle stated above:

1.All vehicle models of UBR26 are identical design concerning the front body structure and fuel system.

2. The test vehicle was set on the weight of not less than the maximum vehicle weight in all vehicle models of UBR26.

Test Date: Apr. 16, 1999

Test Conditions:

1. Frontal Barrier Crash Test

Barrier Face Angle

30 degree in the left direction from the Perpendicular to the line of travel of the

vehicle

Vehicle Impact Speed

49.0 km/h ( 30.4 mph)

Vehicle Weight with Dummies

2282 kg

Occupants

Driver

Hybrid II

Right Front passenger

Hybrid III

Percent of Fuel Teak capacity

Used

94 %

2. Rollover Test

Is roll duration time at each increment of 90 degrees between 1-3 minutes?

× YES NO

Test Results
1.Left Side 30° Oblique Frontal Barrier Crash Test Results.

	Amount of fuel leakage (ounce by weight)	Max. Allowance (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
Per minutes for subsequent 25 minutes period	0	1.0 per minute

## 2. Rollover Test Results (Clockwise):

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	*****
180° ∼ 270°	1 minute	0	0	_
270° ~ 360°	1 minute	0	0	
Max. Allowance	1-3 minute	5.0	1.0	1.0

#### Attachment D (3 of 3)

## $3. Rollover\ Test\ Results\ (Counterclockwise)$

Rotation angle	Rotation time	Amount of fuel leakage during first 5 minutes (ounce by weight)	Amount of fuel leakage during any 1 minutes interval ( ounce by weight)	Amount of fuel leakage during any 1 minutes interval (ounce by weight)
0° ~ 90°	1 minute	0	0	_
90° ~ 180°	1 minute	0	0	<del>-</del>
180° ~ 270°	1 minute	0	0	-
270° ~ 360°	1 minute	0	0	
Max. Allowance	1-3 minute	5.0	1.0	1.0

Do the above recu	lts of examination satisfy the requirements?		
Do the above less	×	YES	NO
Reference Report:	ISUZU Research Engineering Report No	<u>ET5-</u>	1248
(Jamazahi)	C ( cHA		

K. YAMASAKI

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Manager

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Vehicle Model: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

(Left and Right Side Lateral Impact & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5

and S5.6 of FMVSS No. 301.

Basis of validation

The following Design Validation Report is applicable as following reasons.

The fuel system and the body structure of both the vehicle sides on 2000 year model UBR26 have not been changed from 1992 year model UBS25G. Therefore the Design Validation Report of 1992 year model is applicable.

Applicable Design Validation Report No. V-UBS-330

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#### Attachment F

Vehicle Model: UBR26

Model Year: 2000

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

(Rear Moving Barrier Crash & Static Rollover)

Introduction: To determine if the fuel system of UBR26 meet the requirements of S5.5

and S5.6 of FMVSS No. 301.

Basis of validation

The following Design Validation Report is applicable as following reasons.

The fuel system and the body structure of the rear of vehicle on 2000 year model UBR26 have not been changed from 1999 year model UBS25G.

Therefore the Design Validation Report of 1999 year model is applicable.

Applicable Design Validation Report No. V-UBS-464

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# CONFIDENTIAL INFORMATION REDACTED

#### ISUZU MOTORS LIMITED

## DESIGN VALIDATION REPORT

REPORT No. V-UBS-510

ISSUED DATE \_\_\_\_\_Sep. 11, 2001

Vehicle Model: <u>UBR/S26G</u>

Model Year : 2002

Subject: FMVSS No.301.Fuel System Integrity

FMVSS Method of

Section Item Validation Conclusion

S5.5 Fuel Spillage: Test Comply

Barrier Crash (cf. Attachment A to C)

S5.6 Fuel Spillage: Test Comply

Rollover (cf. Attachment A to C)

This certifies that UBR/S26G meet the applicable requirements of FMVSS No.301

Authorized by

M.YOSHINO General Manager Vehicle Safety

### SELECTION OF TEST VEHICLE

O: TEST

C/O: Carry-over

Test Item	UBR/S26G		
Perpendicular Frontal Barrier			
Right Side Oblique Frontal Barrier	C/O Attachment B  (UBR : See Validation Report No. V-UBS-495)  (UBS : See Validation Report No. V-UBS-464)		
Left Side Oblique Frontal Barrier			
Left-hand Side Lateral Moving Barrier	C/O Attachment C		
Right-hand Side Lateral Moving Barrier	(See Validation Report No. V-UBS-330)		
Rear Moving Barrier	O Attachment D		

#### Attachment B (1 of 1)

Vehicle Model: UBR/S26G

Model Year: 2002

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

( Perpendicular Frontal Barrier Crash , Right Side Oblique Frontal Barrier,

Left Side Oblique Frontal Barrier & Static Rollover)

Introduction: To determine if the fuel system of UER/S26G meets the requirements of

S5.5 and S5.6 of FMVSS No. 301.

#### Basic of validation

The following Design Validation Report is applicable as following reasons.

The fuel system except fuel tank and ORVR, and the body structure on 2002 year model UBR/S26G have not changed from 1998 year model UBS25G and 2000 year model UBR26G.

There is no deformation on the area which are equipped with fuel tank system and ORVR. So, these changes don't influence the fuel system integrity.

Therefore, Design Validation Reports of 1998 and 2000 year model is applicable.

Applicable Design Validation No. V-UBS-464, V-UBS-495.

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#### Attachment C(1 of 1)

Vehicle Model:: UBR/S26G

Model Year: 2002

Subject: Compliance for S5.5 & S5.6 of FMVSS No.301, Fuel System Integrity

(Left and Right Side Lateral Impact & Static Rollover)

Introduction: To determine if the fuel system of UES26G meets the requirements of S5.5

and S5.6 of FMVSS No. 301.

#### Basic of validation

The following Design Validation Report is applicable as following reasons.

The fuel system except fuel tank and ORVR, and the body structure on 2002 year model UBS26G have not changed from 1992 year model UBS25G.

There is no deformation on the area which are equipped with fuel tank system and ORVR.

So, these changes don't influence the fuel system integrity.

Therefore, the Design Validation Report of 1992 year model is applicable.

Applicable Design Validation No. V-UBS-330.

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Manager

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### Attachment D(1 of 3)

Vehicle Model: UBR/S26G

Model Year: 2002	
Subject: Compliance for S5.5 & S5.6 of FMVSS (Rear Moving Barrier Crash & Static Introduction: To determine if the fuel system S5.5 and S5.6 of FMVSS No. 301.	Rollover) of UER/S25G meets the requirements of
Method of validation: Test	
Vehicle Identification No.: JACDJ58X827J00014	Į.
Explanation of reason why the tests was conduct	ted on the vehicle stated above;
<ul><li>1.All vehicle models of UBR/S26G are identistructure and fuel system.</li><li>2.The test vehicle was set on the weight of not in all vehicle models of UBR/S26G.</li></ul>	
Test Date: Aug. 28, 2001	
Test Conditions: 1.Rear Moving Barrier Crash Test	
***** * **** * * * * * * * * * * * * *	3.6km/h (30.2MPH) 313g
	ybrid II (75.75kg) ybrid II (75.75kg)
Percent of Fuel Teak capacity Used 94	4 %
2.Rollover Test Is roll duration time at each increment of 90 d	legrees between 1-3 minutes?  XYESNO

### Attachment D (2 of 3)

Test Results
1.Rear Moving Barrier Crash Test Results.

	Results (ounce by weight)	Max. Allow (ounce by weight)
During impact	0	1.0
During first 5 minutes after impact	0	5.0
per minutes for subsequent 25 minutes Period	0	1.0 / 1 ,minute

### 2.Rollover Test Results (clockwise);

Rotation angle	Rotation time	During first 5 minutes ( ounce by weight)	During any 1 minutes interval (ounce by weight)	During any 1 minutes interval ( ounce by weight)
0° ~ 90°	minute	0	0	_
90° ~ 180°	minute	o	0	
180° ~ 270°	minute	0	О	
270° ~ 360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

#### Attachment D (3 of 3)

#### 3. Rollover Test Results (Counterclockwise)

Rotation angle	Rotation time	During first 5 minutes ( ounce by weight)	During any 1 minutes interval ( ounce by weight)	During any 1 minutes interval ( ounce by weight)
0° ~ 90°	minute	0	0	_
90° ~ 180°	minute	0	0	_
180° ~ 270°	minute	<u>.</u> 0	0	_
270° ~ 360°	minute	0	0	
Max. Allow	1-3 minute	5.0	1.0	1.0

D. C	The state of	ISUZU Research Engineering Report No	2001-0777

× YES \_\_\_\_NO

Do the above results of examination satisfy the requirements?

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