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APPENDIX 1 : SAMPLE 1 SAMPLING DATA

Workstation	Process	MH Effective		MH Non Effective		MH Total
		VAA	NVA	Allowance	Waste	
Fit UP Body Assy	Handling protrector+clamping (fit up ke jig)		00:24:00			0:24:00
	Setting front-protector	03:51:00	00:03:00	00:01:00		3:55:00
	Fit up side wall (Rh&Lh ke front)	02:50:00	00:04:00	00:03:00		2:57:00
	Setting side wall LH sama RH	00:15:00				0:15:00
	Setting side RH-front	00:38:00	00:02:00			0:40:00
	Setting side LH-front	00:20:00	00:03:00			0:23:00
	Setting side-bottom	00:40:00	00:02:00	00:02:00		0:44:00
	Set bottom-front	01:49:00	00:04:00	00:01:00		1:54:00
	Set bottom-side LH RH-Front	00:38:00				0:38:00
	Setting reinforce protector	00:35:00	00:01:00			0:36:00
	Set mirror protector	00:28:00				0:28:00
	Handling body assy ke terlungkup		00:19:00			0:19:00
Lay Down Workstation	Handling+Set end coaming	00:41:00	00:02:00			0:43:00
	FW End coaming	01:12:00				1:12:00
	Handling+Set Ext	00:45:00	00:05:00			0:50:00

mid frame dan 2 doubler					
FW Ext frame+2 doubler di ext mid frame	01:37:00	00:02:00			1:39:00
Set (memasang) ext end	01:15:00				1:15:00
Set (Memasang) Doubler di Ext end	00:26:00				0:26:00
Setting las, Masang plate depan	00:06:00				0:06:00
FW doubler di plate depan	01:49:00				1:49:00
FW plate depan (end) (gambar no 7)	01:04:00				1:04:00
Handling Exhaust line assy		00:02:00			0:02:00
Fit up dan set exhaust line assy	00:40:00				0:40:00
FW Exhaust line Assy	03:32:00	00:02:00			3:34:00
FW front-protector	00:24:00				0:24:00
FW protecetor-front wall belakang (kolong)	00:23:00				0:23:00
FW reinforce LH dan Rh	02:41:00				2:41:00
FW side wall-front luar	01:25:00				1:25:00
FW side wall-front	01:13:00				1:13:00

dalam					
Handling-set corner front wall- Side wall (segitiga)	02:00:00	00:05:00			2:05:00
FW segitiga yg di sisi pojok atas	01:17:00				1:17:00
Handling box mufler		00:09:00			0:09:00
Fit Up box mufler		00:13:00			0:13:00
FW box mufler	01:08:00				1:08:00
Handling Box Front		00:06:00			0:06:00
Handling Jig to Unit		02:04:00			2:04:00
Set Box Front	01:55:00				1:55:00
FW box front	03:12:00	00:05:00	00:02:00		3:19:00
Handling dan fit up Ext box front (Reinforce nya)		00:07:00			0:07:00
Sett ext+fit up boxfront	00:14:00	00:01:00			0:15:00
Fw ext Boxfront	00:42:00				0:42:00
Grinding reinforce box front	00:04:00				0:04:00
FW side-bottom	01:22:00				1:22:00
Fw protector-side	00:46:00				0:46:00
FW mirror corner protector	02:01:00				2:01:00
FW front-bottom	01:34:00				1:34:00
grinding front- bottom	00:03:00				0:03:00

	FW longitudinal	00:29:00				0:29:00
	Handling (menuju terlentang)		01:36:00			1:36:00
Lay Up Workstation	FW Bottom-Side	01:45:00				1:45:00
	FW Front-bottom sisi bawah	01:24:00				1:24:00
	FW front-bottom sebelah bawah sisi dalam	00:56:00				0:56:00
	FW Bracket Corner Protector	02:08:00				2:08:00
	Fw box front+box muffler+exhaust line Assy	06:58:00	00:02:00	00:04:00		7:04:00
	Set Plate cover vertical Long	00:07:00				0:07:00
	FW Plate Cover Vertical Long	00:51:00				0:51:00
	FW segitiga yg di sisi pojok atas	00:26:00				0:26:00
	Setting Corner Plate	05:19:00	00:03:00	00:01:00		5:23:00
	FW Corner Plate	07:18:00	00:07:00	00:01:00		7:26:00
	FW bottom floor	03:27:00	00:02:00			3:29:00
	FW cover end coaming (Reinforce)	00:27:00				0:27:00
	Grinding cover end coaming (Reinforce)	00:07:00				0:07:00
	FW+grinding End frame	03:51:00				3:51:00

Handling ke stager		00:29:00			0:29:00
FW cover longitudinal	00:42:00				0:42:00
FW longitudinal+hinge brack LH & RH	01:21:00				1:21:00
Memasang Rock Ejector Assy	00:12:00				00:12:00
Total	85:23:00	6:24:00	0:15:00	0:00:00	92:02:00

APPENDIX II : SAMPLE 2 SAMPLING DATA

Workstation	Process	MH Effective		MH Non Effective		MH Total
		VAA	NVA	Allowance	Waste	
Fit UP Body Assy	Handling protrector+clamping (fit up ke jig)		00:29:00			00:29:00
	Setting front-protector	03:19:00	00:01:00			03:20:00
	Fit up side wall (Rh&Lh ke front)	03:19:00	00:03:00			03:22:00
	Setting side wall LH sama RH	00:18:00				00:18:00
	Setting side RH-front	00:26:00				00:26:00
	Setting side LH-front	00:28:00				00:28:00
	Setting side-bottom	00:39:00				00:39:00
	Set bottom-front	01:39:00				01:39:00
	Set bottom-side LH RH-Front	00:39:00				00:39:00
	Setting reinforce protector	00:33:00				00:33:00
	Set mirror protector	00:19:00				00:19:00
	Handling body assy ke terlungkup		00:23:00			00:23:00
Lay Down Workstation	Handling+Set end coaming	00:48:00	00:03:00			00:51:00
	FW End coaming	01:12:00	00:05:00			01:17:00
	Handling+Set Ext mid frame dan 2 doubler	00:48:00	00:07:00			00:55:00

FW Ext frame+2 doubler di ext mid frame	01:38:00	00:02:00			01:40:00
Set (memasang) ext end	01:24:00				01:24:00
Set (Memasang) Doubler di Ext end	00:16:00				00:16:00
Setting las, Masang plate depan	00:07:00				00:07:00
FW doubler di plate depan	01:55:00				01:55:00
FW plate depan (end) (gambar no 7)	01:09:00				01:09:00
Handling Exhaust line assy		00:07:00			00:07:00
Fit up dan set exhaust line assy	00:51:00				00:51:00
FW Exhaust line Assy	03:15:00	00:07:00	00:03:00	00:06:00	03:31:00
FW front-protector	00:21:00				00:21:00
FW protecctor-front wall belakang (kolong)	00:21:00				00:21:00
FW reinforce LH dan Rh	02:22:00				02:22:00
FW side wall-front luar	01:02:00				01:02:00
FW side wall-front dalam	01:04:00	00:02:00			01:06:00
Handling-set corner front wall-Side wall (segitiga)	01:48:00	00:01:00		00:07:00	01:56:00

	FW segitiga yg di sisi pojok atas	01:00:00				01:00:00
	Handling box mufler		00:07:00			00:07:00
	Fit Up box mufler		00:08:00			00:08:00
	FW box mufler	00:59:00				00:59:00
	Handling Box Front		00:07:00			00:07:00
	Handling Jig to Unit		02:09:00			02:09:00
	Set Box Front	02:00:00		00:03:00		02:03:00
	FW box front	03:16:00	00:06:00	00:05:00		03:27:00
	Handling dan fit up Ext box front (Reinforce nya)		00:04:00			00:04:00
	Sett ext+fit up boxfront	00:21:00				00:21:00
	Fw ext Boxfront	00:34:00				00:34:00
	Grinding reinforce box front	00:05:00				00:05:00
	FW side-bottom	01:18:00				01:18:00
	Fw protector-side	00:56:00				00:56:00
	FW mirror corner protector	01:50:00				01:50:00
	FW front-bottom	01:30:00				01:30:00
	grinding front-bottom	00:08:00				00:08:00
	FW longitudinal	00:45:00	00:04:00			00:49:00
	Handling (menuju terlentang)		01:37:00			01:37:00
Lay Up Workstation	FW Bottom-Side	02:01:00				02:01:00
	FW Front-bottom sisi bawah	01:39:00				01:39:00
	FW front-bottom	01:04:00	00:05:00			01:09:00

sebelah bawah sisi dalam					
FW Bracket Corner Protector	01:48:00				01:48:00
Fw box front+box muffler+exhaust line assy	07:21:00	00:06:00	00:02:00	00:09:00	07:38:00
Set Plate cover vertical Long	00:05:00				00:05:00
FW Plate Cover Vertical Long	00:40:00				00:40:00
FW segitiga yg di sisi pojok atas	00:37:00				00:37:00
Setting Corner Plate	05:09:00	00:12:00	00:09:00	00:07:00	05:37:00
FW Corner Plate	07:34:00	00:09:00		00:09:00	07:52:00
FW bottom floor	03:33:00	00:10:00			03:43:00
FW cover end coaming (Reinforce)	00:34:00				00:34:00
Grinding cover end coaming (Reinforce)	00:07:00				00:07:00
FW+grinding End frame	03:57:00	00:09:00			04:06:00
Handling ke stager		00:23:00			00:23:00
FW cover longitudinal	00:36:00				00:36:00
FW longitudinal+hinge brack LH & RH	01:17:00				01:17:00
Memasang Rock Ejector Assy	00:17:00				00:17:00
Total	85:01:00	7:06:00	0:22:00	0:38:00	93:07:00

APPENDIX III : SAMPLE 3 SAMPLING DATA

Workstation	Process	MH Effective		MH Non Effective		MH Total
		VAA	NVA	Allowance	Waste	
Fit UP Body Assy	Handling protrector+clamping (fit up ke jig)		00:31:00			00:31:00
	Setting front-protector	03:27:00	00:04:00	00:09:00		03:40:00
	Fit up side wall (Rh&Lh ke front)	03:05:00				03:05:00
	Setting side wall LH sama RH	00:21:00				00:21:00
	Setting side RH-front	00:30:00				00:30:00
	Setting side LH-front	00:24:00				00:24:00
	Setting side-bottom	00:42:00	00:07:00			00:49:00
	Set bottom-front	02:00:00	00:11:00	00:10:00		02:21:00
	Set bottom-side LH RH-Front	00:43:00				00:43:00
	Setting reinforce protector	00:30:00				00:30:00
	Set mirror protector	00:25:00				00:25:00
	Handling body assy ke terlungkup		00:21:00			00:21:00
Lay Down Workstation	Handling+Set end coaming	00:43:00	00:04:00			00:47:00
	FW End coaming	01:13:00				01:13:00
	Handling+Set Ext mid frame dan 2 doubler	00:58:00	00:05:00			01:03:00

FW Ext frame+2 doubler di ext mid frame	01:38:00	00:03:00			01:41:00
Set (memasang) ext end	01:33:00				01:33:00
Set (Memasang) Doubler di Ext end	00:18:00				00:18:00
Setting las, Masang plate depan	00:05:00				00:05:00
FW doubler di plate depan	02:04:00				02:04:00
FW plate depan (end) (gambar no 7)	01:00:00		00:05:00		01:05:00
Handling Exhaust line assy		00:06:00			00:06:00
Fit up dan set exhaust line assy	00:53:00				00:53:00
FW Exhaust line Assy	03:11:00	00:08:00			03:19:00
FW front-protector	00:18:00				00:18:00
FW protecctor-front wall belakang (kolong)	00:28:00				00:28:00
FW reinforce LH dan Rh	02:19:00	00:08:00			02:27:00
FW side wall-front luar	01:09:00				01:09:00
FW side wall-front dalam	01:09:00	00:08:00			01:17:00
Handling-set corner front wall-Side wall (segitiga)	01:48:00			00:11:00	01:59:00

	FW segitiga yg di sisi pojok atas	00:55:00				00:55:00
	Handling box mufler		00:05:00			00:05:00
	Fit Up box mufler		00:09:00			00:09:00
	FW box mufler	00:57:00	00:05:00			01:02:00
	Handling Box Front		00:05:00			00:05:00
	Handling Jig to Unit		02:05:00			02:05:00
	Set Box Front	02:05:00				02:05:00
	FW box front	03:20:00	00:06:00			03:26:00
	Handling dan fit up Ext box front (Reinforce nya)		00:04:00			00:04:00
	Sett ext+fit up boxfront	00:09:00				00:09:00
	Fw ext Boxfront	00:29:00				00:29:00
	Grinding reinforce box front	00:03:00				00:03:00
	FW side-bottom	01:08:00				01:08:00
	Fw protector-side	00:54:00				00:54:00
	FW mirror corner protector	01:58:00				01:58:00
	FW front-bottom	01:35:00				01:35:00
	grinding front-bottom	00:07:00				00:07:00
	FW longitudinal	00:42:00				00:42:00
	Handling (menuju terlentang)		01:35:00			01:35:00
Lay Up Workstation	FW Bottom-Side	01:59:00				01:59:00
	FW Front-bottom sisi bawah	01:45:00				01:45:00
	FW front-bottom	00:57:00	00:07:00			01:04:00

sebelah bawah sisi dalam					
FW Bracket Corner Protector	01:55:00	00:04:00			01:59:00
Fw box front+box muffler+exhaust line assy	07:15:00	00:15:00			07:30:00
Set Plate cover vertical Long	00:03:00				00:03:00
FW Plate Cover Vertical Long	00:40:00		00:10:00		00:50:00
FW segitiga yg di sisi pojok atas	00:30:00				00:30:00
Setting Corner Plate	04:51:00	00:12:00	00:09:00		05:12:00
FW Corner Plate	07:22:00	00:11:00		00:09:00	07:42:00
FW bottom floor	03:29:00	00:07:00			03:36:00
FW cover end coaming (Reinforce)	00:32:00				00:32:00
Grinding cover end coaming (Reinforce)	00:04:00				00:04:00
FW+grinding End frame	03:45:00	00:12:00			03:57:00
Handling ke stager		00:26:00			00:26:00
FW cover longitudinal	00:33:00				00:33:00
FW longitudinal+hinge brack LH & RH	01:16:00				01:16:00
Memasang Rock Ejector Assy	00:16:00				00:16:00
Total	84:28:00	7:44:00	0:43:00	0:20:00	93:15:00