AVNRX

10 May 2022

### Annual Procurement Plan Proposed Tier 2 Projects

					Schedu	le for Each I	rocureme	nt Entity		Est	timated Budget (Ph	P)	Remarks
L/I Nr	CODE (PAP)	Procurement Program/Project	End-User	Mode of Procurement	Ads/Post of ID/BEI	Sub/Open of Bids	Award of Contract	Contract Signing	Source of Funds	Total	MOOE	со	(Brief Description of Program/Project)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	5-06-04-060-03	Mobile Air Traffic Control Tower			Jun-22	Jun-22	Jul-22	Jul-22	GAA CY 2022	26,272,894.00		26,272,894.00	Procurement Requirement for FY 2022
3	5-06-04-060-03	Aircraft Refueler Truck			Jun-22	Jun-22	Jul-22	Jul-22	GAA CY 2022	15,286,535.00		15,286,535.00	Procurement Requirement for FY 2022
4	5-06-04-050-09	Firetruck with Foam Tank	AvnR (P), PA	Public Bidding	Jun-22	Jun-22	Jul-22	Jul-22	GAA CY 2022	20,570,000.00		20,570,000.00	Procurement Requirement for FY 2022
5	5-06-04-060-03	Ground Power Unit (GPU)			Jun-22	Jun-22	Jul-22	Jul-22	GAA CY 2022	9,643,202.76		9,643,202.76	Procurement Requirement for FY 2022
6	5-06-04-060-03	Helicopter Flight Training Device Level 7 (Flight Simulator)			Jun-22	Jun-22	Jul-22	Jul-22	GAA CY 2022	200,000,000.00		200,000,000.00	Procurement Requirement for FY 2022
										TOTAL >>>>>>		271,772,631.76	

Prepared By:

ANDRE B SANTOS Colonel (MNSA) PA Commanding Officer Recommended for Approval:

ROGELIO D ULANDAY

Approved By:

POMEO BRAWNER JR Lieutenant General PA Commanding General, PA

AVNRX

10 May 2022

# Project Procurement Management Plan (PPMP) Proposed Tier 2 Projects

L/I Nr	Code	General Description	Part Number	End-User		Qty	// Size	Estimated Budget	Procurement Method							ched			
1	2	3	4	5			6	7	8	9 -	10	11 1	2 13	14	15	16	17	18	19 20
	-				Qty	Unit	U/P	Total		J	F	M A	A M	J	J	A	S	0	N D
1	5-06-04-060-03	Mobile Air Traffic Control Tower		AvnR (P), PA	1	lot	26,272,894.00	26,272,894.00	Public Bidding					1					
		BASELINE REQUIREMENT			1,000														
		1. Mobile Cabin																	
		The size of the Cabin shall approximately be as follow: Minimum Length excluding Balcony: 3700mm x Width: 2360mm x Height: 2020mm. The length of the cabin including the balcony shall not be more than 6042 mm. Total gross weight of the cabin including all equipment shall not be more than 3800kg.																	
		Minimum standing height within the ATC cabin of 1.9 m, floor to ceiling.																	
		<ul> <li>With an unobstructed field of view of 360 degrees in azimuth with the exception of the six support columns. The column dimensions shall be minimized (maximum dimensions of 7.62 cm x 7.62 cm) or better</li> </ul>																	
		The overall unobstructed glass dimension on the vertical from the still level to the ceiling edge shall be minimum of 91.5 cm (36 in.) or better sloping outward from the vertical Interior floor																	
		Covered with an anti-static, high friction, resilient, non-flammable, and textured material.																	
	1	3. Wall										(S2 10)	50		-			300	200
		<ul> <li>Enclosures shall be a minimum of 1m or better high and shall be of sandwich construction with interior and exterior aluminum layers enclosing polyurethane foam providing a rigid thermal insulated structure resistant to moisture.</li> <li>The walls shall be made of polyurethane sandwich panels covered</li> </ul>																	
		by steel metal 0.5mm sheets or Aluminum metal 3.2 mm sheets. The thickness of the wall panels shall be at least 40mm to maximum 84 mm.																	
		4. Roof																	
		The roof shall be of sandwich construction with interior and exterior aluminium skins enclosing polyurethane foam to provide a rigid structure and thermal insulation resistant to moisture.																	
		5. Glass																	Se (22)
		<ul> <li>The 25mm (1-inch) double-glazed glass panel shall be composed of a 6mm (1/4-inch) clear interior glass pane and a 6mm (1/4-inch) Solargray outdoor glass pane separated by 13mm (1/2-inch) hermetically sealed air space.</li> </ul>																	
		6. Air Conditioner			外呼信														
		<ul> <li>A dual Heat Pump Air Conditioning System, minimum 6.8 kW (24,000 BTU) cooling capacity per unit shall be used.</li> <li>The Main Power Supply shall be 415±15/240±10V, 50 Hz 3-phase</li> </ul>																	
	-	• The Main Power Supply shall be 415±15/240±10V, 50 Hz 3-phase  7. Ladder												0 1000	N/A				400
		The material shall be square aluminum profile, aluminum tubes and the steps shall be provided from anti-sliding aluminum sheet. Ladder shall have on lower part two wheels or on skis (no wheel) and on the upper part fixed by hooks and chains.																	
		8. Configuration								800									

	The tower shall include Console with three (3) controller positions,														ГΤ	
	each comprising:									$\perp$					LI.	
	➤ Flight Strips Tray (2 x 10 Flight Strips)					<b></b>			_	┵	—			—	$\vdash$	+
<del></del>	> Flight Strips	····		$\vdash$					+	+					⊢⊢	+
	Task Lamp     Controller Chair							<del> </del>	+	+	$\rightarrow$	+	-			
<del></del>						<del></del>			-	+-+		+		-	<del>                                     </del>	+
<del></del>	9, Vehicle Configuration  • 2022 model year							<del>                                     </del>	+	1-1					┼┼	
<del> </del>	Wheeled type	-		<del></del>				<del>                                     </del>	+	+	-	-	-+			
<del></del>	Diesel Engine									+		_		+		+
<del>                                     </del>	Set back axie			<del></del>				<del></del>	+	+	<del>-</del>	+	_	+	<del></del>	
	L/H primary steering			<del></del>		···	<del></del>		-+-	╅╌┪	-+	+		+	<del>   </del>	+
	• Euro IV Emission			<del></del>		· · · · · ·		<del> </del>	+	+	-	+-		+	<del></del>	+
	Engine should at least 320 HP at optimum RPM		<del></del>					<del></del>		+		1		+		+
	10. Electronic Parameters			<del></del>						11		-	-	_	1	
	At least 80 km/hr road speed limit								_	1	$\neg$			-		$\neg$
	Cruise control speed same as road speed limit								_	+	$\neg$	1		$\top$		$\neg$
	EDC Engine regulation	*						1		$\dagger$	$\neg \uparrow$	1			$\vdash$	
	PTO mode engine											7		$\neg$		$\neg$
	11. Engine Equipment				7.7					1						$\Box$
	DR 12 v 160 amp 28-SI quadramount pad alternator with remote									$T \Box$	1			$T^{-}$	$\Box$	T
	battery volt sense or better option.									$\perp$					$\perp \perp$	
	Battery box with aluminum cover.															$oldsymbol{oldsymbol{oldsymbol{oldsymbol{\Box}}}$
	Air compressor 1 cylinder 360 ccm with internal safety valve or										T		T		ΙТ	
	better.						ļ			$oldsymbol{\sqcup}$		$\perp$				
1 1	Electronic engine integral shutdown protection system: Standard		ļ.						ı	1 1				'	1 1	
l i	exhaust system, Standard radiator and 12v HD starter with integrated		i						Į	1 1		1 1		'	1 1	
1 1	magnetic switch.			1					1	1 1		1	- 1	_ L'	L_I_	
	12. Transmission Equipment															
	. Aluminum clutch housing, PTO available ,PTO mounting, bottom of								$\neg \neg$	П						
	main transmission, Transfer case oil cooler and Synthetic			,					- 1	1 1	- 1	1		1 '	1 (	- 1
	transmission lube									1		1				
	13. Front Axle									$\bot$						
	Single front axle with HR carrier , Stabilizer for front axle , Power							i i		1 1				- } '	1 }	- 1
	steering with auxiliary gear and Synthetic 75W-90 front exte lube.								-	++						
<u> </u>	14. Front Suspension								-	╁		-	-+		╌┼	
	Taper leaf or Parabolic or better front suspension									╁╾╂	-	-		—	$\vdash$	+
<b>-</b>	Front shock absorbers.  15. Rear Axte								+-	┯	-	-		<del></del> -		
<del></del>	Manufacturer standard Rear ade								+-	1-1		+			<del></del>	
<del></del>	Synthetic 75W-90 front axle lube									╁╌┤		+		+	<del>i  </del>	+
<del>                                     </del>	Differential lock or better			-					+	╅		+	-+		<del></del>	-+-
<del>  </del>	18. Rear Suspension									+		1		+	<del>   </del>	+
	• flat leaf/Parabolic spring rear suspension with helper and radius									$\vdash$	_	_	$\neg$	_	$\vdash$	+
i	rod.							l [		1 1	- 1		- 1	'	1	ı
	17. Brake System												$\neg \vdash$			
	Air brake package/electronic brake system															$\Box$
	BS without traction control											$\Box$				$\Box$
	Steel air brake reservoirs, Air dryer, heated								1							
	18. Wheelbase and Frame							37								
	Within 175-245 inch wheelbase									$\Box$						$oldsymbol{oldsymbol{oldsymbol{oldsymbol{\Box}}}$
	steel frame									$\Box$				$\Box$	$\Box$	$\bot$
	Within 98-108 inch rear frame overhang or suitable								$\perp$					تــــــــــــــــــــــــــــــــــــــ		_ـــــــــــــــــــــــــــــــــــــ
	Calculated overall frame length									┸		4			$\sqcup$	
<u> </u>	19. Chassis Equipment							<u> </u>	-	4-4		4		——'	$\vdash$	
ļļ	Three piece 14 inch painted steel bumper with collapsible ends						L	ļ	-	₩		+		'	$\vdash$	+
	Front tow hooks		ļl						-	4		4	_	'	┷	
<u> </u>	Hostler 3500 lb capacity rear cross member						L.————	ļ.,ļ.		+		+	$\dashv$	——'	$\vdash$	+
	Mudflaps								-	<b>↓</b>		4			<del>                                     </del>	
ļ	20. Fuel Tanks					·				1		+	_	——'		
	80 gallon/302 to 380 liter rectangular aluminum fuel tank.								_	44		4-			┷	
	21. Wheels									+	-	+	$\dashv$	┯	$\vdash$	+
	Suitable size, quality and standard recommended by Manufacturer			[	- 1			ŀ		1	ĺ			-   '		
	taking consideration Philippine Road standard while travelling to					l			-	1 1	J		1	-   '		- 1
<del></del>	cemented and rough road.  22. Cab Exterior									+ +	$\overline{}$	+	-		$\vdash$	-+
L	AL VON EARINI				1			<u></u>						تــــــــــــــــــــــــــــــــــــــ		

	• 2 ½ inch fender extensions	<del> </del>	,	_	_	T					$\top$		_	7		
	Integral headlights, Integral LED stop/tail/backup lights . Standard		<del> </del>	<del> </del>		<del></del>			$\vdash$	+	+	$\dashv$	$\dashv$	+		+
	front turn signals, Dual west coast mirrors, Dual level cab entry steps			1											.	1
	on both sides , Centre locking system, Tinted door glass , Window			1					1						.	
<del>                                     </del>	cleaning set. 23. Cab Interior							<del> </del>	$\vdash$	┥~	+				+	++
<del></del>	Opal grey interior/Door interior paneling washable Main HVAC		<del> </del> -	<del> </del>			<del> </del>	<del></del>	1	+	1-1	-	-	+		1-
1 1	controls with circulation switch ,Standard heater plumbing ,Heavy			]					1 1						.	
	duty air conditioner compressor, 12 v negative ground electrical								i I						.	
	system, Premium high back air suspension drivers seat, 2 man mid		ļ	<del> </del>				ļ		-	+	-	-	-		<del></del>
	back non suspension passenger seat . Fixed steering column .  24. Trailer Mounted Generating Set		<del> </del>	<del>                                     </del>			<del> </del>		$\vdash$		+	-+	-	+	-	++
<del></del>			<del> </del>	<del>                                     </del>					$\vdash$	+	+	_	+	+		++
	<ul> <li>Diesel Generator , Minimum rating of 13.5 KVA, 400/220V, 50 Hz 3 phase (Standby Power), Automatic voltage regulation, Digital Control</li> </ul>		Į		}				{ }						. 1	
1	panel ,Automatic Transfer Switch (ATS), Starting time: within 15		ł		1											1 1
	seconds, Degree of protection: IP54 , Power cable: up to 33 meters		ļ						ł I		1				. 1	1 1
	from the ATC Mobile Tower, Fuel Autonomy: 24 hours minimum.				}						1 1					
	Single Axle trailer.									$\top$						
	26. UPS System														工	$\bot \bot$
	<ul> <li>Shall be a single module of on-line technology, provide connection</li> </ul>				1		}				1				, 1	
1 1	control circuits, disconnection control circuits, system instrumentation, system status indicators, system alarms and system						}								.	
	diagnostic.															
	Shall have a minimum 6kVA rating, 240 Vac, 50 Hz Input/output.														工	
	Maintenance-free and leak-free battery with at least 1 hr autonomy.									7	$\Box$		T			
$\vdash$	28. Voice Communication and Control System/Controller		<del> </del>	<del> </del>	<del> </del>		ļ	ļ	$\vdash$		+ +	-		+		+-+-
	Working Position(CWP)	*.			1			1			1		ļ			
	One (1) VCCS/CWP central equipment shall have the following.						-		$\Box$	十			_	1		
	minimum specifications:			<u> </u>				Į	ш		1-1					$+\!\!+\!\!\!+$
1 1	> It shall employ client-server architecture, with open platform								1		1 1				.	
<del>                                     </del>	software and commercial off-the-shelf hardware.  > A single failure in VCCS/CWP shall not result in the loss of large.		<del> </del>						-	┿	+	-	+	+		+
1 1	system parts. The digital audio processors shall be fully redundant			1					il				_		.	1 1
	and in parallel processing mode.		ļ	ļ					<b>  </b> -		+			44		
	> It shall include hot swappable radio and telephone interfaces Integrated with VCCS/CWP or Telephone Interface can be		1		ŀ			1							.	
	separately provided with IP-PABX with minimum 3G/4G GSM Port,				İ			<b>,</b>		ļ			- 1		.	1 1
	3 VolP Ports, 3 FXS Ports, etc.															$\bot\bot$
	Three (3) VCCS/CWP positions, each position shall have the															
<del></del>	following minimum specifications:  Minimum 10,1* Color Touch Screen Display				<b></b>				┝╼┼╸	-	+	-+	+	+-		+
	➤ Indications: Squelch (incoming call), PTT, radio selection(M/S)	-		1					$\vdash$	┪	+	-+	-	+	$\neg$	++
	and alarms							<u> </u>		$\bot$	$\sqcup$			$\bot$		
<u> </u>	> Controls: Radio selection (M/S), Squelch override		-	$\vdash$	<u> </u>				$\vdash \vdash$	-	+				-+	+-+
	Resolution, Contrast; 800X600 pixels, 500:1     Reliability: MTBF at least 200,000 hours		<del> </del>	<del> </del>						+	+	$\dashv$	+	+		+-+-
			1		<b>─</b> ─				$\sqcap$	_	1-1	-	$\top$	+	$\top$	$\top$
	> Connectors: for microphone, headset, foot switch and recording		ļ	lacksquare	L			ļ	$\sqcup$		4			4		<b>↓</b>
	> Power Supply: 230V AC > Loudspeaker	<del></del>	<del> </del>	<del> </del>			ļ	<del> </del>	┝╌┼╴	+	+	+	+	+	$\dashv$	+
	➤ Loudspeaker  ➤ Dual Jack-Box (operator and instructor)/Microphone Interface	•••	<del> </del>	$\vdash$	$\vdash$		<del>                                     </del>	<del>                                     </del>	$\vdash \vdash$	+	+-+	$\dashv$		+	$\neg$	+
	Facility								$\sqcup \bot$					$\perp$		$\bot \bot$
	> Headset w/in-line PTT o Handset w/PTT		1							-	+	-+		4	_	+
<del>                                     </del>	➤ Footswitch w/connector  27. Voice Recording		<del> </del>	<del> </del>					$\vdash$	+	+-1		+			+++
	Once (1) 24-Channel Digital Recorder System shall comprising:		<del></del>				<u> </u>	<u> </u>		+	+		$\dashv$	+	$\vdash$	++
	➤ Analogue interfaces									$\perp$					$\equiv$	
	> Blu-Ray Drive		ļ						$\vdash$		+			+	$\vdash$	++
	➤ USB Port ➤ Replay Portable PC		<del>                                     </del>	$\vdash$					$\vdash$	┥~	+	-+	+-		-	+
	> Ten (10) Blue Ray Disks									1				$\top$		
	> Two (2) Portable Hard disks														二	
	28. HF System								$\perp \Gamma$	$\perp$	4	$\perp$	<u> </u>	$\perp$		44
	One (1) HF Radio System shall include:     TX Frequency range: 2.0 to 30 MHz		<del>                                     </del>	$\vdash$				1	$\vdash$	+	+	-	+			++
	> 1X Frequency range: 2.0 to 30 MHz > RX Frequency range: 250 KHz to 30 MHz			$\vdash$					$\vdash$	+	1-1	$\dashv$	+	+	-	++
	> Power Output: 125 Watts (PEP)		İ					L		二二					二二	

<del>, ,</del>									_					_			
	➤ Receiver Sensitivity: -121 dBm (0.2uV) for 10 dB SINAD.				<u> </u>		ļ		-	-	—	┿		_	-	+	_
	> Shock and Vibration standard: MIL-STD 810G								$\vdash$	-		┦		4-4		$\rightarrow$	_
l	HF Antenna shall include:						L					$\bot$					
	> Power Capacity: 150W PEP											$\perp$	L			-	
	> VSWR: 2:1 maximum															_	
	➤ Shock and Vibration Standard: MiLSTD 810G										T	$\Box$					
<del> </del>	➤ Integrated Antenna Coupler									$\neg$	$\neg$	1-1		$\neg$		$\top$	
<del> </del>	29. VHF System								_	-	_	+				+	_
<del></del>				<u> </u>	<del> </del>		<del> </del>		-	+	+	+			_	+	_
	VHF Radio System:								<del></del>	-	+	┿		-	_	-++	
1	> Three (3) Operational Frequencies in Main/Standby Configuration							1		- 1	- 1	1 1		1 1			
L										-	$-\!\!\!\!-$	+					
	> Six (6) VHF-AM Transceivers shall be provided with the following							i i		- 1	- 1	1 1		1 1			
	characteristics:															$\bot$	
	> Frequency Range: 118-136 MHz • Power Output: 50W																
	➤ Adjacent channel power; > 70dBc									$\neg$	$\neg$	T					
	> Receiver Sensitivity: 10dB SINAD(CCITT)						-			$\neg \vdash$	$\neg$	T				$\top$	
	> Channel Spacing: 8.33/25 KHz									$\neg$	_	$\top$		$\neg$		$\top$	_
h	Recording Output: VolP ED137B Interface o Channel unto 99									$\neg$	_	+				$\overline{}$	
	New Section Codified to ICO 0004 ICO 44004 OURAS ata				_					-	+	+	-	-		+-	
	➤ Manufacturer Certifled to ISO 9001, ISO 14001, OHSAS, etc.						<del> </del>		-	-	-	++			-	+	
	> Certified with EC Declaration of conformity, Type approval				l		i	1	1		1	1 1	- 1		l		
L	certificate, Declaration of conformity, etc.				⊢—		ļ	<u></u>	-	-	+	┿	—⊢	$\dashv$	<del></del>	<del></del> +	
	> Power Supply: 230V AC/50Hz and 24V DC				L		L		$\rightarrow$			4			$\vdash$	$\rightarrow$	
	➤ Duty cycle: 100% continuous operation										—	4					
	> Three (3) Single VHF Cavity Filters											┸┸					
	> Three (3) sets of Antenna Change Over Unit, Surge Protectors											1	T			T	
	are to be included or provide dual port VHF antenna as mentioned							1		1	- 1		ı		l		
	below						1		- 1	- 1	- 1	1 1	- 1		l		
<del> </del>				-			<del> </del>	<del> </del>	-+	-	+	+		$\top$		+++	
	➤ Radio shall have VoIP ED137B interface for Recording purpose				l		1	1		- 1	- 1	1 1	- 1		l		
ļ <del></del> -			<u> </u>			<del></del>	<del> </del>		$\rightarrow$	$\rightarrow$	+-	┿	-	-		-++	
L	➤ Three (3) Single/dual Port (VHF) Antennas:				<b></b>		<del></del>				+-	++	-		$\vdash$	++	
	> Frequency range: 118-136 MHz					<u> </u>	<del></del>			-		<del>↓</del>	-			+	
	Number of Elements:						<u> </u>				$\bot$	$\bot$		$\bot$			
	> VSWR: (typical 1.5:1)													$\perp$			
	> Polarization: Vertical									$\Box$			$\Box$				
	➤ Pattern; Omni-directional											$\mathbf{T}$				$\bot$	
	> Minimum Power Capacity: 150W				$\overline{}$	<u> </u>	T		$\neg$	_	$\top$	$\Box$				T	
<del></del>	> Single Obstruction LED Light	<del></del>							_	_	_	1-1				$\overline{}$	$\overline{}$
<del></del>	➤ Single Obstroction EED Earth  ➤ Lightning Rod						<del> </del>		$\rightarrow$	+	_	1-1				+	_
<del> </del>	30. Handheld Transceiver							····	-		+	+-+			-	+	_
		<del></del>					<b></b>		-	+		┿				++	
	One (1) VHF-AM Handheld Transceiver shall include:									-	$-\!\!\!\!-$	+	-	-			
l	> Internal Battery									_		+∔		_		$\rightarrow$	_
	➤ Battery Charger									_		1				$\rightarrow$	
	> Extra Battery				l							11				$\bot$	
	> Heavy Duty Leather Case																
	> Operating Frequency: 118,000 to 136,975 MHz								$\Box$ T		$\perp$	$\perp$		$\Box$			
	> Number of memory channel; 200				l		ľ			$\neg$	Т		7			$\Box$	
	> Channel Spacing: 8.33/25 KHz								$\neg$	$\neg$	$\neg$	$\top$		$\neg \neg$	1	1	
<del>                                     </del>	> Power Output: 5W (PEP), 1.5W (CW)						<del>                                     </del>	<del>                                     </del>	-+	-	+	+-+	_	$\neg$		+	_
<del></del>	> Power Output: SW (PEP), 1.5W (CW) > Reception Sensitivity: better than 0.8 uV for 6dB S/N				<del> </del>		<del> </del>	<del> </del>	_	+		+	<del></del>	4-	_	+	_
<u> </u>										-	+	+				-+	_
l	31. Master Clock				<del></del>	<del> </del>	<del> </del>	<b> </b>	-+	+	+	+		+		++	
	One (1) GPS Timing System which shall include:		L		Li		Ļ	1	$\perp$	<b>⊣</b> -		4		4	$\vdash$	+	
	➤ GPS Antenna/Receiver w/surge protection.							ļ			—	$oldsymbol{\sqcup}$		لــــــــــــــــــــــــــــــــــــــ		44	
	> NTP Master Clock									L_		$\perp$				للل	
	> Three (3) Secondary Clocks (controller) which shall include:									$\Box$		LIT	$\Box$ $\Box$	$\Box$			
	➤ Red digits													$\top$			
<del></del>	> Format: HH:MM:SS									$\neg$	$\top$	$\top$	$\neg$	$\neg \neg$			
	Character Height: 20 mm Height minimum				$\vdash$				$\dashv$	$\dashv$	+	++	_	$\neg$	$\neg$	$\overline{}$	_
<del></del>	On MET Cancers				<del> </del>					-	+-	++	$\dashv$	_		+-+	
<del></del>	32, MET Sensors		<b></b>		<b>-</b>	<u> </u>		<b> </b>	-+	+	+	+				+	
	All Sensors and MET Display shall be of WMO and ICAO				1		I	I			1	1 1	- 1			1 1	
	Standard,						Ļ		$\rightarrow$	-		4			-	+	
	<ul> <li>Sensors(Relative Humidity and Temperature Sensor, Wind Speed)</li> </ul>						I				1	1 1	1				
	and Direction Sensor, Pressure Sensor)		L		L		L	<u> </u>		_L		<u></u>		لــــــــــــــــــــــــــــــــــــــ			
	One (1) Ultrasonic Wind Direction/Speed Sensor shall have the				I				Т	$\neg$	1		T				
	following minimum specifications:						I				1	1 1					
<del>                                     </del>	> Wind Direction Sensor:				· · · · ·		†		$\dashv$	-+-	+	+-+	_	$\dashv \dashv$	-	+	_
<del></del>					<b> </b>		<del> </del>		+	+	+	+		+	-	+-+	
<del> </del>	> Range: 0-360degrees				$\vdash$		<del></del>			-+	+	+		+	-	++	_
	> Resolution: 0.01°				$\vdash$			<u> </u>		~+	$+\!\!-$	+	-	+	-	+	—
	➤ Accuracy: ±2 degrees				<u> </u>		<del></del>	L	-	-	-	+		4	-+	+	-
						l	1			- 1	1		ı			. 1 1	!
	33. MET Display								_								-

															,	
	• 5.7° TFT LCD display with touchscreen, designed for viewing real-		l	1	}	1		1					1 1	- 1	1 1	
Į l	time wind, pressure, and temperature weather information in				i	1					ł I		1 1	- 1		
ł I	accordance with ICAO and WMO standards and recommendations.			<b>f</b>	ŀ	İ	ł				1 1	-	1 1	- 1	1 1	1 1
											+		$\vdash$		<del>  -</del>	$\dashv$
1 1	<ul> <li>Wind Speed and Direction: 2 Minute Average, 10 Minute Average,</li> </ul>						l				1 1	1	1 1	- 1	1 1	1 1
	10 Minute Maximum, and 10 Minute Minimum.	L								_	1		$\vdash$	<del></del>	1	$\dashv$
	Temperature and Humidity-Air Temperature, Dew Point, Relative							i i		- 1	1 1	- 1	1 1	- 1	1 1	1 1
	Humid, Pressure-Air Pressure, QNH, QFE, etc.										1				$\vdash$	
	34. Signal Light Gun				1 X 1 1								$oxed{oxed}$			$oldsymbol{oldsymbol{\sqcup}}$
	Completely portable and cordless										Ш.				$\perp$	
	<ul> <li>Press button colour selectors ensure the correct color is activated</li> </ul>										1	- 1	1 1	- 1		- 1 1
	RED/WHITE/GREEN										<u> </u>		$\sqcup$		<b>I</b> I	
	<ul> <li>LED light cluster to provide in excess of 50,000 hours of use, with</li> </ul>							<u> </u>			1	ĺ	1 1	ì		- 1 1
l i	minimal power consumption						L				$\bot$					
	Lithium battery including charger										J				$\perp \perp$	
	8 hours continuous use on one charge									1			$\Gamma_{-1}$			
	Power Consumption not more than 100W														<u> </u>	
	Range greater than 4kM									٦.						
	<ul> <li>Light Intensity: More than 12000 cd(White), 10000 cd(Red), 12000</li> </ul>															$\neg \neg$
	od(Green)		L ::	L	<u> </u>		L			$\perp$		_1_				
	Power Supply 230V AC								T	T						
	Lamp: Dichroic reflector Lamp		1				I									
I	35. Binoculars								$\neg \uparrow$							$\Box$
	Diameter: 50 mm	· · · · · · · · · · · · · · · · · · ·			T		I			_	1		$\sqcap$			$\neg \neg \neg$
	Magnification: 4 x			<u> </u>			T		$\neg$	$\neg$	1	$\neg$				$\neg \neg$
h	Day/Night application				<b>—</b> —				_	$\neg$	1		-	$\neg$	TT	$\neg$
	Battery standard						h		_	+	+	-	1 1	_		$\neg \neg$
	Accessories included: carrying case									-	+		<del>  -</del>		<del>   </del>	$\rightarrow$
<del></del>	36. Fire Extinguisher						<del> </del>			+-	+ +		<del>  </del>		<del>                                     </del>	
<b>———</b>	ABC Multi-Purpose Stored Pressure Dry Chemical				<del></del>				-	+-	<del>  -</del>		<del>  -</del>		1	+
<del></del>	37. Rotating Beacon								-	+-	1		-		<del>                                     </del>	+
<b> </b>									-+		<del>   </del>		<del></del> -		+	
<b>———</b>	To be mounted on the roof of the ATC Mobile Tower				<del> </del>				-		╁┷┼		╁╼╾┼		<del>   </del>	$\dashv \dashv$
<del></del>	Visibility; up to 48 Km (30 miles)			-	<u> </u>				-+	+-	+		┝╾┼		<del></del>	-
<b></b>	• RPM: 12				<b></b>		<del></del>		_	+-	+		╌┼		-	-
i I	Lamps: Two sealed beam 500W PAR 56 • Beam Width: 5° wide x						[			1	1	- 1	1	ı		
	32° high			$\vdash$						┵	+-+				$\vdash$	+
ļ	Power supply: 240 Vac, 50 Hz						ļ			+	╂	_	-		-	
	38, Cresh Alarm						<u> </u>		-		++-	-	<del>  -</del>			
	Siren shall be mounted on the roof of the ATC Mobile Tower										+	——			<del></del>	
L	Power Supply 240V AC								-	-	+	_	<b>-</b>		╄╼╌┼╌	
<u> </u>	Sound Level: minimum ≥112 dB								-		<del>                                     </del>		<b></b>		$\vdash$	$\dashv$
	IP43 IP Rating						ļ		_	-	+		$\vdash$		+-+	
L	Operating Temperature -30°C to 40°C								_				<del></del>		$\vdash$	$\dashv$
L	Crash alarm local switch shall be mounted in the console												L			
	39. Accessories				<u> </u>				$\perp$		1-1-					—
	One (1) lot sunshades, Solar Grey										$\perp$		$\sqcup$		$\perp$	
	One (1) lot window covers for protection during transport										1		<b></b> _		$\vdash$	—
	One (1) First Aid Kit										1		$\sqcup \Box$	_ _	$\vdash$	
	One (1) Smoke detector)						L				1 1		oxdot		$\sqcup \bot$	
	One (1) Ladder (affixed to tower cabin for roof access)										1 1		$\sqcup$		$\sqcup$	
	One (1) Additional Ladder for maintenance purposes								$\perp$						$\perp \perp$	
	40. Tools			- 1			<u> </u>		$\Box \Gamma$				$\Box \Box$		LI	
	One (1) Tool Kit to maintain the CNS/ATM Electronic equipment								T	T					1 T	
	shall be provided.				<u> </u>		L									$oldsymbol{ol}}}}}}}}}}}}}}}}$
	41. Test Equipment								$\Box T$				$\Box \Box$		$\Box T$	
	One (1) Portable PC; Last generation (Core i5, 8GB RAM, 512 GB)									T			$\Box$	T		
	SSD).			L	L		<u> </u>					L_	LJ.			
	One (1) Adapter Kit; for HF/VHF Electronic equipment.															
T	One (1) Attenuator Kit; for HF/VHF Electronic equipment.							`	$\neg$		П	1		$\neg \vdash$		$\neg \neg$
	One (1) RF Cable Kit: for HF/VHF Electronic equipment.													T		$\Box$
	INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT									$\neg$	T	$\neg$		$\neg$	$\Gamma$	
	1. Integration service								$\neg$		$\top$		$\vdash$			$\neg$
<del></del>	The supplier shall deliver as one fully integrated mobile control								一	$\top$		_	1	+-	1-1	$\neg$
1	tower mounted on a 4x4 or 6x6 or suitable size (for their propose								ĺ		1 L			- 1	1 1	
	Mobile ATC Tower) prime mover (Vehicle) with trailer-mounted genset		1								1 1	- 1	l I	- 1	1 1	
1	for inspection by TIAC.						1	1		-	1		l I	- 1	1 1	
	nor mopeoution by TIAO.		L	ــــا	لـــــا		L	L	Ļ_							

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	<ul> <li>The supplier shall conduct Factory Acceptance Testing (FAT) in the presence of TIAC representatives.</li> </ul>															
	2. Training Program					1000					- 1		$\Gamma$			
	It must cover the operator, maintenance, and mission support						1			_						
<del></del>	Supplier shall address all training and training support elements to						*-		-	+	_		1-1		+	$\neg$
			-			<del></del>		<del></del>		+	_	+	+		+	
	Training should be at least in English and shall combine theoretical								_	+			11		+	-
	<ul> <li>Trainings must be completed within thirty (30) days. It will at least</li> </ul>									+	-	-	$\vdash$	——		
	> Technical Operations and Maintenance Training for Air Traffic Safety Electronics Personnel (at least 2 participants).									İ						
	> Technical Operations and Maintenance Training for Mechanical Personnel (at least 2 participants).								7		$\neg$	1	$\Box$		11	1
	> On-site Operation and Maintenance Training (at least 4 participants).							-"	┪			T				
		<del></del>				····	<del></del>		<del> </del>	+	<del></del>	+	<del>   </del>		+	
	3. Ground Support Equipment (GSE								_	-		-	1		+	
	The GSE must be provided for servicing, handling and									_			1		+	
	a. Field Maintenance Tools									Ь.			1			
	b. Special Tools			1			l"						1			
	c. Test Diagnostic Equipment															
	4. Technical Manuals	····								T -		$\neg$	1			
<del></del>	THE PARTITION INVESTMENT	·	<b> </b>				T			1	-	$\overline{}$	1 1		1	_
	Original copy and electronic copy of the following technical manuals:							-								$\perp$
	➤ Operators manual															
	> Wiring diagram manual								$\neg$	1					$\neg \neg$	$\neg$
<del></del>	> Maintenance Instruction Manual								<del></del>	1	$\neg$	1	1	$\neg$	<del>1  </del>	$\neg$
<del>                                      </del>						<del></del>	<del></del>		-	+	-	+-	┼─┤		+-+	
<del></del>	➤ Illustrated Parts Catalog						<del> </del>			+	+	+	<del>  </del>	$-\!\!\!\!\!-$	+ +	+
	➤ Consumable Material List					<u> </u>	L		$-\!\!\!\!-$	+			₩		+	
L	➤ illustrated Tools and Equipment Manual									↓_		┷	<b>↓</b> ↓		+	_
	➤ Ground Service Equipment (GSE) Technical publication											_	╙		4	
	➤ General Information and Servicing Manual															
	> Equipment Inventory List															
<del> </del>	> Other Technical Orders and ATC Equipment System Manuals		· ·									$\neg$				
<del>                                     </del>	6. Spare Parts Program									$\top$		_	1		1	
							<del> </del>	<del> </del>		+	-		1		1	-
1 1	The Supplier shall provide spares sufficient for two (2) years of						1	[			- 1	- 1	1	- 1	1	- 1
1 1	operation with an annual utilization rate of one hundred (100)						l			1	- 1	- 1		- 1	1	- 1
1 1	operating hours. Fast-moving items and consumables shall be						l	i l		1		- 1	1 1	- 1		- 1
LL	delivered together with the GOODS.									1			<b>↓</b>		4	
	The supplier shall provide the complete list of TCI, RCA, fast-						i	j	1	1		1	1 1	- 1		- 1
1 1	moving items and consumables during the Opening of Bids (Price			1			İ	1	ı	1		1	1 [			- 1
1							ĺ		l l	1		ı	1 1		1	- 1
L	List to be included in the financial documents).							L		1					$\perp$	
	8. Product Support Information												آــــــــــــــــــــــــــــــــــــــ			
i	· As part of the product support information, publications and								$\top$	1			T			
1 1	technical bulletins shall also be provided as long as the Philippine			1	- 1				- 1	1		1	1 1	- 1	1 1	
	Army is operating the Mobile ATC Tower. It shall include among								- 1	1		- 1	1 1	1	1 1	1
1 (				ŀ	- 1				- 1	1		1	1 1	l		
<b>———</b>	others:			<del></del>	_		<del></del>			+	$\dashv$	+	┿	-+	+ +	+
<del></del>	> Information Bulletins						<b>-</b>		$-\!\!\!\!+$	+		<del></del>	╁╌┼		+	
<b>—</b>	➤ Service Bulletins	· · · · · · · · · · · · · · · · · · ·					ļ.		-+	+			┼┼┼		+	<del></del> -
	> Modification Bulletins									+		+	<del>                                     </del>		+	
					- 1	Paragraphy and the second			- 1	4		1			+	
	7. Interim Contract Support	<del></del>										•			1 1	í
	7. Interim Contract Support	<u> </u>										1		1	1 1	1
	The Supplier shall be required to have an Interim Contract Support	<del>-</del>										1		1		1
	7. Interim Contract Support  • The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-		· · · · · · · · · · · · · · · · · · ·													
	The Supplier shall be required to have an Interim Contract Support	<u> </u>	· · · · · · · · · · · · · · · · · · ·													
	7. Interim Contract Support  • The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.	- 11 <del>1</del>									_					
	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the in-				- 41							1				
	7. Interim Contract Support  • The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  • One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance.	<u> </u>														
	7. Interim Contract Support  • The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shotting upon acceptance of the delivery of the Mobile ATC Tower.  • One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance.	<u></u>														
	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training.	7.			- "											
	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training (OJT) Consultant of our maintenance crew. The in-country technical	<u> </u>														
	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training.															
	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training (OJT) Consultant of our maintenance crew. The in-country technical															
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	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training (OJT) Consultant of our maintenance crew. The in-country technical representative will work five (5) days (Monday – Friday) a week for at least four (4) hours a day and make himself available on weekends (Saturday and Sunday) and holidays whenever his services deemed															
	7. Interim Contract Support  The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Mobile ATC Tower.  One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training (OJT) Consultant of our maintenance crew. The in-country technical representative will work five (5) days (Monday – Friday) a week for at least four (4) hours a day and make himself available on weekends.	- <del> </del>														

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	10. Tartaine Brogress		<del>1</del>				T	·			<del></del>				
	Training Program     It must cover the operator, maintenance, and mission support		<del> </del>							1 1	+	+			+
	training requirements.									$\perp \perp$					$\bot \bot$
	<ul> <li>Supplier shall address all training and training support elements to operators and maintenance personnel involved on the operation of the Aircraft refueler truck.</li> </ul>														
<del></del>	Training should be at least in English.		<del> </del>				-		+	+	-+-	╁╌┼	+-		++-
<del>                                     </del>	Supplier shall perform the training at Aviation Regiment's		<del> </del>						$\vdash$	+-+		t - t	_	<del></del>	+++
	Headquarters.		ļ						$oxed{oxed}$	$\sqcup \downarrow$		$\sqcup \bot$			$\bot \bot$
<del></del>	n. Operators Training	<del></del>	<b> </b>		<del></del>		<del> </del>			+	$\dashv$	┼ ┼		$\vdash$	++
	<ul> <li>All operators shall undergo the provided free training of the supplier and also undergo CAAP approved training or the equivalent of Petron fuel handling training for fuel truck</li> </ul>														
	b. Maintenance/ Specialist Personnel Training														
	Maintenance NCO shall undergo maintenance training provided by the supplier														
	3. Ground Support Equipment (GSE)						40								
	The GSE must be provided for servicing, handling and maintenance of the Aircraft refueller truck. These are:														
	a. Field Maintenance Tools								$\Box$						$\bot \bot$
	b. Special Tools		<u> </u>				ļ			$\perp$		$+$ $\Gamma$			
<b>——</b>	c. Test Disanostic Equipment		ļ							₩	-	$\vdash$	-		+
<b>  </b>	4. Technical Manuals		<del></del>		ļ		ļ			┿		<del>   </del>	-	<del></del>	+
	Original copy and electronic copy of the following technical manuals:		<u> </u>			<del></del>				$\sqcup$		Ц.	$\perp$		$\bot \bot$
	- Operators manual		<u> </u>							ш		$oxed{oxed}$			
	- Wiring diagram manual									-		-	_		+
	5. Spare Parts Program	·	ļ	<b>  </b>	ļ					11		$\vdash$			+
_	<ul> <li>The Supplier shall provide spares sufficient for two (2) years of operation.</li> </ul>	v								$\coprod$					
	6. Product Support Information	· · · · · · · · · · · · · · · · · · ·								1-1		<del>-</del>			
	<ul> <li>As part of the product support information, publications and technical bulletins shall also be provided as long as the Philippine Army is operating the Aircraft Refueller Truck. It shall include among others:</li> </ul>														
<del></del>	- Information Bulletins		<del> </del>	<del>  </del>						+ +	+	<del>   </del>	-		++-
<del></del>	- Service Bulletins		<del> </del> -							+	_	$\vdash$	_	$\neg$	+
	- Modification Bulletins		<del> </del>							+			_	$\neg$	+
	7. Interim Contract Support														
	<ul> <li>The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Aircraft refueller truck.</li> </ul>														
	8. Warranty Program			<b>  </b>					_	+		-			+
	<ul> <li>The supplier shall cover Two (2) years warranty period for the Aircraft refueller truck, which will commence upon acceptance of the fuel truck.</li> </ul>														
	<ul> <li>The technical representative shall correct any discrepancy due to material failure/factor expeditiously, which should not exceed sixty (60) days upon receipt of notice. If sixty (60) days turnaround time is not possible, the supplier is under obligation to replace the affected component with a new one or provide a temporary replacement in order not to hamper the operational requirements of the AFP.</li> </ul>														
	9. After Sales Support														
	<ul> <li>After sales services shall include supply of spares for the Aircraft refueller truck and components, interim contract support, technical support, and warranties. Technical support shall include query and answering (to include open/free access to online information) and assistance on defect investigation while the Philippine Army is</li> </ul>														
	operating the Aircraft refueller truck		<del> </del>	<del>                                     </del>						+	_	$\vdash$		_	+
	10. Life Cycle Management Information		L	L			L	L	-						

	-	• Information/ references regarding Mean Time Between Failures (MTBF), lead time, shelf life, total life, repairable cycle assets, as well as information for repair and overhaul of components to include repair turnaround time and cost shall be provided. Likewise, the proponent shall also identify all the authorized repair facilities, local and abroad, where the items would be repaired or overhauled.															
3	5-06-04-050-09	Firetruck with Foam Tank	AvnR (P), PA	1	lot	20,570,000.00	20,570,000.00	Public Bidding					1				
		BASELINE REQUIREMENT	-							_	-						
		1. Engine							1533			358		- N. S. S.			E TOWN
		Type (Diesel Fed, Turbo Charged In-line six (6) cylinders at least, Direct Injection)															
		Cooling System: Water Cooled		respective.													
		Power Output: at least 240 horsepower															
		Euro-IV compliant or Euro V compliant															
		Equipped with EGR (Exhaust Gas Recirculation) system.															
		2. Chassis															
		<ul> <li>The chassis is 4x2, consisting of two (2) channels fastened together by cross members and provided with supports prepared to mount all vehicle components. Turbo charged diesel engine, manual transmission with power take off (PTO) which allows the pump drive to engage.</li> </ul>															
		Dimensions:															
		Length: not to exceed 7,800mm															
		Width: as per manufacturer's standard															
		Height: as per manufacturer's standard													1		
		Gross Vehicular Weight Rating (GVWR): as per manufacturer's standard															
		Under Chassis:															
		Steering:									_				-		
		Handle position: Left Hand Drive									-	-					
		Type: Re-circulating ball with integral power assisted by oil										-					
		Steering Column: Tilt and telescopic							1	_		1			_		
		Transmission and Clutch									-	-		_	-		
		Manual	 						-		-	1			$\perp$		
		Speed: Six (6) forward and one (1) reverse	 						-	-	-	-			-	-	
		Clutch Type: as per manufacturer's standard	 						-	_	-	-			+-+		
		<ul> <li>Brake System (Shall be equipped with Anti-lock Brake System (ABS)</li> </ul>								_							
		Service Brake: as per manufacturer's standard	 						$\vdash$	-	-	-	-		+		-
		Parking Brake: as per manufacturer's standard	 						+	-	+	+	-	-	+		-
		Auxiliary Brake: as per manufacturer's standard	 		-				-	-	-	+-+	-	-	+-	_	_
		Wheel Configuration: 4x2	 		_				-		-	+	-	-	+		-
		Axles and Suspension	 		-				-	-	+	+-+	-	-	+		-
		Front Axles: as per manufacturer's standard	 		-				++	-	+-	+	$\rightarrow$	+	+	-	+
		Front Suspension: as per manufacturer's standard	 		-				+-+	-	-	-	-	-	+-+		-
		Rear Axles: as per manufacturer's standard  Per Company for the professional actu	 		-				-	_	-	+	-	+	+	-	-
		Rear Suspension: as per manufacturer's standard     Wheels and Tires: The wheels and tires shall be able to withstand	 						++	-	+	+-+	-	-	+	-	+
		the load during the service of the vehicle and not exceeding its axle loading															
		Front: as per manufacturer's standard									-	$\perp$		_	-		
		Rear: as per manufacturer's standard						***************************************	-	-	-	+			++	_	-
		Disc Wheel: as per manufacturer's standard	 						-	-	-	+-		_	-	_	-
		Spare: Spare wheel equal to front								-	-	$\vdash$			+	_	
		No, of Wheel Stud: as per manufacturer's standard.	 						-	-	-	-		-	-		-
		Front: Single	 						-	-	+-	$\vdash$	-	-	+		-
		Rear: Double	 						-	-	-	+	-		+	-	-
		Tire Accessories			-				+-	+	-	+	-	-	++	-	+-
		Flaps and Tubes (for all tire sets)	 		-				-	-	-	+-	-	-	+	-	+
		Mud Guards (for all wheel)	 														

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and crisis members  See the sign of manifold manifold selected  Post of an extra manifold manifold selected  Protein and Select services are not book  Protein and Select services are not book  Protein and Select services are not book  Disclored and "No Cf) presents in front and faur (4) presents in front and faur (4) presents in front and faur (4) presents in front and faur (5) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in front and faur (6) presents in faur (6) pres		`			-	 	<u></u>		┝╼┼		+	$-\!\!\!\!\!+\!\!\!\!\!-$	1	$\rightarrow$	-+	+
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of the CI on each sides servine each row of the cable shall have four (4) doors with wide opting angle. Each coor shall have each opting angle. Each coor shall have a window operated by electric or of coordinates and the system as per manufacturers standard. In case of independent cable the diverse compartment shall only be stroked.		The cabin shall have a total of four (4) service doors composed	·····						$\Box$	_	1			7	$\neg$	$\top$
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Cob suspension and Titl system: as per manufacturer's standard, in case of independent cobin the driver's compariment shall only be provided.  All stad vasided construction with safety zono design.  AMF/M Basico with nodernal antenna.  In Mark Basico with nodernal antenna.  In Will District Models Ratio 3,90 – 400 MHz frequency.  Three (3) units UEF portable ratios, 380 – 400 MHz frequency.  A Pail Traft.  Coppetry 2,000 Librs.  In Mentral Middle of present steel.  Copp. Equipped with lowy lock and impress with the words Deset of the steel of the position to be assessed casely. All electric circum has separate luses and they are grouped into the common box on the dath based.  Before 1, 200 Libra 1						L	l			$\perp$ L	!					[
In case of independent cabin the driver's compartment shall only be provided.  4. All steel welled construction with safety zon design.  5. AMF Miscle with settinal safety.  6. AMF Miscle with settinal safety.  7. AMF Miscle with settinal safety.  8. There (3) until LMF protested setol, 380 – 400 MHz frequency.  9. There (3) until LMF protested setol, 380 – 400 MHz frequency.  9. Fuel Trank.  9. Coppety x 200 Liters.  9. Equipped with levy lock and impress with the words Dieset fuel.  19. Equipped with levy lock and impress with the words Dieset fuel.  9. Prover Stupped Synthem.  10. The text rey is titled in the position to be assessed cestly. All ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and hely are grouped into the ectoric circuit has expanie bases and held and the province safety and ectoric circuit has expanie bases and held and the province safety and ectoric circuit has expanie bases and explain and explain and explain a									П					$\neg \neg \neg$		
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AMFAIR Radio with external antennal  His Potal Mobile Redio, 393 – 400 MHz frequency  Three (3) units UHF portable redio, 380 – 400 MHz frequency  A Field Trank  Capacity x 200 Libra  Material Made of pressing steel  Cap Equipped with key lock and impress with the words Dieset to the city of		Heavy duty rubber matting.	-								T		$\Gamma$			$\Box$
Util Debit Mobile Radio, 380 – 400 MHz frequency Three (3) units Util Proteibe radio, 380 – 400 MHz frequency 4. Fuel Trank Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Material Make of presions stell Capeacy 200 Jiers Alternation as per manufacturers standard Capeacy 200 Jiers Capeacy																
4. Fuel Tenk Capetry 2 200 Liters Material: Made of pressing steel Capetry 2 200 Liters Material: Made of pressing steel Capetry 2 200 Liters See Power Supply System The Detirety is fitted in the position to be assessed easily. All electric circult has separated fuses and they are grouped into the common box on the dash parted. Alternative see per manufactures standard Battery 2 x 127 160AH (minimum) The main console, skyled to reflect the clean modern lines of the interior, positioned centrally and flowers of the driver and will contain necessary information and facilities relating to automotive.  The main console, skyled to reflect the clean modern lines of the interior, positioned centrally and flowers of the driver and will contain necessary information and facilities relating to automotive.  The great shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control As per applicable manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per manufacturer's standard Equipment compartment as per m	1															
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Meteral Made of pressing steel     Cap, Equipped with sy lock and impress with the words Diesel fuel     Repower Supply System     The battery is fitted in the position to be assessed easily. All electric circult has separate tuses and they are grouped into the common box on the dash panel.     Alternative as per manufacturery standard.     Retitery 2 x12 y 100AH (mismum)     Briting Consolo     The main console, styled to reflect the clean modern lines of the interior, positioned centrally and floward of the driver and will contain necessary information and facilities relating to automotive.      The gaer shift, pump drive and heard bake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot larme and which.      Switches/Control     As per spokecible manufacturer's standard.     Wernel Licht     Cauches as per manufacturer's standard.     Wernel Licht     Sources as per manufacturer's standard.     Lichts, Indicator and Alarm.     As per spokecible manufacturer's standard.     Lichts, Indicator and Alarm.     As per manufacturer's standard.     Lichts, Indicator and Alarm.     As per manufacturer's standard.     Lichts, Indicator and Alarm.     As per manufacturer's standard.     Lichts, Indicator and Alarm.     As per manufacturer's standard.     Reverse Audible Alarm (cetternal).		4. Fuel Tank									$\mathbf{I}$					
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B. Power Supply System  The battery is fitted in the position to be assessed easily. All electric circuit has separate fuses and they are grouped into the common box on the dash carrel.  Alternator as per manufacturers standard. Battery, 2 x 12V 100AH (minimum).  B. Driving Console  The main console, styled to reflect the clean modern lines of the interior, positioned centrally and floward of the driver and will contain necessary information and facilities relating to automative.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and ewitch.  Switches/Control  As per applicable manufacturer's standard.  Equipment competiment as per manufacturer's standard.  Werning light FTD Clanage  Gauges as per manufacturer's standard.  Mentor Meters as per manufacturer's standard.  Mentor Meters as per manufacturer's standard.  Mentor Meters as per manufacturer's standard.  Lights, Indicator and Alarm. As per manufacturer's standard.  Lights, Indicator and Alarm. As per manufacturer's standard.  Reverse Audible Alarm (seteral)		Material: Made of pressing steel.									$\perp$	L_	1	$oldsymbol{\bot}$		
S. Power Surphy System  The bettery is fitted in the position to be assessed easily. All electric circuit has separate tuses and they are grouped into the common box on the dash barer!  Alternator as per manufacturers standard  Battery. 2x 12V 100AH (minimum)  B. Driving Console  The main console, styled to reflect the clean modern lines of the interior, positioned certally and flower and will contain necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipped with all necessary standard  Strobe light!  Strobe light!  Fire Gragge  Gauges as per manufacturer's standard  Montor Meters as per manufacturer's standard  Lights, Indicator and Alarm.  As per approximation as per manufacturer's standard.  Lights, Indicator and Alarm.  As per manufacturer's standard.  Equipped with difference indicator light  Pro Gragge as per manufacturer's standard.  Strobe light!  Pro Gragge as per manufacturer's standard.  Seques as per manufacturer's standard.  Seques as per manufacturer's standard.  Seques as per manufacturer's standard.  Seques as per manufacturer's standard.  Reverse Audible Alarm (external)  Reverse Audible Alarm (external)	[	<ul> <li>Cap. Equipped with key lock and impress with the words Dieset</li> </ul>							1			- 1	1 1	1 1		1 1
The battery is fitted in the position to be assessed easily. All electric circuit has separate fuses and hey are grouped into the common box on the dash senie.  Alternator as per manufacturer's standard  Bettery 2 x 12V 100AH (minimum)  Buttery 2 x 12V 100AH (minimum)  The main console, skyled to reflect the clean modern lines of the interior, positioned centrally and forward of the driver and will contain necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Beginnent compartment as per manufacturer's standard.  Warning light  PriO Engage  Gauges as per manufacturer's standard.  Montro Meters as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Montro Meters as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Montro Meters as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent compartment as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufacturer's standard.  Beginnent constant as per manufactur													<del>                                     </del>			$\bot$
electric circuit has separate fuses and they are grouped into the common box on the dash baret.  • Atternator, as per manufacturers standard  • Battery 2 x 12 / 100AH (minimum)  6. Driving Console  • The main console, syled to reflect the clean modern lines of the Interior, positioned contrarily and flowerd of the driver and will contain necessary information and facilities relating to automotive.  • The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  • Switches/Control  • As per appoilected menufacturer's standard.  • Equipment compartment as per manufacturer's standard.  • Werning light  • Strobe light  • PTO Einsage  • Gauges as per manufacturer's standard.  • Lights, Indicator and Alarm.  • As per manufacturer's standard.  • Lights, Indicator and Alarm.  • As per manufacturer's standard.  • Reverse Audible Alarm (external)  • Reverse Audible Alarm (external)  • Open roller shuter indicator light						 <u></u>			-	-	+		$\vdash$			
common box on the dash panel.  Alternator: as per manufacturer standard  Battery, 2x 12V 100AH (minimum)  The main console, styled to reflect the clean modern lines of the interior, positioned centrally and forward of the driver and will contain necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard.  Sugment compartment as per manufacturer's standard.  Warning light  Strobe light  PTO Encage  Gauges as per manufacturer's standard.  Lights, Indicator and Alarm.  As per amplicaturer's standard.  Lights, Indicator and Alarm.  As per manufacturer's standard.  Reverse Audible Alarm (external).											1 1			1 1	. !	1 1
Alternator as per manufacturers standard Batterr, 2x 12V 100AH (minimum) Batterr, 2x 12V 100AH					ŀ						1 1		1 1	- 1 - 1	. 1	1 1
Battery 2 x 12V 100AH (minimum)  8. Driving Console  • The main console, styled to reflect the clean modern lines of the Interior, positioned centrally and forward of the driver and will contain necessary information and facilities relating to automotive.  • The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  • Switches/Control  • Switches/Control  • As per spolicable manufacturer's standard  • Equipment compartment as per manufacturer's standard  • Warning light  • Strobe light  • PTO Endage  • Gauges as per manufacturer's standard  • Monitor Meters as per manufacturer's standard  • Lights, Indicator and Alarm  • As per manufacturer's standard  • As per manufacturer's standard  • Reverse Audible Alarm (external)  • Copen roller shutter indicator light									-					$\dashv$		—
8. Driving Console  • The main console, styled to reflect the clean modern lines of the interior, positioned centrally and forward of the driver and will contain necessary information and facilities relating to automotive.  • The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilol lamps and switch.  • Switches/Control  • As per applicable manufacturer's standard.  • Equipment compartment as per manufacturer's standard.  • Warning light  • Strobe light  • PTO Engage  • Gauges as per manufacturer's standard.  • Monitor Meters as per manufacturer's standard.  • Lights, Indicator and Alarm.  • As per annufacturer's standard.  • Lights, Indicator and Alarm.  • As per manufacturer's standard.  • Reverse Audible Alarm (external)  • Open roller shutter indicator light						 			+	-	+	_	$\vdash$	-		4
The main console, styled to reflect the clean modern lines of the interior, positioned centrally and forward of the driver and will contain necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  PTO Engage  Gauges as per manufacturer's standard  Monitor Meters as per manufacturer's standard  Lights, Indicator and Alarm  As per manufacturer's standard  Lights, Indicator and Alarm  As per manufacturer's standard  Reverse Audible Alarm (external)  Open roller shutter indicator light						 			-	-	++		<del>  -</del>	$\dashv$		
Interior, positioned centrally and forwar of the driver and will contain necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  PTO Engage  Gauges as per manufacturer's standard  Lights, Indicator and Alarm.  Lights, Indicator and Alarm.  As per manufacturer's standard.  Reverse Audible Alarm (external)  Reverse Audible Alarm (external)  Open roller shutter indicator light		6. Driving Console				 		<u></u>	$\vdash$	-	4					
Interior, positioned centrally and forwar of the driver and will contain necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  PTO Engage  Gauges as per manufacturer's standard  Lights, Indicator and Alarm.  Lights, Indicator and Alarm.  As per manufacturer's standard.  Reverse Audible Alarm (external)  Reverse Audible Alarm (external)  Open roller shutter indicator light		The main console, styled to reflect the clean modern lines of the			1						1 1				. [	1 1
necessary information and facilities relating to automotive.  The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  Switches/Control  As per applicable manufacturer's standard.  Equipment compartment as per manufacturer's standard.  Warning light  Strobe light  FPTO Engage  Gauges as per manufacturer's standard.  Lights, Indicator and Alam.  Lights, Indicator and Alam.  As per manufacturer's standard.  Lights, Indicator and Alam.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  Oper notificator and Alam.										į	1 1			- 1 - 1		
The gear shift, pump drive and hand brake controls should be located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  PTO Engage  Gauges as per manufacturer's standard.  Monitor Meters as per manufacturer's standard.  Lights, Indicator and Alarm.  As per manufacturer's standard.					1						1 1		1 1	- 1 - 1	. 1	1 1
located within a console adjacent to the driver. The dashboard shall be equipped with all necessary gauges, pilot lamps and switch.  • Switches/Control • As per applicable manufacturer's standard • Equipment compartment as per manufacturer's standard.  • Warning light • Warning light • Strobe light • PTO Engage • Gauges as per manufacturer's standard. • Monitor Meters as per manufacturer's standard. • Lights, Indicator and Alarm. • As per manufacturer's standard. • As per manufacturer's standard. • As per manufacturer's standard. • Reverse Audible Alarm (external) • Open roller shutter indicator light						 	ļ			+	+ +		╁╌╌╁┈	<del>    </del>	-	+
be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  FTO Engage  Gauges as per manufacturer's standard  Monitor Meters as per manufacturer's standard  Lights, Indicator and Alarm.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  Open roller shutter indicator light		. The gear shift, pump drive and hand brake controls should be			i						1 1			- 1 - 1	. 1	1 1
be equipped with all necessary gauges, pilot lamps and switch.  Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  FTO Engage  Gauges as per manufacturer's standard  Monitor Meters as per manufacturer's standard  Lights, Indicator and Alarm.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  As per manufacturer's standard.  Open roller shutter indicator light		located within a console adjacent to the driver. The dashboard shall							1 1	- [	1		1 1	-1-1		
Switches/Control  As per applicable manufacturer's standard  Equipment compartment as per manufacturer's standard  Warning light  Strobe light  FITO Engage  Gauges as per manufacturer's standard  Mention Meters as per manufacturer's standard  Lights, Indicator and Alarm.  As per manufacturer's standard  As per manufacturer's standard  As per manufacturer's standard  As per manufacturer's standard  Open roller shutter indicator light  Open roller shutter indicator light									l I		1 1		1 1	- 1 1		1 1
As per applicable manufacturer's standard     Equipment compartment as per manufacturer's standard     Warning light     Strobe light     FTO Engage     Gauges as per manufacturer's standard     Menitor Meters as per manufacturer's standard     Lights, Indicator and Alarm.     As per manufacturer's standard.     As per manufacturer's standard.     As per manufacturer's standard.     Open roller shutter indicator light		L				 -			$\vdash$	+	+-+		+ +		-+-	+
Equipment compartment as per manufacturer's standard.      Werning light     Strobe light     PTO Engage     Gauges as per manufacturer's standard.      Monitor Meters as per manufacturer's standard.      Lights, Indicator and Alarm.      As per manufacturer's standard.      As per manufacturer's standard.      As per manufacturer's standard.      Open roller shutter indicator light						 					+		<del>  </del> -	-	-	+
Werning light					<b></b>				$\vdash$	+-	++	+	+	<del></del>	_	+
Strobe light  PTO Engage  Gauges as per manufacturer's standard.  Monitor Meters as per manufacturer's standard.  Lights, Indicator and Alarm.  As per manufacturer's standard.  Reverse Audible Alarm (external)  Open roller shutter indicator light					<del>  </del>				$\vdash$	+-	+ -+	$\dashv$	+	+-+	$\rightarrow$	+
PTO Engage     Gauges as per manufacturer's standard     Nontro Meters as per manufacturer's standard.     Lights, Indicator and Alarm.     As per manufacturer's standard.     As per manufacturer's standard.     Open roller shutter indicator light						 			-	-	+ +	-	<del>├</del> -	-+	+	+
Gauges as per manufacturer's standard.      Monitor Meters as per manufacturer's standard.      Lights, Indicator and Alarm.      As per manufacturer's standard.      Reverse Audible Alarm (external)      Open roller shutter indicator light					<del></del>				$\vdash$	+-	++	-	+ +	<del>-  </del>	-+	+
Monitor Meters as per manufacturer's standard.      Lights, Indicator and Alarm.      As per manufacturer's standard.      Reverse Audible Alarm (external)      Open roller shutter indicator light					+	 					+	-	<del> </del> -	~++	$-\!$	+
Lights, Indicator and Alarm.     As per manufacturer's standard.     Reverse Audible Alarm (external)     Open roller shutter indicator light						 			$\vdash$	+-	++		+	<del></del>	-+-	+
As per manufacturer's standard.     Reverse Audible Alarm (external)     Open roller shutter indicator light						 			<del></del>		1 +	-	┼┼-		+	+
Reverse Audible Alarm (external)     Open roller shutter indicator light			····						$\vdash$	-	1-1		+	<del>-  </del>	-+-	+
Open roller shutter indicator light				<del></del>		 				+	+	$-\!$	<del>  -  </del>	+-	+	+
				<u> </u>		 			-	+	+		1 1	++	-	+
1/. General Data-Up Body Peatures						 		<del></del>	$\vdash$	+	++	$-\!\!\!\!+\!\!\!\!-$	1	<del>-  </del>	-+-	
	<b>_</b>	//. General Burr-Up Body Pearures		L		 L	l				لمسل					لب

	apparatus body frame structure shall be made of stainless re tube with 0.120 inch minimum wall thickness constructed													
of into a	superstructure by means of bolts and nuts or welding or					ļ								
	on of both apparatus body design shall be rugged with suitable	<del> </del>			$\dashv$		 	+	++	$\dashv$	_	$\vdash$	++	
ventilation	and good visibility to front, sides and rear		ļ				 	-	₩	$\dashv$		<del></del>	$\dashv$	
• Panel stainless	of the superstructure is made of dull finished gauge 18 SS304 sheets or gauge 18 aluminum connected to the													,
superstruc	cture frame by means of metal glue or riveting or welding or		:			ł								j
	nuts or combinations thereof.				$\dashv$		 	-	++	+ +	+	$\vdash$	++	_
	rizontal surface, steps and top deck, etc. shall be covered uered aluminum plates that are slip resistant. The roof/top		-			İ			11	-	- 1			
	ne superstructure and tank shall be provided with non-skid plate having thickness not less than 4.0mm.								1 1					
	is ladder and/or steps shall be mounted on the rear side of		}				 	-	+	-+-+	+	<del>   -</del>	++	
the body.									$\perp \perp$				$\perp \perp \downarrow$	
The p	ump compartment shall be at the rear portion of the body.													-
	ockers on the left Hand Side and Right Hand Side of the								П	$\Box$				
	I have roller shutters and/or doors. Suitable lockers having volume or space shall be fitted for keeping the equipment													
and acces							 	_	+-+					
	oller shutter shall be constructed from aluminum extruded th have a flexible seal between each stat for proper sealing				İ									
	or. The roller shutter shall be equipped with a lift bar style			ĺ	i				1 1	-			]	
	hanism which will latch at the bottom of the door mounting.  The roller shutter assembly shall be furnished with a spring							İ		1 1				
	ounter balance assembly to assist in door actuation.							-						
	kers shall be properly illuminated.						 		口					
	kers shall be provided with 1/16 inch diameter drain holes the bottom of each locker.			1				- 1	11					
8. Metal	Finishing, Painting, Identification and Markings									$\Box$				
	eration: Prior to painting, all weldment of the body, pump			-					11					
	ent and piping shall be inspected and cleaned, to ensure of any surface imperfections and to ensure superior paint		]						1 }			1 1		
adhesions	to the metal. All compartment un-welded seams		l							11			1 1	
	to high moisture environments and all seams between pieces that are not continuously welded shall be sealed										- 1		1 1	
	manent pliable caulking prior to paint finish to inhibit													
<del>                                     </del>	The weldment shall be primed with epoxy primer.						 		++	+	+	$\vdash$	++	+
	ing: All painting shall be conducted in an atmosphere spray booths. The vehicle body, cab exterior, body				- 1				1					
compartm	ent and all exposed ferrous metal surfaces shall be painted				ı					1 1	1			
	rethane painting system using standard "YELLOWISH-color polyurethane paint. A clear coat paint finish shall be				j						ı		1	
	or greater protection on the quality of exterior paint finish.													
	rear portion of the vehicle shall have a Chevron pattern							$\top$						
downward	Emergency Red and White reflectorized sticker slopping at 45o angle)												$\perp$	
	ght fittings shall be hard plated with chromium and surfaces oull Finished".			İ						11				
• Logos	and markings shall be made of prismatic tape engineer				$\top$			$\neg$	$\top \top$	11			11	_
	ectorized sticker; and ing's design and location shall be subject to AvnR, PA					·	 		++	++		<del>  -</del>	+-+	
standard					_		 	+	++	$\rightarrow$	-	<b></b>	++	
9. Water									11	++			+ +	+-
	rater tank shall be fully protected with the superstructure of e. It should be cradled, cushioned and spring-mounted.			l										
Capac	city: 1000 gallons capacity with provision for expansion and				$\top$		 	$\top$	++	_	$\neg$	$\vdash \vdash$	++	$\dashv$
moving wa	ater. ial: Stainless steel 304				-+-		 	+	++	$\dashv$		$\vdash$	+-+	-
Thickgr	ness: ≥5mm (tank shell and partition plate)								$\Box$	廿			$\pm$	$\perp$
Mount	ting: Torsion free design on strong rubber						 L					سلب	_Ll_	

				,											
	<ul> <li>Manhole: 450mm diameter (for top filling, maintenance and</li> </ul>		1				İ		1 }		1 1	1 1	- 1		
	inspection)		<u> </u>		└				—		$\vdash$			+	
L	<ul> <li>Drain Outlet: Drain outlet shall be located behind the rear axle.</li> </ul>	***************************************	<u> </u>				<u> </u>	<u> </u>	$\bot$	Щ'	$\vdash$	$\bot$		$\bot$	
	<ul> <li>Piping: Overflow 3 inch, water supply 2.5 inch, water refilling 2.5</li> </ul>									1 '	1 1	1 1		1 1	
	inch, water suction 5 inch, water drain 2 inch		L	Ĺ					$\perp \perp$	'	$\perp \perp$	$\perp$		$\bot$	
	<ul> <li>Baffle plate: Provided with baffle having ≥4mm thickness.</li> </ul>														
	<ul> <li>Detachable water tank equipped with a method for lifting or</li> </ul>								П	7		T			
	removing the tank from the chassis.		l					i		'			L_		LL_
	Tank level gauge: Glass tube type or Electronic Type								П	$T^{-1}$		$\Box$			
	10. Foam Tank					9.44						TT	$\neg$		
	. The foam tank shall be fully protected within the superstructure of									_					T
	the vehicle.							1	1 1	- 1 '	1 1	1 1			1 1
	Capacity, 200 Liters								$\Box$	7		$\neg$	$\neg$		
	Material: Glass Reinforced Fiber (GRF) or Polypropylene Plastic									$\neg$	$\Box$	$\top$	$\neg$		
1 1	(PP)							ļ	1 1	1 '	1 1	1 1	.	1	1 1
	Thickness: 6mm for GRF or 12.5mm for PP	······································	<del>                                     </del>						$\overline{}$	$\top$	$\vdash$	$\top$	$\neg$		
	Manhole: 200mm diameter (for top filling maintenance and	<del></del>		1						$\top$		$\top$	$\neg$		
1 1	inspection)			l i	Ì		ł	1	1	-   '	1 1	1 1		1	- I - I
	Piping: as per manufacturer's standard		1				· · · · · · · · · · · · · · · · · · ·		-	+		+	$\neg$		
	Tank level gauge: Glass tube type or Electronic type		<del> </del>	$\vdash$				<u> </u>	<del></del>	+	$\vdash$	1	-		++-
<del></del>	11. Water Monitor		i	<del>                                     </del>			<del> </del>	<del></del>	$\vdash$	+-		+-+	$\neg$	$\vdash$	_
<del>                                     </del>	The wheel operation type monitor is permanently mounted on the		<del> </del>	<del>  </del>	<del>                                     </del>		<del> </del>	<del> </del>		+-	<del></del>	+-+		1	
	top deck of the rear body.				1		1	1	( I		( l		- 1	1 1	
<del>                                     </del>	The vertical and horizontal travel is controlled by hand wheel and		t				<del> </del>	<del> </del>	-	+	$\vdash$	+	-	<del>  </del>	<del></del>
1 1	worm gear drive. Inside located gear box protects gear from dust and		1	1 1			i	1	( I		( l		- 1	1	
	other dirty materials.		ł	1 1			1	1	1	'	1 1	1 1	i	i I	1 !
<del></del>	Material: Cast Iron		<del> </del>	<del>  </del>			<del> </del>	<del> </del>	<del></del>	+	$\vdash$	+ +	-	<del>      -</del>	<del></del>
<del></del>	Movement; Vertical -40o up to +80o, Rotation 360o			-					$\vdash$	+-		++		+	+-
<b>—</b>			<del> </del>					<del></del>	<del></del>	+	$\vdash$	+	+	+-+-	
<del> </del>	Connection:	·····							$\vdash$	+				╁┷┼	+
<b>—</b>	Inlet: 2.5 Inch diameter	<del></del>	<del> </del>					<del> </del>		—	──	+	<del></del>	┼├-	
	Outlet: 2.5 inch diameter							<del> </del>	<del></del>	+		+		╁┷┼╸	-
	12. Nozzie		<del> </del>		<u> </u>				++	4	<del>  </del>			<del></del>	
	Lightweight								<del></del>	——'	—			┷	
	Flow rate: 1900 L/min or 500 gals per min.		ļ		<u> </u>				$\vdash$	<b></b> -'				<del></del>	
	Material: Aluminum										—	+		+-+	
<u> </u>	Surface: Black hard anodizing			$\perp$					╙	<u></u> '		4-4		<del>                                     </del>	
	Connection: 2.5 inch (female thread)							<u> </u>	<del></del>		$\vdash$	$\bot$		$\bot$	+
	Minimum Shooting range: 60m horizontal, 24m vertical.							<u> </u>		'				oxdot	
	13. Fire Pump									'	$oldsymbol{\sqcup}$			$oldsymbol{oldsymbol{\sqcup}}$	
	<ul> <li>The pump shall be mounted on a common frame located at the</li> </ul>							[	i i	1 '	1 1			1 1	1 1
	rear portion of the body.								$\perp \perp$			$\perp$		$\perp \perp$	
1 1	The pump shall be powered by the vehicle's engine via a full		}	1	i		1	<b>,</b>	1 1	, ,	1 1		i	1 1	1 1
	torque clutch independent Power Take Off (PTO) and balanced		1					1	1 1	1 '	i I		1	1	1 1
	propeller shaft, for operation while it is stationary.							<u> </u>	$\vdash$						
1	<ul> <li>Pump engagement control shall be located inside the cab</li> </ul>		1	1 1	i			1 '	1 1	1 '	1		- 1	1	
	provided with appropriate warning lights and label.									'					
	ISO Certified Manufacturer of Fire Pump								$\perp \perp$	<u> </u>	$\Box$	$oldsymbol{oldsymbol{\sqcup}}$		$oldsymbol{oldsymbol{\sqcup}}$	$\bot$
	Type: Centrifugal, two (2) stage								$\perp \Gamma$		$\Box \Box$			ш	$\bot$
	<ul> <li>Maximum discharge: Low pressure 3000L/min@10 bar High</li> </ul>							1	iΤ	1		T T		1 1	1 1
	pressure 250L/min@40 ber			Ll			<u> </u>		$oldsymbol{oldsymbol{\sqcup}}$	'	$oldsymbol{\sqcup}$	$oldsymbol{oldsymbol{\sqcup}}$		$oldsymbol{\sqcup}$	
	Material:											$\bot$			
	Pump body: Corrosion resistant anodized aluminum or bronze or						1			1	l T			1 T	
	stainless steel.		L	LI	لـــــا		<u> </u>							$oldsymbol{oldsymbol{\sqcup}}$	
	High-pressure impeller: bronze or stainless steel.														
	Low-pressure impeller: aluminum or bronze or stainless steel			[								$\perp$			
	Impelier shaft: Stainless steel									$\Box$		$\perp$		$\Gamma$	
	Shaft seal; Maintenance free mechanical seal.									$\Box$					
	Drive:		I .				l			$\top$		$\mathbf{I}$	$\neg$		
	Full clutch independent Power Take-off (PTO)			- 1					$\sqcap$	1		7		$\Box$	
							i			$\top$	$\Box$	$\top$	$\neg$		
	Sandwich type (between the chasis, engine and the transmission).							!	1 1	1 '			- 1		
							i		$\vdash$	$\top$		1	$\neg$	<del></del>	1
	Pneumatic driving mode by means of the electric solenoid valve.		1				1	1	( l	1 '			- 1	1	
	Design Features:	-							$\vdash$	1		1-1	$\neg$		_
<del></del>	Meets EN 1028 or NEPA or JIS Standards, Certificate of	······································						t	$\vdash$	+	$\vdash$	+	-	<del></del>	$\top$
1 1							l .	1 '	4 (		, I				1 1
1 1			1	1			1	l i	1 (	- 1 - 1	1 1		- 1	1 1	1 1
	compliance to be issued by an ISO 17025 certified Third Party testing facility.					:		ļ		1					

<del></del>				<del>,                                     </del>	,						7					
	<ul> <li>Designed to pump both high and low pressure simultaneously.</li> </ul>		L			1				_L						$\bot$
	<ul> <li>Lightweight, corrosion resistant construction.</li> </ul>			1.	l		1			- 1			1	I L		IL_
	Automatic piston primer.				T		T									
	Easily accessible high pressure strainer.		<del>                                     </del>	<del>†                                      </del>	_		· · · · · · · · · · · · · · · · · · ·				+	-	+-	<del>   </del>		++
	Built-in high pressure relief valve.			<del>├</del> ──		<del></del>	<u> </u>		-				+	┼╌┼	+	+-
<u> </u>				<b>├</b>			ļ			-	+	_	+	$\vdash$		+
	Automatic thermal relief valve.			<del></del>			L									1
1	Warrenty: Five (5) years warranty.			1			1			- 1	1 1	- 1	1	1 1	1	1 1
	14. Foam Proportioner				T						$\top$		T	$\Gamma$	$\neg$	$\Box$
	<ul> <li>The round pump foam proportioner consist of an educator, foam</li> </ul>									$\neg$	1		$\top$	$\vdash$		
1 1	proportioning valve and foam control (On/Off) valve			1				1	1 1		1 1	- 1		1 1	- 1	1 1
<del>                                     </del>	Dioportioning voive and local Control (One on) valve			+	<del></del>	<del></del>	<u> </u>	-	$\vdash$	_	+ +		+	┼ ┼	<del></del>	++
1 1	<ul> <li>When activated, a portion of the pump discharge flow is directed.</li> </ul>			Į.	ı	i		}	l I	- 1	1 1		1	ł I		1 1
1 1	to the educator. This flow causes a pressure drop on the educator		ì	i	1			}		- 1	1 1	- 1	1	1 1		1 1
1 1	which draws foam concentrate through the proportioning valve.		i	ı	1				i i	- 1	1 1	l l	1	1 1		1 1
				L												$\bot$
	<ul> <li>The foam mixes with water flowing through the educator and the</li> </ul>		ĺ	j .		1			1	- 1	- 1 - 1	- 1	1	1 1		1 1
1 1	foam solution flows through the pump and delivered to the discharge		į.	1		l		!		- 1	1 !	- 1	1	1 1		1 1
	outlets		1	1		1					1 1	- 1		1		1 1
<del> </del>	Proportional Type: Round the pump proportioning system.		1		1						1		<del></del>		$\neg$	
	Foam Mixing Ratio: Preset positions for 1%, 3% and 6% foam.		····	<del> </del>			<del> </del>	-	-	+	+-+		+	<del></del>	-	+
			1	ł			I	1		- 1	- I - I	- 1	1	i I		1 1
<del></del>	preportioning.		<del> </del>	<del> </del>	<del> </del>		<del> </del>		$\vdash$		+	-+-	+	┼┼-		+
	16. Pipe Works			<del> </del>			ļ		<b></b> -		4				——	+
1	<ul> <li>All pipe works and valves shall be manufactured from stainless</li> </ul>			1	l		1	1		- [		- 1	1	i I		1 1
	steel grade 304.		<u> </u>			L	<u> </u>			ᆚ	لــــــــــــــــــــــــــــــــــــــ					
	<ul> <li>All pipes shall be designed to enable valves and components to</li> </ul>									T	$\Box$	T		Г	T	$T^{-}T^{-}$
	be removed without having to detach other components and/or pipe		1	1	ı	I	I			- 1	1 1	- 1	1	1 1		1 1
1 1	work			i	1	i	I			- 1		1		1 1		1 1
	All valves within the system are of the guarter turn type.		<del> </del>	1	<del>                                     </del>	†		<del>                                     </del>	_	+	<del>1  </del>	-+	+	<del></del>	+	+-+-
<del></del>	16. Hose Reel	<del></del>	<del> </del>	<del> </del>	<del> </del>		<del> </del>		-				+	<del>  -</del>	+	++-
<del></del>		<del>``````</del>	<del> </del>	<del> </del>	<del> </del>				-+	-	+	-+-	+	<del></del> -		+
1 1	The one (1) unit hose reel should be mounted inside the body at		I	i	1	[	1	1		- 1	1 1		1	1 1		1 1
<del></del>	the rear portion of the vehicle.		<b></b>	<b> </b>	<b></b>	ļ			$\vdash$		+		_	╙	_	
	Type: Electric rewind and manual override.			<u> </u>				1					_i			
	Hose: Non-collapsible rubber multi-lined ply.		l	1	T				$\Box$		TT		T			
	Hose bore/length; 25mm/30 meters									_	1	$\neg \vdash$			$\neg$	
	Pressure rating: 40 bar			1		<del></del>			-	_	7 1	$\neg$		1	_	1
) t	Nozzle: Easy turn of fog and straight stream.		<del>                                     </del>	<del></del>	<del> </del>	<del></del>	<del> </del>		-		+		+	<del>  -</del>		+
	17. Pneumatic Service Panel		<del> </del>	· · · · · ·		ļ	<b></b>				+		+	—⊢		+
		<del></del>			<b></b>	· · · · · · · · · · · · · · · · · · ·	<u> </u>			—			<del> </del>			+
1 !	<ul> <li>A service panel shall be located in the pump compartment,</li> </ul>			l			I	l i	1		1 1		1	1 1		
1 1	suitably marked and labeled including filters, air driers, lubricators			l			1				1 1		[			
	and valves.															ᆚ
1	<ul> <li>Valves shall be activated by a pneumatic solenoid type switch. In</li> </ul>															TT
1 1	case of failure, valves shall be manually operated. All pneumatic			ŀ	l	ļ					1 1			1 1	1	
1 1	piping should be nylon type and color coded.		(	ł	į							- 1		1 1	- l	
	18. Control Devices			<del></del>					_		+		+	1	_	+
<del></del>	Control Panel Cab: In addition to the standard motor vehicle			<del>                                     </del>					-	-+-			+	-	+	+
1 1				1						- 1	1 1				- 1	1 1
<del></del>	switches, gauges and monitors, the following shall be provided:		<del> </del>		<b></b> _				+	+	+	-	+	$\vdash$	+	+
$\vdash$	Warning Light Switch		<b></b>								4			<b></b> -		
L	Fire Pump PTO and Lamp		L							$\bot$	الل					ألمل
	Water Tank Main Valve Switch and Lamp									T						I = I
	Working Light Switch				I							$\neg \neg$			$\neg$	T
	Siren Control Switch and Microphone		1		· · · · ·		<u> </u>				7-1		$\top$	1-1	_	
	Control Panel-Fire Pump Compartment:		<del> </del>	<del>                                     </del>					$\dashv$	$\rightarrow$	+ +	$\dashv$	+	$\vdash$	+	+
$\vdash$	Tachometer / Hour meter			<del></del>			<del> </del>		-+	+-	<del>-  </del>		+-	<del>  -</del>	<del></del>	+
<del></del>		<del></del>	<del> </del>		<del></del>		<u> </u>		+	+	+	-	+	$\vdash$	$\rightarrow$	+
$\vdash$	Indicator Lamp (high pressure)			<u> </u>	ļ		ļ						-	<b>  -</b>		+
	Indicator Lamp (low pressure)												_	ш	—	$\bot \bot$
	Indicator Lamp (main valve)										┸┈Ӏ				L	LI.
	Indicator Lamp (PTO)									T						
	Compound Gauge								$\neg$		1 1				$\top$	$\Box$
	Normal Pressure Gauge		1						-	_	1 1	$\neg$	+	$\vdash$	$\overline{}$	$\vdash$
	Tank Level Display (water)			-	$\vdash$		<del></del>		-+		++		+	<del>  -</del>		+
				├	<del></del>	<del></del>	<del></del>		+	+	+	+	+	$\vdash$	$\rightarrow$	++
$\vdash$	Tank Level Display (foam)		<b></b>	<u> </u>			ļ		-	-	4		+-	<del>                                     </del>		+
	Cooling Valve		L		<u> </u>					_	$\bot$		1	oxdot	—	+
	Main Valve Switch						l						$\perp$			
	RPM Up Switch		L							J	┸Ҵ		$\perp$		$\Box$	$\bot \Box \top$
	RPM Down Switch		l							$\neg$	7 1	$\neg \vdash$	T		$\neg$	
	Deck Light Switch									_	1		<del>                                     </del>	<del></del>	_	
	Compartment Light Switch								$\dashv$		+-+		+-	<del>  -</del>	$\overline{}$	++-
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	Pressure Direction (high/low lever)		L			L	L	L					ــــــــــــــــــــــــــــــــــــــ		—	

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* Water Titler Valve with Secret Many Casters - 2.9 roth, but type  * Water Subject valve with Secret Many Straint 2-9 roth, but type  * Water Subject valve with Secret Many Straint 2-9 roth, but type  * Water Subject valve with Secret Many Straint 2-9 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Many Fall Pressure date Valve - 2.5 roth, but then  * Form Many Valve - 1.5 roth, but then  * Form Many Valve - 1.5 roth, but then  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject Connection Valve - 2.5 roth, but type  * Form Subject Connection	Control Valves:														L_	
* Water Titler Valve with Secret Many Casters - 2.9 roth, but type  * Water Subject valve with Secret Many Straint 2-9 roth, but type  * Water Subject valve with Secret Many Straint 2-9 roth, but type  * Water Subject valve with Secret Many Straint 2-9 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Hear Connection Valve - 2.5 roth, but type  * Many Fall Pressure date Valve - 2.5 roth, but then  * Form Many Valve - 1.5 roth, but then  * Form Many Valve - 1.5 roth, but then  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject valve - 2.5 roth, but type  * Form Subject Connection Valve - 2.5 roth, but type  * Form Subject Connection	Water Tank Main Valve – 5 inch pneumatic type								$\Box$							T
* Water Durchers Vater - 2 Part, Providence of Party - 2 Party, 1987  * Water Supply New with Scores Mean Statemer - 2 Party, 1987  * Section print Vater, with Scores Mean Statemer - 2 Party, 1987  * Section print Vater, with Scores Mean Statemer - 2 Party, 1987  * Section print Vater, with Scores Mean Statemer - 2 Party, 1987  * Vater Free Scores Vater, 2 Party, 1987  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Common Party - 2 Party Institutes  * Party Sept Present Party Party - 2 Party Institutes  * Party Sept Present Party Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Institutes  * Party Sept Party Party - 2 Party Party - 2 Party Party - 2 Party Party - 2 Party Party - 2 Party - 2 Party - 2 Party Party - 2													_	$\top$	$\neg$	$\top$
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20. Mirrors and Optical Reflectors							1			$\neg$	7			T		T
Side Mirror 1 pair				<del></del>		· · · · · · · · · · · · · · · · · · ·			$\vdash$	$\dashv$	<del>                                     </del>	_	_		_	1-1
Dever's Consectioned Reserving Mills 1 set		<del></del>	<del> </del>						<del>                                     </del>		+	-+		+		+-+
Front Bumper Minror -1 set				-					$\vdash$			-	-			+
Side Optical Reflectors 1 pair											4		-	+	—	+
Rear Cottacl Reflectors - Dari									ш		$\perp$					$\bot \bot$
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Rear Optical Reflectors-1 peir	Rear Optical Reflectors-1 pair						· · · · · · · · · · · · · · · · · · ·			$\neg \neg$		$\neg \neg$	$\top$	$\top$		T
### 21. Fire Pixthins Reulement   Note of Country Coun															$\neg$	T
Hose 2,5 Inch x 50 feet (double) jecket; - 6 rolls				<del></del>					$\vdash$	_	1	-	<del></del>	1 1	_	1
Hose 1,5 Inch x 50 feet (double jeaket) + 10 rolls			<del> </del>				<u> </u>		<del>  -</del>		+	-	<del></del>	+	<del></del>	+-+
Suction Hose - 4 Inch x 2 SM - 4 Units     Suction Hose First and second strainer) - 1 unit     Way connection 2 ½ to 1 127-2 pcp     1 ½ Hose Wrench - 1 unit     2 ½ Hose Wrench - 1 unit     Pisto Type Nazzat (2 ¼ inch) - 2 units     Pisto Type Nazzat (2 ¼ inch) - 1 unit     Sucretain Ladder - 1 unit     Sucretain Ladder - 1 unit     Ave - 1 unit Filtehead ave and 1 und pick ave     Pick Pick - 1 unit     Pisto Type Nazzat (2 ½ inch) - 1 unit     Sucretain Ladder - 1 unit     Wheel Block - 2 units     Wheel Block - 2 units     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 2 units     Nite Pick - 1 unit     Wheel Block - 3 units     Nite Pick - 2 units     Nite Pick - 3 units     Nite Pick - 4 units     Nite Pic		<del></del>		-			ļ		$\vdash$					+		+
Suction Hose (First and second strainer)-1 unit   We connection 2 1/2 10 11/2 20 5									┡┈┼						ᆣ	+
We connection 2 ½* to 1 1/2*-2 pcs									ш		4					
1 ½ Hose Wrench - 1 unit	Suction Hose (First and second strainer)- 1 unit									i_				للسل		
1 ½ Hose Wrench - 1 unit	Wye connection 2 %* to 1 1/2*- 2 pcs  1 1/2*- 2 pcs									$\neg$						TT
Pistol Type Nozzie (1 ½ inch) – 2 units		-								$\neg$	$\neg$	$\neg \vdash$	$\neg$		$\neg$	$\top$
Pistol Type Nozzie (1 ½ inch) - 2 units   Pistol Type Nozzie (2 ½ inch) - 1 unit				<del> </del>					$\vdash$	$\neg$	11	-		1 1	-	+
Pistol Type Nozzie (2 ½ nich) — 1 unit									<del>  </del> -	-	+	-	-	+	+	+
Extension Ladder-1 unit		· · · · · · · · · · · · · · · · · · ·		$\vdash$			-		$\vdash \vdash$	┯	╅━┩	-	+	++		+
Axe - Unit Flethead axe and 1 unit pick exe				<b></b>					<b>├</b>		┿		-		—	+
Pick Pole -1 unit     Traffic Cone- 6 pcs     Bott Cutter- 1 unit     Hammer -1 unit     Wheel Block- 2 units     INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT     Tools (1 Set)     Oil Jack - 20T capacity     Spere Tire Handle     Piler Set     Wrench Monkey     Open Wrench     One (1) set Combination Wrenches     Ratchets and accessories     Screw Driver sets     Screw Driver sets     Survey Driver sets     Auto LED work lights and flashlights     Wheel Nut Wrench and Handle									$\vdash$					4		4
Pick Pole -1 unit     Traffic Cone- 6 pcs     Bott Cutter- 1 unit     Hammer -1 unit     Wheel Block- 2 units     INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT     Tools (1 Set)     Oil Jack - 20T capacity     Spere Tire Handle     Piler Set     Wrench Monkey     Open Wrench     One (1) set Combination Wrenches     Ratchets and accessories     Screw Driver sets     Screw Driver sets     Survey Driver sets     Auto LED work lights and flashlights     Wheel Nut Wrench and Handle			L		1						┵					$oldsymbol{\perp}$
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1. Tools (1 Set)	AND A TOTAL A COLUMN CALIFORNIA (IL C.)			<del></del>					├┼		+			<del></del>	+	+
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Spare Tire Handle	1. Tools (1 Set)										44		Ц.,	4-1		
Spare Tire Handle	Oil Jack – 20T capacity		L						لللا		⊥_Т			[		
Piler Set									П	T				$\top$		1
Wrench Monkey											1	-		$\neg \neg$	$\neg$	$\top$
Open Wrench			1						$\vdash$	$\dashv$	+	-	_	+ +	-	+-+
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	/ Transmy						L		<u></u> _	.—					<del></del>	

		All equipment / apparatus / devices made as component of the				T						T					
1		fire truck shall have a warranty of at least three (3) years or 200,000								1 1	1	1 1			- 1 '		
						1				1 1	- 1				- 1		1 1
1		kms mileage whichever comes first, issued by the source-								1 1		1 1			- 1 '		- 1
		manufacturer.									_						
		Three (3) years LTO Registration (RED PLATE)															
		Unit/s shall be registered under the name of: Aviation Regiment.															
1				1		1				4	- 1						
-		Philippine Army (AvnR, PA)				-				-	-	+-+		-		-	-
		Three (3) years TPL Insurance								-	_			$\vdash$			
		Three (3) years GSIS			1,010												
		Comprehensive Insurance with AOG															
-		All other requirements stated in the BFP Technical Specifications		1		_				+++	_	+	_	_			-
						1				1 1	- 1	1 1			1 8		
		Number: BFP-TC-2017-01 as of August 29, 2018 that is not included								1 1		1 1			1 /		
1		in the Section VII: Technical Specifications shall form part of the				1				1 1	-	1 1			- 1 - 7	1 1	
		same										-					
								-							100		
				Target divine		1											
4	5-06-04-060-03	Ground Power Unit (GPU)		AvnR (P), PA	1	lot	9,643,202.76	9,643,202.76	Public Bidding				1				
				- W. A. S.				The state of the s									
					erress.		and the second second	Company of the second	TO STATE OF THE ST								
		BASELINE REQUIREMENT															
		1. Engine										1 100				1000	St 755
		Doosan 34, Diesel Fed			-					-	-	1					
						-				+	-	+	-	+	-	-	-
		Turbo Charge, four (4) cylinder, four-stroke engine				-				+	_	-		-	_	-	-
		Direct injection															
		12 volt electrical system															
		121 HP, 90.3kW at 2000 rpm		1		-				+	-	+	_		-	1	-
						-				+	-	+	-	-	_	-	-
		Water cooled															
		2. Capacity												1000			
		35 gallon fuel tank									_						
				-		-				+-+	-	+	_	+	-	_	_
		3.4 gallon tank with filtering lubricating oil				-				+	_	-	_	-		-	-
		1.41 gallon coolant tank															
		3. Physical			TANKS AND A	September 1		THE REPORT OF THE PARTY OF THE		1000				10000	100		100
		<ul> <li>Length: 113 ½ in (288cm)</li> </ul>			-	1					-			-			
						-				+	-	+	_	-	-	-	-
		<ul> <li>Width: 79 1/8 in (201 cm)</li> </ul>								-	-	-	_	-	-	-	_
		<ul> <li>Height: 74 7/16 in (189 cm)</li> </ul>															
		<ul> <li>Weight: 4000 lbs (1814 Kg)</li> </ul>															
		30 ft (9.1m) long (AC and DC) output cable				1				1	-	1			-		
				-		-				+	+-	+	-	-	-	-	-
		Tronair blue, powder coated and corrosion resistant				-				-	-	-	-	-		-	
		Trailer mounted with fifth wheel steering frame															
		Front wheel scrub brake											1				
		4. Alternator			A					1000	65 100	1000		1000	400	10000	100
					-	-				-	-	-	-	-	-	-	-
		Mecc Alte: Synchronous Generator								-	-	-		-	_	-	_
		<ul> <li>28.5 DCV maximum power outlet</li> </ul>															
		Speed 2000 rpm															
						_				_	_	_	_		-	_	_
		40 °C ambient Temperature		-		-				+	-	+	-	-	-	-	-
		150 °C Temperature Rise									_						_
		Class H, IP21 insulation															
		Pre-lubricated single sealed bearing															
		5. Power Requirement				The state of		CARLES IN CALLED IN COLOR							1000		or Holes
						100000000000000000000000000000000000000				1					1000000		
		28.5 DCV maximum power outlet									_						
March Colored Co.		12V-14V Input Voltage															
		6. Interface Types	Since State State State		in and										100	15.00	ER DE
		Musely MDC00 9 DV200 Digital Controlles/Displays		-		-						1			-		
		Murphy MPC20 & PV380 Digital Controller/Displays				-					-	-	-	-	_	_	-
		7. Functional Interfaces and Features										1 000		-	-		
		With at least but not limited to the following options: MPC-															
		20 is an all-purpose industrial controller that stands up to the				1							- 1				
				1						1 1		1 1	1		1 '		
		harshest environments. This powerful controller is targeted for		1 1													
		engine-driven pumps and irrigation, with the versatility to work		1											1		1
		in most engine-driven applications. The MPC-20 is configurable		1													
		by the user to meet the most versatile applications. The ease of													1 7		
		initial setup of the I/O does not leave the user feeling paralyzed															
				1 1		1 1					- 1				- 1		
		when an input is needed for a specific function. This allows for		1													
		quicker uptime and less headache while on the manufacturing		1													
		floor or in the field		1											1 '		
				-		-				+	-	++	-	+	-	+	-
		<ul> <li>Software Suite of display configuration tools. The software</li> </ul>		1													
		interface enables users to modify the display to their own															1
1		specific needs.		1											1 1		
		apecino needa.															

BITEGRATED LOUISTIC SUPPORT (LLS) RECUIREMENT  1. Interpretation services  * The supplier shall provide the delivery of the said tent to Avation Regiment. Philippine Army at Fort Magansysay, Nuver Ecipl.  * The Supplier shall provide all the necessary documents from the manufacture (Certification menuls), stockeds  2. Traintina Proserum  * It must done the operator, mariteriance, and mission support  * Supplier shall softens as training and training support elements to operators and mariteriance personnel for the safety procedures oncerning use of the CPU in and around the interested aircraft at the interest all stands described beginning.  * Supplier shall provide a late interested aircraft at the interest all stands described beginning.  * Supplier shall provide the calculation.  * Supplier shall provide calculation.  * Supplier shall provide calculation.  * Supplier shall provide calculation shall be shal		
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Regiment, Philippine Amy afford Magasaya, Nuava Edja.  The Suppler shall provide all the necessary of the necessary obscuments from the manufacturer (Certificide, minus) to obscuments from the manufacturer (Certificide, minus) to obscuments from the manufacturer (Certificide, minus) to obscuments from the manufacturer (Certificide, minus) to obscuments from the manufacturer obscuments.  It must cover the operator, markenance, and mission support terments to operators and markenance personnel for the safety procedures concerning use of the GPU in and around the intended aircraft at the intended aircraft and the intended aircraft at the intended aircraft and incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials such as elevance of training and the incidentials and training and the incidentials are such as elevance of training and training and the incidential such as elevance presented and elevance personnel training on the static constitution of the const		
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Interining requirements  Supples shall address all training and training support elements to operators and maintenance personnel for the safety procedures concerning use of the GPU in and around the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors at the intended arrors and intended arrors arrors and intended arrors arrors and intended arrors		
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Supplier shall pay the cost of training and its incidentals such as aliafrares, board and lodging, local transportation, subsistence ellowence of training programs connected with the Ground Power Unit acquaitation.  Trainings must be completed within thirty (30) days. It will at least include:  A. Operators Training A. Operators Training A. Operators shall undergo theoretical and actual training on the self-ty operation of the ICPU.  Maintenance personnel shall undergo maintenance training of the self-ty operators shall undergo maintenance training of the Maintenance personnel shall undergo maintenance training of the Maintenance personnel shall undergo maintenance training of the Maintenance of the Ground Power Unit in both Organizational and maintenance of the Ground Power Unit in both Organizational and Initial Levels. These are:  B. Field Maintenance Tools  D. Special Tools  4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  - Operators and Service Manual  - Maintenance Insulation Manual  - Illustrated Parts Catalon  - Consumble Melerial use  - Illustrated Forts Catalon  - Scheduled maintenance moulements  - Scheduled maintenance productorests  - Other Technical System Equipment Manuals  - Scheduled maintenance moulements  - Scheduled maintenance moulements  - Scheduled maintenance moulements  - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		П
sirfares, board and lodging, local transportation, subsistence ellewence of trainers for all training programs connected with the Ground Power Unit acoustition.  Trainings must be completed within thirty (30) days, it will at least include:  a. Operators Training  • All operators shall undergo theoretical and actual training on the sefety operation of the GPU  b. Maintenance/Specialist Personnel Training  • Marintenance/Specialist Personnel Training of the GPU  3. Maintenance/Specialist Personnel shall undergo maintenance training of the GPU  3. Maintenance Supprement  • The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Flotal Levels. These are:  9. Field Maintenance Tools  10. Special Tools  4. Teachineal Maintails  Original copy and electronic copy of the following technical manuels:  - Cherators and Service Manuel  - Maintenance Instituted Tools and Service Manuel  - Maintenance Instituted Tools and Gouloment Manuel  - Illustrator Tools and Equipment Manuels  - Tools and Equipment Manuels  - Tools and Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment Manuels  - Other Technical System Equipment manuels  - The Supplier shall provide sparse sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	$\neg \neg \neg \neg$	
ellowance of trainees for all training programs connected with the Ground Power Unit acoustition  Trainings must be completed within thirty (30) days. It will at least include:  a. Operators Training  All operators shall undergo theoretical and actual training on the safety coerstion of the GPU  b. Maintenance Spacellist Personnel Training  Maintenance personnel shall undergo maintenance training of the GPU  3. Maintenance Equipment  The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These are:  a. Field Maintenance Tools b. Special Tools b. Special Tools  4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  Operators and Sarvice Menual  Maintenance Instruction Manual  Illustrated Ports Catalog  Consumptibe Material List  Understanding and Maintenance Instruction Manual  Illustrated Ports Catalog  Consumptibe Material List  Understanding and Equipment  Scheduled maintenance requirements  Consumptibe Material List  Understanding and Equipment Manuals  Consumptibe Material List  Tools and Equipment  Scheduled maintenance requirements  Coher Tools and Equipment Manuals  Space Parts Program  The Supplier shall provide sparse sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	111	- 1
- Ground Power Linit acculation.  - Trainings must be completed within thirty (30) days. It will at least include:  - Operators Training  - All operators shall undergo theoretical and actual training on the safety operation shall undergo theoretical and actual training on the safety operation of the GPU  - Maintenance Specialist Personnel Training - Maintenance Specialist Personnel Training of the GPU - S. Maintenance Equipment - The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Firiol Levels. These are: - In Field Maintenance Tools - Special Tools - Special Tools - Original copy and electronic copy of the following technical manuals: - Operators and Service Menual - Maintenance Instruction Menual - Illustrated Ports Catalon - Consumable Material List - Tools and Equipment Menuals - Tools and Equipment Menuals - Tools and Equipment Manuals - Other Technical System Equipment Manuals - Scheduled maintenance requirements - Other Propries - Other Propries - Other Propries - The Supplier shall provide sparse sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	1 1 1	- 1
* Trainings must be completed within thirty (30) days. It will at least include:  a. Operators Training  A lit operators shall undergo theoretical and actual training on the safety, operation of the GPU  b. Maintenance Specialist Personnel Training  * Maintenance Specialist Personnel Training  * Maintenance Equipment  * The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These are:  a. Field Maintenance Tools  b. Societi Tools  5. Special Tools  Operators and Service Menuel  Maintenance Instruction Manual  Consumable Material List  - Illustrated Ports Catalog  Consumable Material List  - Illustrated Ports Catalog  - Consumable Material List  - Illustrated Ports Catalog  - Consumable Material List  - Illustrated Ports and Equipment  - Scheduled maintenance requirements  - Other Technical System Equipment Manuals  - Contention and Equipment  - Scheduled maintenance requirements  - Other Technical System Equipment Manuals  - Seneduled maintenance requirements  - Other Technical System Equipment Manuals  - Tools and Equipment Manuals  - Seneduled maintenance requirements  - Other Technical System Equipment Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Seneduled maintenance requirement Manuals  - Tools and Equipment Manuals  - Tools and Equipment Manuals  - Tools and Equipment Manuals  - Tools and Equipment Manuals  - Tools and Equipment Manuals  - Seneduled maintenance requirement Manuals  - Tools a	1 1 1	- 1
Include:   a. Operators Training   a. All operators shall undergo theoretical and actual training on the safety operation of the GPU   b. Maintenance/ Specialist Personnel Training   b. Maintenance Specialist Personnel Training   b. Maintenance Specialist Personnel Training   b. Maintenance Specialist Personnel Training of the GPU   b. Maintenance Equipment   b. The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These arc:   b. Field Maintenance Tools   b. Special Tools   b. Special Tools   b. Special Tools   b. Special Tools   c. Spe	$\neg$	$\neg \uparrow$
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sefety operation of the GPU  D. Maintenance Specialist Personnel Training  Maintenance Personnel shall undergo maintenance training of the GPU  3. Maintenance Equipment  The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These are:  a. Field Maintenance Tools  b. Special Tools  Coriginal copy and electronic copy of the following technical manuals:  Original copy and electronic copy of the following technical manuals:  - Operators and Service Manual  - Maintenance Instruction Manual  - Illustrated Parts Cetalion  - Consumble Maintel List  - Illustrated Parts Cetalion  - Consumble Maintel List  - Illustrated Tools and Equipment Manual  - Tools and Equipment Manual  - Scheduled maintenance requirements  - Other Technical System Equipment Manuals  - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	$\overline{}$	_
Description   Description		
Meintenance personnel shall undergo maintenance training of the GPU  3. Maintenance Egulpment      The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These are:  a. Field Meintenance Tools  b. Special Tools  4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  - Operators and Service Menual  - Maintenance Instruction Manual  - Illustrated Parts Catalon  - Consumable Material List  - Illustrated Tools and Equipment Manual  - Tools and Equipment Menual  - Tools and Equipment Menual  - Operators and Equipment Manual  - Operators and Equipment Manual  - Tools and Equipment Manual  - Tools and Equipment Manual  - Scheduled maintenance requirements  - Other Technical System Equipment Manuals  5. Spare Parts Program  - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	<del></del>	$\rightarrow$
the GPU  3. Maintenance Equipment  • The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Fleid Levels. These are:  a. Field Maintenance Tools b. Special Tools  4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  • Operators and Service Manual • Maintenance Instruction Manual • Illustrated Parts Catalog • Consumable Material List • Illustrated Tools and Equipment Manual • Illustrated Tools and Equipment Manual • Tools and Equipment of Equipment Manual • Scheduled maintenance requirements • Other Technical System Equipment Manuals • Other Technical System Equipment Manuals • Other Technical System Equipment Manuals • Spare Parts Program • The Supplier shall provide sparse sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	<del>-                                      </del>	$\overline{}$
3. MaIntenance Equipment  The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These are:  a. Field Maintenance Tools b. Special Tools corporate Service Manuals  Original copy and electronic copy of the following technical manuals:  - Operators and Service Manual - Maintenance Instruction Manual - Illustrated Parts Catalog - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment Manual - Tools and Equipment Manual - Scheduled maintenance requirements - Scheduled maintenance requirements - Citler Technical System Equipment Manuals - Special Tools and Equipment Manuals - Cher Technical System Equipment Manuals - Special System Equipment Manuals - Special System Equipment Manuals - Cher Technical System Equipment Manuals - Special System Equipment Manuals - Cher Technical System Equipment Manuals - Special S		- 1
The ME must be provided for servicing, handling and maintenance of the Ground Power Unit in both Organizational and Field Levels. These are:  a. Field Maintenance Tools b. Special Tools 4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  - Operators and Service Manual - Maintenance Instruction Manual - Illustrated Parts Catalog - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment Manual - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Other Technical System Equipment Manuals - Tools are Parts Program - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		_
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Field Levels, These are:  a. Field Meintenance Tools b. Special Tools 4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  Operators and Service Manual  - Operators and Service Manual  - Maintenance Instruction Manual  - Illustrated Parts Catalog  - Consumable Material List  Illustrated Tools and Equipment Manual  - Tools and Equipment Manual  - Tools and Equipment Manual  - Scheduled maintenance requirements  - Other Technical System Equipment Manuals  - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		- 1
a. Field Maintenance Tools b. Special Tools 4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  - Operators and Service Manual - Maintenance Instruction Manual - Illustrated Parts Catalog - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment Manual - Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Tools and Equipment Manuals - Tools on Tools and Equipment Manuals - Tools on	1 1 1	
D. Special Tools   A. Technical Manuals   Criginal copy and electronic copy of the following technical manuals:   Coperators and Service Manual   Eliustrated Parts Catalog   Eliustrated Parts Catalog   Eliustrated Parts Catalog   Eliustrated Tools and Equipment Manual   Eliustrated Tools and Equipment Manual   Eliustrated Tools and Equipment Manual   Escheduled maintenance requirements   Escheduled maintenance requirements   Escheduled maintenance requirement   Escheduled maintenance r	<del></del>	$\rightarrow$
4. Technical Manuals  Original copy and electronic copy of the following technical manuals:  Operators and Service Manual  Maintenance Instruction Menual  Illustrated Parts Catalog  Consumable Material List  Illustrated Tools and Equipment Manual  Tools and Equipment  Scheduled maintenance requirements  Other Technical System Equipment Manuals  Sparce Parts Program  The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	<del></del>	
Original copy and electronic copy of the following technical manuals:  - Operators and Service Manual - Maintenance Instruction Manual - Illustrated Parts Catalog - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment Manual - Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Tools and Equipment Manuals - Tools and Equipment Manuals - Tools on Equipment Manuals - Tools on Equipment Manuals - Other Technical System Equipment Manuals - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		-
- Operators and Service Manuel - Maintenance Instruction Manual - Illustrated Parts Catalog - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment Manual - Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Spare Parts Program - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)	<del></del>	-
Maintenance Instruction Manual     Illustrated Parts Catalog     Consumable Material List     Illustrated Tools and Equipment Manual     Tools and Equipment Manual     Scheduled maintenance requirements     Other Technical System Equipment Manuals     Spare Parts Program     The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilitization rate of one hundred (100)		
- Maintenance Instruction Manual - Illustrated Parts Cataloa - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment - Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Other Technical System Equipment Manuals - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		_
- Illustrated Parts Catalog - Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Tools applier shall provide spares sufficient for two (2) years of operation with an annual utilitization rate of one hundred (100)		
- Consumable Material List - Illustrated Tools and Equipment Manual - Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals - Other Technical System Equipment Manuals - Tools and Equipment Manuals - Other Technical System Equipment Manuals - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		_
Illustrated Tools and Equipment Manual     Tools and Equipment     Scheduled maintenance requirements     Other Technical System Equipment Manuals     S. spare Parts Program     The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilitization rate of one hundred (100)		$\neg$
- Tools and Equipment - Scheduled maintenance requirements - Other Technical System Equipment Manuals  5. Spare Parts Program - The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		$\neg$
- Scheduled maintenance requirements - Other Technical System Equipment Manuals  5. Spare Parts Program  • The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		$\neg$
Other Technical System Equipment Manuals     S. Spare Parts Program     The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		
S. Spare Parts Program     The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		
The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100)		
operation with an annual utilization rate of one hundred (100)		
operating hours. Fast-moving items and consumables shall be		
delivered together with the GOODS	1 1	
The supplier shall provide the complete list of TCI, RCA, fast-		_
moving items and consumables during the Opening of Bids (Price		ı
List to be included in the financial documents).	1 1	
6. Product Support Information		
As part of the product support information, publications and		
technical bulletins shall also be provided as long as the Philippine		1
Army is operating the Ground Power Unit. It shall include among		
others:	11	_ {
- Information Bulletins		
- Service Bulletins		
- Modification Bulletins		
7. Interim Contract Support		
The Supplier shall be required to have an Interim Contract		
Support (ICS) to ensure the proper operation, maintenance, and	1 1 1	- 1
Support (IGS) to ensure the proper of personal relations and troubles shooting upon acceptance of the delivery of the Ground	1 1	
trouble-shooting upon acceptance of the Ground	1 1	1

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	One (1) technical representative from the proponent to cater the in-country services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training (OJT) Consultant of our maintenance crew. The incountry technical representative will work five (5) days (Monday – Friday) a week for at least four (4) hours a day and make himself available on weekends (Saturday and Sunday) and holidays whenever his services deemed necessary.  8. Warranty Program															
	The supplier shall cover One (1) years warranty period for the Ground Power Unit which will commence upon acceptance of the unit.			-												
	<ul> <li>The technical representative shall correct any discrepancy due to material failure/factor expeditiously, which should not exceed sixty (60) days upon receipt of notice. If sixty (60) days turnaround time is not possible, the supplier is under obligation to replace the affected component with a new one or provide a temporary replacement in order not to hamper the operational requirements of the AFP.</li> </ul>															
	9. After Sales Support												A ROOM			
	<ul> <li>After sales services shall include supply of spares for the Ground Power Unit and components, interim contract support, technical support, and warranties. Technical support shall include query and answering (to include open/free access to online information) and assistance on defect investigation while the Philippine Army is operating the Ground Power unit (GPU)</li> </ul>															
	10. Life Cycle Management Information															
	<ul> <li>Information/ references/ software regarding Mean Time Between Failures (MTBF), lead time, shelf life, total life, repairable cycle assets, as well as information for repair and overhaul of components to include repair turnaround time and cost shall be provided. Likewise, the proponent shall also identify all the authorized repair facilities, local and abroad, where the items would be repaired or overhauled.</li> </ul>															
	11. Support Equipment and Structures							14000000	E 100			164 650	100			ALS!
	Supplier shall provide information regarding the support equipment required for the maintenance and operation of the Ground Power Unit (GPU).															
	12. Spares and Components Storage Procedures															
	Supplier shall provide storage procedures of spares and components.															
5 5-06-04-060-03	Helicopter Flight Training Device Level 7 (Flight Simulator)	AvnR (P), PA	1	lot	200,000,000.00	200,000,000.00	Public Bidding					1				
	BASELINE REQUIREMENT															
	Mechanical/Technical     Display system uses projection on a spherical screen with a								-				-			
	nominal 9-foot radius made of fiberglass															
	The Visual field of view is at 200° horizontal by 68° vertical.															
	22 x 20 ft in dimension								-		_	_	-	_		_
	a. Static load     Trainer in cueing system = 5000 LBS acting over six 10" x	 -						-	-	-	-	-	-	-		_
	12" pads			1												
	Electronic, IG and I/O cabinet = 2000(500 LBS each)															
	Cueing system cabinet = 800 LBS	 							_	-	_	_	-	_	-	_
	Visual system = 3500 LBS     Instructor cab + steps (cueing system air tanks are under IOS	 -						-	-	+	-	-	-	-		
	floor) = 2500 LBS															
	b. Dynamic load															
	Maximum 300 LBS acting on any one 10" x 12" area at 25 – 35 Hz at any given time.															
	2. Flight Deck and Instructor Cab															46

	The flight deck configuration and layout is based on the atrcraft.														
	<ul> <li>The hardware simulation of the aircraft cockpit includes all portions of the cockpit from the nose to a cross section of the cockpit at the extreme aft setting of the flight crew seats.</li> </ul>														
	<ul> <li>The authenticity of cockpit components, furnishings, controls, and indicators replicates the appearance of the aircraft components in accordance with the qualification standard.</li> </ul>					-									
	The cockpit assembly is mounted on a steel base frame.							L							
	<ul> <li>The cockpit shell may be constructed from fiberglass or from a real aircraft fuselage and is attached to the cockpit base frame assembly that supports the flooring, controls, seats, panels, consoles, and other cockpit contents.</li> </ul>														
	<ul> <li>Electronic instrumentation is simulated by using either commercial flat panel displays driven by graphics computers or actual aircraft displays. These displays incorporate realistic bezels with appropriate knobs and buttons.</li> </ul>														
	Mechanical indicators are simulated using either:     computer graphic representation of the indicators, behind bezel								H	++	+	$\dashv$	++	$\dagger \dagger$	
<b></b>	cutouts		<del> </del>		—				$\vdash$	++	-	-	+		
	b. mechanical servomechanisms controlled by computer		<del>                                     </del>			*			⊢	+			+	+	-
<del></del>	c. In some cases, real aircraft instruments  Flight controls are installed in the cockpit and connected to the		1				· · · · · · · · · · · · · · · · · · ·		$\vdash\vdash$	++			<del>     </del> -		
	<ul> <li>Flight controls are installed in the cockpit and connected to the Control Loading system.</li> </ul>		]	1		1						1		1 1	
	. Cockpit and door window openings are the same shape and		i i										$\top$		
	size as in the aircraft ensuring a correct visual image. Transparencies are installed.		i												
	<ul> <li>Access to the cockpit is from crew access doors and steps, otherwise, through the Instructor Cab.</li> </ul>														
	<ul> <li>Crew seats are representative of the aircraft to the extent that they are adjustable in the same manner as the aircraft and allow the pilots to correctly set their seating position as in the aircraft. Seat</li> </ul>					·									
	belts and shoulder harnesses are provided.  • A low-profile Instructor Operating Station (IOS) Cab is								$\vdash$	H	+	+	$\dagger \dagger$	++	$\pm$
	included, from which the instructor controls the simulated flight.  The IOS Cab is mounted behind the cockpit on a base frame		<del> </del>							++	+	+	+	+-+	$\dashv$
	Low walls provide a semi-private workspace for the instructor.		<del>  </del>			**				1				+	$\dashv$
	and an eventual observer.  An IOS Desk is included, which provides a workspace for the		<del> </del>						$\vdash\vdash$	╁┼			╁┼	+	$\dashv$
	instructor and the user interface with the IOS software.		1	4					1	1 1			1 1	1 1	
	Seats are provided for instructor and observer.														
	3. Flight and Powertrain Simulation									$\Box$				$\Box$	
	The flight performance allows exploration of the flight											1		1 T	
	envelope including hover, approach-tohover, and autorotation conditions.								Ш				$\sqcup$	$\perp \downarrow$	
	<ul> <li>The aerodynamics simulates a classic six degree-of- freedom model accounting for typical forces, moments, and</li> </ul>														
	velocities.  The reference model is tuned to perform like the specific	-	<del> </del>						╁┼╌	+	+	+	++	++	+
	aircraft by manipulating appropriate multi-dimensional coefficients and forces.	<del></del>						<u> </u>				$\perp$		$\perp \downarrow$	Ш
	<ul> <li>Forces from the main rotor system are derived by a blade element rotor model.</li> </ul>					**				$\sqcup \bot$		$\bot$		$\perp \downarrow$	
	<ul> <li>The rotorcraft model incorporates six degree-of-freedom sub-models for the main and tail rotors, aerodynamic surfaces, ground contacts (skids or struts with tires), and engines.</li> </ul>														
	The model allows for the flight performance of the simulator to encompass the entire flight envelope, including ground reactions, translational lift, autorotation conditions, retreating blade stall, settling with power, and tall rotor failures.														

Forces and Moments representing aerodynamic surfaces (fuselage, tall surfaces, and other surfaces as necessary) are based off of forces in the wind and body axes.  Ground effects during takeoff, hover, and landing procedures are modeled and affect lift coefficients and airflow conditions of the main rotor.  The instructor can control the simulated aircraft load through the IOS.  Center of Gravity (CG) changes automatically according to the changes in payload weight and fuel load during simulated	
procedures are modeled and affect lift coefficients and airflow conditions of the main rotor.  The Instructor can control the simulated aircraft load through the IOS.  Center of Gravity (CG) changes automatically according to the changes in payload weight and fuel load during simulated	
through the IOS.  Center of Gravity (CG) changes automatically according to the changes in payload weight and fuel load during simulated	
the changes in payload weight and fuel load during simulated	
flight	
The atmospheric model derives from parameters of the International Standard Atmosphere tables. Realistic values for static air temperature, true air temperature, density attitude, pressure attitude, density ratio, and air density ratio, and air density derive from the aircraft's Mean Sea Level (MSL) attitude, instructor-entered temperature deviation from standard, and the local barometric pressure corrected to sea level.	
The Instructor can control wind values to produce uniform changes (both speed and direction), wind gusts, wind shear (microburst), and turbulence.	
Engine, transmission, and rotor simulation are representative of the aircraft in accordance with the qualification standard and data package.	
Engline starting is simulated during flight and ground operations.	
Engine transients are realistic and correct in trend and magnitude.	
The engine control levers utilize simulated hardware. Look, feel, and range of operation are in accordance with the qualification standard and data package.	
The IOS includes controls to allow the selection of various failures which are part of the engine model. Failures include the following (turbine engine example):	
a. Hot starts	
b. Ignition failure c. Chip Detection	<del></del>
d. Torque failures	<del>-                                     </del>
o, Temperature Gauge Verlation	
f. Fuel failures	
g. instrument fallures	<del></del>
h. Oil pressure variation i, Immediate or gradual loss of power	
Engine/rotor thrust computations are a function of appropriate variables (RPM, torque, atmosphere, collective setting, and autorotation) and representative of the alroraft in its normal flight envelope.	
Engine and gear box oil pressures and temperatures are simulated.	
4. Systems Simulation	44
Alroraft systems are simulated to allow the execution of training requirements.	
Cockpit environmental systems are simulated and have an appropriate effect on cockpit indicators and on the rate of ambient air flow into the cockoit.	
Actual heating or cooling of the cockpit is not provided.	+
The Stability Augmentation Systems (SAS), Autopilot, and Filight Director are included as per configuration, and are a fully functional representation of the aircraft systems.	
Aircraft radio and intercom communications systems     simulations allow the realistic incorporation of communication     procedures into training assistions.	
Instructor and observer can hear transmissions made by the crew, as well as navigation station identifiers.	

			т		<del></del>		T	т т						$\neg$	
	<ul> <li>Installed cockpit controls and indicators associated with the aircraft's electrical system are operational.</li> </ul>					ļ			- 1						ı I
	All circuit breakers found in the aircraft cockpit are represented.				 			П	1	17				$\top$	
<del>  </del>	in the FTD.  Those circuit breakers which are associated with normal,		ļ	<del>  </del>			<del> </del>	++	$\dashv$	+	+		+	+	$\vdash$
i i	abnormal, and emergency procedures are pullable by the pilot and					1		1 1						1 1	ı (
<b>!</b>	"poppable" by the instructor, with appropriate effects on the affected					}		Ιi							, l
	subsystems.		ļ	$\vdash$				$\vdash$	_	+	_			$\dashv$	
}	<ul> <li>The voltage and current of the engine-powered starter/generators are based on engine Revolution per Minute</li> </ul>							1	- 1					-1-1	ı I
1 1	(RPM) and applied load.							1	- 1						ı I
<del>  </del>	The state of battery charge level and voltage relies upon							П		$\top$				$\top$	$\neg \neg$
	charge or discharge currents.		ļ					╁╌┼		4		-		+	ightarrow
	<ul> <li>All major electrical loads are modeled. The automatic representation of minor electrical loads may be omitted. The electrical</li> </ul>					Ì		1 1	-						ı I
	loads from simulated components are based on the data package.							1 1							ı I
	The instructor can adjust the overall electrical load in order to							1 1							
	simulate an overload.		<del> </del>		 		<del></del>	++		+		+		+	$-\!\!\!\!-$
	The fire detection and protection systems simulation allows														ıl
1	the appropriate checklist test procedures, the annunciation of simulated engine fires, and the activation of fire protection systems.			j				1							ıl
			<b>.</b>	$\vdash$		ļ	<del> </del>	₩	+	+	$\dashv$	┰	-+	$\dashv$	<del></del>
	<ul> <li>IOS controls include a "fire" setting for the engine and, a "reset" control to refill fire extinguishers.</li> </ul>													1 1	, I
			<b> </b>				<u> </u>		+	1		П		$\top$	$\Box$
	Primary flight controls appear and operate as in the aircraft.							$\vdash$	_	+	_			+	
	Secondary flight controls (rotor brake) are functional.  Secondary flight controls (rotor brake) are functional.		<del> </del>		 		<del> </del>	╁╼┼	-	+		+		+	-
	<ul> <li>Fuel system simulation includes tanks, indicators, valves, pumps, and cockpit controls.</li> </ul>			1 1			İ								.
	Features of fuel system simulation include the following: a.	<del>-</del>			 										
	Instructor control of total fuel quantity		<u> </u>	<b>├</b> ──┼			ļ	-		+	_	+	-+	$\dashv$	-
<del></del>	Control of valves and pumps in the system     Depletion rate dependent on fuel paths including cross-feed			$\vdash$	 ļ		-	$\vdash$	+	+	+	+		+	
	d. Fuel weight and center of gravity computed and applied to								$\top$	1 1	-	+	$\dashv$	+	
	aerodynamics							<u> </u>		$\perp$			_		
	<ul> <li>Cockpit controls and indicators associated with the atrcraft hydraulic system are functional.</li> </ul>							H							
	Under control of the instructor, ice may build up on airframe							П	$\top$			1 1		$\top$	
	and rotors resulting in performance degradation, and Pitot tubes						1	1 1	- 1	1 1	-			-1 1	. 1
<del></del>	resulting in erroneous airspeed indications.  - Cockplt Instruments are driven to display conditions as				 	<del></del>	<del></del>	╁┼		╅┯┼		+		+	-
	calculated by the simulation software.		1	1 1			İ	1 1				1 1		1 1	. {
	Visual and aural annunciators are simulated.				 				$\Box$					$\Box$	
	<ul> <li>Warning systems found in the aircraft cockpit section are</li> </ul>					}			- 1						
<del></del>	The landing gear system is simulated as appropriate for the		<del> </del>	<del>   </del>		<del> </del>		<del>   </del>	+	+		+	$\dashv$	+	+
	aircraft type.											Ш			
	The brake system of aircraft equipped with wheel-type landing														
	gear is simulated to allow realistic ground handling procedures.			]		1	1		1						, [
<del>  </del>						<u> </u>			$\top$	1 1	$\neg$	$\top$	$\neg$	11	$\neg \vdash$
	<ul> <li>Lighting controls functions as in the aircraft and the method of illuminating indicators and panels is representative of the aircraft.</li> </ul>					1		Ш						1 1	.
	morning indicators and paries to representative of the andate.	<del></del>	ļ					╁╼┼		╅	$-\vdash$	+	+	+	
	Emergency lighting in the cockpit is simulated as in the aircraft.					<u></u> .		$\sqcup$				┸┨			
	Exterior lighting controls, such as landing lights and strobes,							П		$\Box$		П		$\Box$	
	provide proper indications.			$\vdash$	 	<del> </del>		$\vdash$	+	+	+	+	+	+	——
1 1	<ul> <li>The Pitot-static system is modeled using static and dynamic pressures derived from the equations of motion and IOS atmospheric</li> </ul>							1			J				. [ '
	settings.					1		Ш	$\perp$	$oldsymbol{\sqcup}$		4		$\perp$	
	<ul> <li>The magnetic variation at the aircraft's current location is</li> </ul>									1 1					.   _
<del>                                     </del>	derived from a polynomial model applicable to the whole world  Mechanical directional gyros drift with time, unless periodically				 		<del>                                     </del>	╁	+-	+-+	$\dashv$	┿┥	+	+	
1	realigned by the pilot							Ш							
	Simulated Very High Frequency (VHF) receivers and													$\Box$	
1 1	indicators are provided to allow reception of localizer and glideslope		1			l					- 1				.   '
	stations. Operation of test and other modes are simulated.					1	]		1	1.		$\perp$ $\mid$		$\perp$ $\mid$	

				, —												
	Weather radar may be provided as an option.		Į				ļ		$\vdash$		+		+		+	$\dashv$
	A radio altimeter is included, as per configuration, and provides		ł		ı				1				1 1		1 1	i
	indications of height above ground level  As an option, a Traffic Advisory System (TAS) or Traffic and		<del>                                     </del>	+							<del>                                     </del>		╅	-	+	$\dashv$
1 1	Collision Alerting System (TCAS) may be provided.		1	1						1	1 1	ı		1	1 1	İ
	Distance Measuring Equipment (DME) is provided.		<del> </del>		_				$\vdash$	$\dashv$	+-1	_	+-1	-	+-+	-
	A Transponder is provided		1					<del> </del>		_	1 1	$\neg$	1 1		1 1	$\neg$
<del></del>	Simulated Very High Frequency (VHF) receivers and		<del> </del>					f	$\vdash$	+	+ 1		+		+-+	-
	indicators are provided to allow reception of Omni directional Range		i i		]			Į.		- 1	1 1	- 1			1 1	- 1
	(VOR) beacons				- 1		ì	i		- 1	1 1				1 1	
	Automatic Direction Finder (ADF) receiver is provided	·						<u> </u>		_	$\top$		$\neg \neg$		T = T	
<del></del>	A Global Positioning System (GPS) is provided as per agreed				$\neg$				$\Box$		7-7					
	sircraft configuration		1		- 1		l	l								
	As an option, a Flight Management System (FMS) may be										T		ТП			
1 1	provided, per aircraft configuration.							L			$\bot$				$\bot$	$-\!\!\!\!-\!\!\!\!\!\!-$
	<ul> <li>Maintenance computer operations are not simulated unless.</li> </ul>							·	1		1 1	- 1			1 1	1 !
	needed for specific pilot training requirements.								-	_	+	+	+		4-4	
	Relevant systems and power train malfunctions are simulated.		1		1			i		-	1 1	- 1			1 1	
	to enable abnormal and emergency procedures of the aircraft.		1		-				1 1	İ		1			1 1	
$\vdash$	ÿ //		<del> </del>	<del>  -</del>					├─┼	+	+-1	-+	+		╅╌╌╂	-+
	Navigation Simulation     The Navigation Simulation consists of software which monitors		<del> </del>	<del>  -</del>			<u> </u>		$\vdash$	+-			┪		++	-
	cockpit navigation controls and drives cockpit instruments and				- 1		1					ı				
	avionics.						l			- [		- 1				
<del></del>	The navigation database is initially loaded with Jeppesen®									$\neg$	$\top$		1		$\top$	$\neg$
	data for the entire world								<u> </u>				┸┚		$\perp$	
	6. Simplicity IOS Software															
	Simplicity™ is a Frasca developed COTS software suite	***************************************													ПТ	
	provided at the Instructor Operator Station (IOS)						<u> </u>								$\perp$	
	It provides the operator with control over the simulation and										1 1	- 1	1 1		1 1	
1 1	access to various training management and maintenance tools.		1							ļ	1 1		1 1		1 1	( )
			<u> </u>						$\vdash$	_	+		+		++	
1	It includes large buttons for easy interaction via touchscreen								1		1 1				1 1	1 1
ļ	with functionality similar to that of smartphones.									-+-	+ +	_	+		+	-
1 1	Simplicity has dark background colors to avoid excess light		1						1	1	1 1	- [	1 1			-
	spill into the cockpit, with primary colors conveying specific				ì			ļ.			1 1		1 1			-
	Reanings     A scenario is an ordered list of actions in the widget bar which					<del></del>	-		-		+ +	_	+		† †	$\dashv$
1 1	can be executed sequentially by the system.							ĺ			1 1	- 1	1 1	- 1	1 1	
	Aircraft page allows injecting malfunctions for Avionics,		<del> </del>				· · · · · · · · · · · · · · · · · · ·				$\neg$					$\neg \neg$
1 1	Powertrain, and Aircraft Systems. It also allows actual "popping" the		1					ł			1 1	- 1	1 1	- 1	1	- 1 1
	fully functional (not 2D or 3D mockups) Circuit Breakers that are						i				1 1	l i	1 1		1 1	
1 1	installed, with appropriate response of the corresponding aircraft						}				1 1		1 1	1	1 1	
	system.								$\perp$	-					++	
	The Loading (Weight & Balance) page controls individual fuel													ı		
1	and payload weights, or direct control of aircraft CG and gross weight									- 1				- 1		
<del>                                     </del>	through a fully interactive display		<del> </del>		-				$\vdash$	+	+	<del></del>	+		+ +	-+-
1	The Conditions page provides specific control over all atmospheric conditions relative to the selected airport. Those include									- [			}		1 1	
1	visibility, winds, precipitation, icing, clouds, temperature and									- [		ı	1 1	-	1 1	
1 1	pressure, surface conditions (season, runway contamination, sea													l	1 1	1 1
	state) and time of day										$\perp$	L_			لل	
	<ul> <li>The Storm page allows positioning a storm selected from eight</li> </ul>								П						$I \perp I$	
	typical patterns anywhere on the map, with appropriate effects in the						ł			- [					1	
	visual system and on weather radar if installed		<b></b>						$\vdash$	-	44	—∤_	+		++	
	The Traffic page allows the operator to place air and ground				- 1		i			- [	}	- 1			1	1
	traffic in the vicinity of the aircraft. A crash will occur if the traffic				- 1		i							ı		
<del></del>	collides with the training aircraft (ownship).		<del>                                     </del>						$\vdash$	$\dashv$	+		+		+ +	
	ATIS module is provided that simulates ATIS transmitters which     the trived by the pilet Messages san be generated sufermatically.													i		
]	can be tuned by the pilot. Messages can be generated automatically based on current environmental conditions, edited by the operator, or						İ					- 1		- 1		
	recorded with a microphone on some systems.						]			- 1			1 1	1	1 1	
<del>  </del>	ATC Chatter module is provided.		<b> </b>	<del></del>						$\neg$	$\top$		$\Box$	$\neg$		$\neg \neg$
	Map page is provided that provides detailed graphical data	·							$\Box$	1			17			$\neg$
	concerning the current flight.									_1_				L	┸┸	
	<ul> <li>Custom Reposition page is provided that provides a</li> </ul>									T			$\Box$			
	mechanism for positioning the aircraft to a location not associated		1												1 1	
	with a station.		L	LL.				L	ـــــــــــــــــــــــــــــــــــــــ		1			I	$\perp \perp$	

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	<u></u>							· · · · · · · · · · · · · · · · · · ·							
	Approach page is provided that provides a two-in-one view of an		i i						1	1 1			1 1		1   '
l l	Instrument Landing System (ILS) approach, including a glideslope		i i			ł				1 1		i I			1   '
ŀ	view and a localizer view.		1						1	1 1					1   '
	View and a localizer view.	-			$\dashv$				$\vdash$	+	_		+-+		
l l	Monitor page is included that allows the operator to view one or		i .							1 1					1   '
l I	more simulated parameters from an extensive list.		l				L			-		LL			<del></del>
i	Record/Replay page is also included that allows the operator to		1						1 1	1 1					1   '
l l	record flight data, save it to a file, or replay the recording in the		}		+					1 1		1 1	1 1		1 1 '
l l			l l							1 1		l I		i	1 1 '
l i	training device with corresponding indications in the cockpit, visual,		1							1 1		1 1		i	1
[	and on the IOS. The recording can also replay on an optional		1							1 1		l i	1 1		1
l l	Frasca Debrief Station (FDS). Flights up to 180 minutes in								· I	1 1		1 1	1 1	1	1
l l			i i							1 1		l I			1
	duration can be saved		-							+	_	-	+		<del></del>
j j	System pages are used to perform various tasks such as		j l					1		1 1		l I	1 1		1
l l	controlling environmental and audio volume, displays, any special									H 1		l I		l l	1
l [	tools, units, exceedances (collisions, landing gear loads, gloads,		1							1 1		1 1	1 1	ı	1
						1				1 1		1 1			1
l l	rotation rates), engine and simulator time tracking, and overall		1							1 1	1		1 1	i	1
l l	simulator readiness status, depending on installed hardware and		i i							1 1		I I	1 1		1
	software modules.									$\vdash$					<del></del>
	Freeze Page is included to freeze the whole simulator, or some!					1		1		1 1		1 1	1 1	1	1
l	components like attitude, attitude, airspeed, fuel consumption, or		,							1 1					1
			1		ı				l I	1 (			1 1	- 1	1 l
	battery drain.	··	-	-					<del></del>	+		$\vdash$	++		
l i	SimAssist™ is provide which is a patent-pending adaptive.				- 1				l i	1		[	1 1		( I
i	software utility which helps pilots to reduce time to proficiency for				- 1			l i		1 1		l [	1 1	i .	( I
1	pilots learning new tasks in FSTDs.		1 1		ı	1			1 I	1 1			1 1		1 1 '
	SimAssist™ somewhat simulates the hand of the instructor on		t		-					1			1		$\neg$
i			1		ı	ļ			1				1 1		(
1	the copilot flight controls, nudging them in the right direction and at		i i	l l	- 1			l i		1 1			1 1		(
1	the correct time, as done in real aircraft with dual controls.					1				4_4			$\bot \bot$		<del></del>
	Remote IOS may be provided to facilitate instruction from the	-								ıΓ	1	"	1 T		1 1 7
l	cockpit and other tasks requiring remote access to IOS functions.		j		ı					1 1		1		- 1	1 1
									_	+	_		++		
	7. Control Loading		l		1_										
	Electric Control Loading (ECL) system is a Frasca COTS									T			1 1		1 1 '
l	design which provides realistic levels of resistance and inertia to the									1 1	- 1		1 1		1
						i				1 1	1	l 1	1 1	l l	1 1 '
	pilot controls during all phases of aircraft operation.				$\rightarrow$				$\vdash$	++		<del></del>	++		<del></del>
i I	Each primary pilot control connects through a precision			i i	- 1				1 1	1 1		1 1	1 1		1 1 '
1 1	mechanical linkage to a separate electrical actuator.		1 1	l i	- 1					1 _ L					
	A 20,000 count per revolution position encoder is integrally														
	A 20,000 count par revolution position choose to integrating		1		l l					1 1			1 1		1 1 '
	mounted to the aft end of the motor shaft.				-+				$\vdash$	+			╅╌╌╁	_	$\leftarrow$
l	A highly integrated digital serve drive and an Actuator									1 1	1	1 1		1 1	1 1 '
l						i			1 1	1 1	- 1			1 1	1 1 '
l	Control Module are used to control the BLDC motor. Each Actuator									1 1	- 1		1 1		1   '
	Control Module has bidirectional Ethernet communication with a								1 1	1 1			1 1	1	1 1 '
	Control Loading computer, itself linked to the Host Computer.									1 1		l i	1	ł	1 I '
					_				-	╄		_	+		<del>                                     </del>
[	<ul> <li>Software for the control loading system runs at a 3000 Hz.</li> </ul>								1	1 1	1	l 1	1 1		1 I '
l	iteration rate under the Windows operating system and follows object									1 1		1	i I	1	1 1 '
l I									1	1 1	1	1 1	i 1	1	1   '
	oriented programming techniques									+ +	$\rightarrow$		+ +		
1	Control Loading system accounts for the significant forces that				- 1					1			1		1 1 1
l I	act on the aircraft controls and include but are not limited to the			l l	- 1					1	1		1 1		1 I
t I	foilowing:		1												ш
	a. Inertia									$\Gamma$		T			
	b. Trim effects		<del></del>		$\neg$					T			$\neg \neg \uparrow$		
			<del></del>		-+				$\vdash$	<del>   </del>	$\rightarrow$	$\vdash$	+ +	$\neg$	-
	c. Static friction d. Control stops		<b> </b>						<del></del>	+	$\rightarrow$	$\vdash \vdash$	+-+		$\vdash$
l	e, Rate Damping								<u> </u>	┸	<del></del>		+	-	-
	f. Breakout force									<u> </u>					
	g. Backlash (or deadband)				T					LT			⊥⊟Г		
<del>                                     </del>	h. Hydraulics failure									1					$\Box$
<del> </del>			<del>                                     </del>						$\vdash$	++	_		++		$\overline{}$
ļ	I. Autopilot/SAS actuators		<b></b>	<del></del>	$\rightarrow$				$\vdash$	+ +	$\rightarrow$	$\vdash$	+		<del>                                     </del>
1 1	<ul> <li>The Control Loading system automatically boots up and performs.</li> </ul>		1 1	l i	ı	ļ			l İ	1 1			1 1	1 .	11'
1 1	self-test and auto calibration when commanded after power is		1	1	- 1				l	1			1 1		(
1 1	applied to the system.		1 1	1	ı	İ			1 1	1	1 1		1 1		1 1 1
<del></del>	The Control Loading system is designed to ensure safe.		<del>                                     </del>		- 1					1	$\neg$	$\overline{}$	<del></del>		
↓			j i	1	ı				1 1	1 1	1		1 1		1 1 '
Li	operation and minimize the potential for user harm.								<del></del>	╁╼┼				-	$\vdash$
	8. Sound Simulation		L 1		1	i									
h	Simulation of significant aural cues is provided.									1			$\Gamma$		
<del></del>									<del> </del>	1		$\overline{}$	<del>1 1</del>	$\neg$	$\neg$
ı l	<ul> <li>Speaker placement in the cockpit is such that the location of</li> </ul>		1 }		ı				1 1	1 [			1 1		ı 1
	the sound is similar to that in the aircraft.									+	$\rightarrow$	$\vdash$	+		
	Communication equipment is simulated to allow two-way		1	1	ı	1				1 1		l	1 1		1 1
l i	communications between the pilots and instructor		1 1		ı	1			ı í	1 1			+ $+$		L_L
<del></del>	Audio panels and cockpit controls for communications		[	<del>-  </del>									7		
1 1					- 1				l I	1			1 1		
	equipment are fully functional.	<del></del>					·			طسط	نــــــــــــــــــــــــــــــــــــــ				

							· — — —									
	<ul> <li>Jacks for the instructor microphone and headphones are provided. A headphone jack is provided for the observer.</li> </ul>															
	Sound Simulation System provides the following engine and								$\Box$					$\neg$		$\Box$
	environmental sound simulations that are applicable to aircraft							}					li		ı	
	make and model:						ļ		┝╌┝	+	$\vdash$	+	$\vdash$	++		+
	a, Engine Spool-up b. Main Rotor Noise			<del> </del>					$\vdash$		-	-	<del></del>	++	-	+
<del></del>	c. Fuel Pumps			-						+	$\vdash$	$\dashv$	$\vdash$	1	$\neg$	+
	d. Hydraulic pumps															
	e. Tire or skid screech														$\bot$	ш
	f. Slip stream (varies in intensity with airspeed)			<b> </b>					$\vdash$	+			$\vdash$			4-4
	g. Gear extension and retraction			<del>                                     </del>				<del> </del>	╌	+	-			+	_	+
	h. Environmental sounds I. Navigation tones								$\vdash$	-				+ +		+
	// Matfunction effects					<del></del>	·			$\neg$						$\vdash$
	k. Aural warning tones										$\Box$					$\Box$
	/, Crash		ļ						$\vdash$	-						
1	<ul> <li>During the design phase actual sounds are recorded, digitally</li> </ul>		i	1 1										1 1	- 1	1 1
<del></del>	analyzed and sampled.  • A multi-channel amplifier boosts the audio sounds generated			<del></del>			<del></del>		<del></del>					++	$\dashv$	+
	in the sound simulation system and drives speakers placed in the		4	1					Ιİ			1		1 1	į	1 1
	cockpit. The instructor can control the overall sound volume		1									1 1		1 1	Į.	1 1
	from the IOS.								ш							$\perp$
	Sound simulation also generates and presents to the audio		!					<u> </u>	17							
	distribution system aural indications, warnings, and annunciations.											1		1 1		
	Communications systems permit simulation of normal radio	<del></del>					<del></del>		$\vdash$				-		<del></del>	+
f	communication between the pilot and copilot in the cockpit and the			1										1 1		1 1
	instructor who may simulate either Air Traffic Control communications		1	}			i		ł	1 1						1 1
	or other aircraft communications.								<u>L.L.</u>							$\perp$
	Instructor's microphone can be set to "hot" at all, times.										$\perp$					4
	<ul> <li>The observer receives all audio transmissions from the pilot,</li> </ul>			i										1 1		1 1
	copilot, and instructor. Configuration files set who the observer will be														1	1 1
	able to speak to.  Communications systems are compatible with helicopter	····		<del>  </del>			<del> </del>	<del></del>	$\vdash$	+		+	-	+-+	_	+-1
	headsets and microphones.													1 1		1 1
	9. Visual System							Supplied Africa								
	Display system uses projection on a spherical screen with a															
	nominal 9-foot radius made of fiberglass internally structured to												l i	1 1		1 1
	provide rigidity. The display is internally coated with a seamless						ļ					1				
	matte off-white finish.					,			$\vdash$	+-			+	+		+-1
i i	The display utilizes up to 8 low-maintenance laser-phosphor								Ιİ	1 1				1 1		1 1
	projectors to display the image with an average surface resolution			į į	- 1							-1 1		1 1	- 1	1 1
	less than 2 arc-minutes with a brightness more than 3 ft-L											1 1			İ	
	Projectors have a 1920 x 1080 or greater pixel resolution.								Ш.					$\perp$		1
	The projectors are mounted on adjustable plates affixed on a													1 1	ł	
	steel framework above the structure.		<b> </b>	<del>                                     </del>				<del></del>	<del>     </del>	+	+	+	$\vdash$	++	+	+
1	The diameter of the screen sphere is large enough to create less than 8° of geometric error between visual system design eye point.				- 1									1 1	ł	1 1
	and either pilot or copilot eve point.				- 1									1 1	ĺ	
	Image Generator (IG) is provided which consists of proprietary									$\neg$		$\Box$		T		$\sqcap$
1 1	software to generate the scenery and is based on TruVision Global™		[											1 1	- 1	$\perp$
	technology			$\vdash$						+	-	$\dashv$		++	$-\!\!\!\!-$	+
	Scene is generated at runtime from available data sources								1 1							
	including vector data, elevation data, hydrography data, 3D models and geo-referenced satellite imagery.				l		1							1 1		
<del></del>	Representative terrain is generated in real-time anywhere in the			1			<del></del>		<del>     </del>	+	+	+		+	+	+
1 1	world based on 1-km resolution geo-specific data.															$\perp$ 1
				1			İ			$\neg$	$\neg$	$\Box$				$\Box$
	At low attitudes, the terrain renders with micro textures for improved law attitude curse, expensively useful for however intercept.				ļ									1 1		
	improved low altitude cues, especially useful for hovering rotorcraft.			$\vdash$					<b>├</b> -├-	4-4		-		+		+
	Coastlines are included in the default set of source data with			1										1 1		
<del></del>	worldwide accuracy of 100-meter resolution.  The ocean supports a 3D sea state, with 6 sea state levels, and			<del>                                     </del>				-	$\vdash$	+	-+	+	$\vdash$	+	-+-	+
1 1	water reflections from the sun are supported.															
<u> </u>	Marti Tenesaviis nom de son de supported.															

	The IG software supports 258 levels of transparency for			1				1		1 1	- }	1 1	1 1 1	
	atmospheric effects, with an adjustable visibility range of 176 km.		<u> </u>	1						1 1				
<del></del>	Ground fog is supported with the ability to adjust visibility		<del> </del>						+-	+-			+++	_
	distance, fog height, and coverage amount.		1						1 1	1 1		}	1 1 1	
	Two cloud layers can be enabled simultaneously with	·	1							1 1			$\overline{}$	_
	selectable base and tops.		1	,								L I		
	<ul> <li>Cloud coverages of Overcast, Broken, Scattered and Few are</li> </ul>							1						
	supported.								4				+	_
1	Lightning botts with associated flash are supported for the		1 1	1						li			1 1 1	
<del></del>	overcast cloud type     Falling rain and snow of variable intensity are also supported,		+	<del></del>	+	<del> </del>		_	++	+	_	$\vdash$	+ + +	-
1 1	including the effects of wind and speed of the sircraft.			i					l f	1 1			1 1 1	
<del></del>					1	<del></del>			1 1	1		$\vdash$		_
	Rotorcraft white out and brown out conditions are supported.													
	The visual effect of the rotor wash when flying low over water.													
1 1	and appropriately encoded terrain (such as snow or dirt) is displayed.		1 1	ł					1 1				1 1 1	
ļ	1 11 1		<del>  </del>				-	-	+-+-					
	Variable time of day and discreet day, dusk, night conditions are						}					l i	1 1 1	
<del>                                     </del>	simulated, for a given date set by the instructor.  • The IG software supports season-correct representations for		<del> </del>		1		<del>                                     </del>		<del>1</del>	_			+++	-
	the sun, moon position, moon phase, and stars. Illumination of the				ŀ				1					
	scene by the moon varies depending on moon phase.		<u> </u>	l			<u> </u>		$\bot$					
	<ul> <li>A winterized mode can be selected that switches in snow</li> </ul>													
	covered terrain and airport surface textures which are automatically		1	l		1				-				
<del>  </del>	enerated from the normal appearance texture.     IG support for mission functions such as line-of-sight, height-		<del> </del>		<del> </del>	+	<del>                                     </del>	$\dashv$	+				+-+-	-
1	above-terrain, height-of-terrain, and collision is supported.		1				}			1 1	ì		1 1 1	1
	Collision detection with buildings, trees, and power lines is		<del> </del>	<del></del>				$\neg \vdash$	<del>                                     </del>	1	$\neg$			
	supported.													
	<ul> <li>IG provides worldwide coverage that includes terrain,</li> </ul>								T					
	geotypical imagery, and airfields					<u> </u>		_	<del></del>		_		1 1 1	_
	It has a default scenery that contains:		<del>                                     </del>		1		<del></del>		<del>}</del>				+ + +	
<del></del>	a. Worldwide Terrain Elevation based off of 1 km resolution.     b. Worldwide geotypical imagery based on land classification.		<del>                                     </del>	-	+	<del> </del>	<del></del>		1	+ +	_	-	<del>-   </del>	-
	data of at least 300 meter resolution		]			į			1 1	1 1			1 1 1	
<del></del>	c. Worldwide coastlines based on 100 m resolution data. d.				<del></del>			$\neg \vdash$		$\top$			$\top$	
	Runways and taxiways for every airfield in the Jeppesen database		1							1 1	i		1 1 1	
	(over 10,000 airfields).			Į .			ļ		+	+			+	_
1 1	Airfields are generated with representative runway surface types,		l	ı		l		i	1 1			1 1	1 1 1	
	runway markings, runway lighting, approach lighting systems, and PAPL/VASI systems.			- 1					1 1				1 1 1	
<del>                                     </del>	For maritime scenes, ships include the ability to pitch, roll and			<del></del>				$\dashv$	11	+		_	<del>-    </del>	-
1	heave with the sea state set by the instructor			ľ				- 1					_ll	
	The IG software allows the instructor to add static objects				T		T I		TT					
	such as oil rigs to the scene							_ļ_	++	41			+	
	A high-detail helicopter Missions Database is furnished.		<del> </del>		<b></b>	Ļ	ļ <u> </u>	_	╁┈╁╌					
	Imagery has a resolution of approximately 1 m and elevation										i			
<del></del>	has a 1 km standard resolution for the entire state.  10. NVG Options		<b> </b>		<del> </del>		<del> </del>		+ +	-		-	+-+-	-
	The Flight Training Device cockpit (lights and displays) and IOS		<del>                                     </del>		<del> </del>	<del> </del>	<del> </del>	$\dashv$	++	1 1			<del>1    </del>	-
	Cab may be filtered and modified to permit the use of real night vision		j l	1										
	goggles (NVGs).					L								
	11. FLIR Options								+	$\Box$	$\Box$		$+\Box$	
	As an option, a gimbaled Forward-Looking Infrared (FLIR)			}						1 1				
	system may be simulated for display on a dedicated monitor, together		j											
<del>                                     </del>	with a hand controller. 12. Vibration (ontion 1)	<del></del>			1	<del> </del>	<del> </del>		1-1-	1-1	_		<del></del>	_
	The qualification standard mandates a system to provide				1		<del> </del>	$\dashv$	1 1	1-1	_		<del>1    </del>	
	characteristic helicopter vibrations to the pilots.		<u> </u>		1				لل					
	<ul> <li>In the vibration system, the steel frame supporting the cockpit</li> </ul>		1						IT	TT				
	is loosely connected to the floor via elastomeric pads.		ļl		<del> </del>				<b>↓</b>		_			
	The design of the system provides vibrations up to 2000 RPM or		]		1				] [					
	33.3 Hz.		├		<del></del>	<del> </del>			++	++	+	$\vdash$	+++	_
<del> </del>	The Vibration System can simulate:  a. Main rotor vibration		<del>                                     </del>		+			+	+-	+-+			<del>                                     </del>	$\dashv$
	b. Effective Translational Lift (ETL) shudder	·····			1				t = t	1				_
	c. Vortex ring vibrations													

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A Type design of pages in process control of the c		d. Ground contact	]													
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1. 18. Melinic Continue Systems (MCS) position (STRIC) products interface (STRIC)  - The system capitalises on the flat that furties to one of the system (STRIC) products (STRI		f. Vertical ground reaction force	<u> </u>					L						$\perp \perp$		
The fleden Custing System (MCG) provides introduction in Committed		g. Abnormal vibrations	 	L						┷						
Consess of Freedom is protect and recipitor or granular extension (protection and protection and			L					<u> </u>						1		
The system capitation on the Med Test Furnam control medical compression of the company of the c		<ul> <li>The Motion Cueling System (MCS) provides limited motion in 6</li> </ul>	1	1 1				1		İ	1 1	- 1	1	1 1		1 1
teneries (non-early muscles) a bord, and delin control pressures) regular recibion with miscentrols compress with the corresponding  The copied frame is connected to the floor through 3 passamatic  The copied frame is connected to the floor through 3 passamatic  The size delection designates are presented on a Size of Parison to  connected to Sprame and the control of the contro		Degrees of Freedom to create both cueing and vibration	 <u> </u>							4-				$\bot$		
In register microbus with milliseconds compressed with the contrepanding of the presentation of the selection control of the presentation of the selection control of the selection of the select		<ul> <li>The system capitalizes on the fact that human body motion</li> </ul>		1				1			1 1	- 1	- 1	1 1		
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most of the statio weight of cockpla base, cookpla interfor, and plate.  * The sits disclare charters are practing as a Shewelf Platform to provise 5 Digrees of Freedom line a Mation Base, but with smaller stories amphibite description with the state of the provise and the provise of the provise and t		The three presumatic actuators are pressurized so as to hear	[	l i				1		1	1 1		i	1 1		1 1
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provide a Degrees of Freedom list a Mixtino Basis, but with amalier activale amplitude (descript) and much higher frequency represenses.  * A Mixtino Couling System PC computes with amplitudes and intervences to command the scalars with, as a Mixtino Basis of the Computer of the Country of		The six electric actuators are arranged as a Stewart Platform to		1				1	- 1		1 1		1	1 1	ı	1 1
acrois amplitude (sourch) and much higher frequency response.  A Motion Courting System RC computes what amplitudes and frequencies to command the actuations with, as a function of cycations of motion (potacetesizes and evolucities) and all systems of cycations of motion (potacetesizes and evolucities) and all systems of the computer of the compute			Ĭ	1 1				1	- 1	1	i I		1	1 1	- 1	1 1
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ocupations of motion (accelerations and velocities) and any special infect versions considerably the biolan EC.  • Centrollable in simplificate and phase up to 8 Mz (compared to Mz.)  • The system provides cueling responses three that are better than for a historyer bear sometime.  • The system provides cueling responses times that are better than for a historyer tree of the fight Simulator (FS) equipped with a vibration system along the motion base, and a semiar vibration.  • Thanks to a compared state, the Motion Cuerge System has significantly fewer facility requirements than for a FFS, as well as a lower cost.  • The system of the compared state of the Motion Cuerge System has significantly fewer facility requirements than for a FFS, as well as a lower cost.  • The system of the motion of the Microsoft of t			ì	l i				]		1				1 1	1	
effect vications considerate that Pack IPC.  Ocentralistics in amplitude and probase up to 60 Hz (companed to 10 Hz for a Michico Reso) and can respective frequencies above 200  1. The system provides cuality responses times that are better than for a Helicopter Level D Full Fight Simulator (FFS) equipped with a vication system dop the motion base, and a simular vication with a vication system dop the motion base, and a simular vication of the significantly from system dop the motion base, and a simular vication of the significantly from feetility requirements than for a FFS, as well as a lower cost.  1. Thanks to its acompact size, the Motion Cuerng System has significantly from feetility requirements than for a FFS, as well as a lower cost.  1. M. Compater and Interface System computes the size of								]			1 1			1 1	- 1	
Controllable in amplitude and phase up to 80 Mt (compared to 10 Hz for six fullorin Base) and can reproduce frequences above 200 Mt. stood with very low amplitude.  A stood with very low amplitude and phase up to 80 Mt (compared to 10 Mt. stood with very low amplitude).  The stood with very low amplitude and the stood of the stood with a vibration system togother lowed to Full Flight Simulation (FFS) quotipped with a vibration system togother more than for a FFS, an well as a stood with a vibration system togother more than for a FFS, an well as a stood with a vibration system call the stood of								]		1				1 1	1	1 1
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	b. 3-Wire Encoder/Input Module is primarily used to read and				Ì		1 1	1 1		1 1	1 1		1   1
1	determine directional movement of a rotary switch which has its pins			- 1		1		1 1	Ĭ	1 1		il	
1 1	wired in groups of 3.							1 1					
	c. The Output Module is typically used for lighting annunciators.						$\sqcup \bot$	$\perp$			$\perp$	$\perp$	$oldsymbol{\sqcup}$
	d. The Analog to Digital Converter (ADC) Module is typically used to			- 1	ì	1	1 1	1 1		1 1	1 1	- 1	i I 1
	read potentiometers for lighting dimming or for control positions.	1		- 1		İ		1 1		1 1		- 1 - 1	1   1
	read potentiometers for lighting diffirming or for control positions.	 				<u> </u>							
	e. The Digital to Analog Converter (DAC) Module typically used to						1 1	1 1		1 1	1 1	- 1 - 1	1
	drive Direct Current resolver based instruments or servo instruments.			- 1	t	į		1 1		1 1	1 1		i   1
L								$\perp$		$oldsymbol{ol}}}}}}}}}}}}}}}}}$	$\bot$		
	f. The Combo Module is used for many functions; typically, they are			- 1	}		1	1 1		1 1	1 1		i I I
	used for lighting annunciators, and reading switch positions.	 			<u></u>		$\perp$			oxdot			-
	g. The CAN Matrix Module primary purpose is to trip circuit breakers			- 1	•			1 1			1 1		i   1
	and to read the state of breakers.	 					$\sqcup \bot$					$\dashv$	
	h. The Lighting Module is typically used to provide panel lighting,			- 1				1 1			1 1		i
	which commonly has a high current requirement.	 		$\longrightarrow$				+			$\rightarrow$	$\rightarrow$	$\vdash \vdash \vdash$
1	I. The SPI/I2C Module provides SPI (System Packet Interface) and			- 1	ļ						1 1	1 1	i
1	I2C (Inter-Integrated Circuit) interfaces to support various simulated			- 1		i	1	1 1			1 1		i + 1 + 1
	instruments or control heads.	 			 		_	+-+		$\vdash$			
	15. Maintenance Software	 			 			+		$\vdash$	+	-	-
	Computer Generated Instruments (CGI) Software Calibration		l i	I	1			1 1			1 1		, , ,
	is provided	 ļ			 ļ	ļ	$\vdash$	++		<del></del>			
	CAN Bus Packet Sniffer is provided to allow the user to monitor			- 1	1								,
L	lower level traffic on the CAN Bus interface.	 			 ļ		Щ	4		<del>  </del>		$\dashv$	<del>   </del>
	CAN Module Software Upgrade Utility; the CAN Flash				1		1 1	1 1		ΙI	1 1		i I I
	programmer utility is provided to allow in-system upgrades to CAN			- 1	}						1 1	1 1	:
	module software if necessary	 			 			$\bot$				$\rightarrow$	-
	Software includes error trapping for certain conditions and			- 1	1	į.		1 i				- 1 - 1	, 1 1
	events.	 						$\bot$		<b></b>		$\dashv$	-
	Standard window maintenance utilities are provided to allow.		1	- 1		i e		1 1	- 1	ł I		-	,   [
1 1	the user to troubleshoot standard windows hardware and software.			- 1	ļ	l			- 1	1 1			
					 	ļ	$\perp$						
	All computers have TeraByte Image for Windows Drive Image			- 1	<u>l</u> .						1 1	1 1	i 1 1
	Backup and Restore Software installed to provide the ability to			- 1									i
	backup each system computer in the event of a failure.				 						$\perp$		
	The Control loading and motion systems includes real time			- 1				1 1			1 1	- 1 - 1	i 1 1
	safety checking software.	 					oxdot	+					
	18. Electrical Requirements	 			 	<u> </u>	Щ.	4-4			11	-	-
	Trainer and Cuaing 480V, 3-phase, 48A	 l											
	Image Generators and Projectors 220 V, 1-phase 40 A				 								أسلسا
	17. Environmental Requirements							$\bot$			$\bot$	$\perp$	
	The equipment must be operated in a dust-free environment:												لسلسا
	<ul> <li>Temperature: 60 - 75 °F (15 - 24 °C)</li> </ul>				 <u> </u>	l		$\bot$		$\perp$	$\bot$		لللت
	Retative Humidity; 30 - 70 %, non-condensing.							$\perp$			$\perp$		لسلسا
	18. Room Requirements												
	Recommended ceiling height 15' 6"					T							
	Minimum Door and Hallways 120" width x 96" height							T					
	INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT	 ĺ	i i	-1				П		П	$\top$		$\overline{}$
	1. Integration service			$\neg$				1					
	The supplier will provide the installation of the Helicopter Flight							ТТ			$\top$		$\overline{}$
1 1	Training Device FAA Level 7 to the end user.	i I		1				1 1		1 1	1 1		: 1 I
	2. Training Program	 			 i			T			$\top$		
<b>—</b>	Supplier will shoulder the training and training support elements	 i			 			$\top$			$\top$		$\overline{}$
1	to operators and maintenance personnel involved on the operation of	i i		- 1				1 1		1 1	1 1	li	i 1 1
1	the Helicopter Flight Training Device FAA Level 7.			1				1 1		1 1	1 1	1 1	i 1 1
-	English language will be used.							$\top$	$\neg$		$\top$	$\neg \neg$	$\neg \neg$
<del></del>	3. Product Support Concept	 		$\neg \neg$	 ,	·					+		-
	Seller will support the Buyer in its support responsibilities by	 <del> </del>		$\dashv$			_	+		$\vdash$	1	$\neg$	$\neg \neg$
1 1	providing training and technical assistance via electronic means.	[		- 1				1 1					.
	These electronic means can include telephone, fax, and email	 r		$\neg$				1			1-1		
1 1	support, as well as, remote diagnostic assistance via modern/internet	, l		1				1 1					.
1 1	connections to the equipment.	}		- {				1 1	- 1				.
<del>                                     </del>	4. Spare Parts Program	 			 			1 1	$\dashv$		1 1	_	$\neg \neg$
<del>  </del>	In order to ensure the highest availability, the equipment must be	 <del>                                     </del>		_	 		-	1 1	$\dashv$		+	1	$\neg \neg$
1 1	supported with adequate spare parts onsite, based on MTBF values			- 1				1 1	ŀ		$\perp$		.
1 1	when available.			- 1				1 1	- 1		1 1	j l	.   1
	In addition, onsite spares are required because certain.	 	-		 			1 1	$\neg$	$\vdash$	1 1	$\neg$	$\neg \neg$
	components may have long lead-times or limited availability			- 1					- 1				.
<del></del>	Toomsourcing may have long regornings or intrined availability				 	•							

<ul> <li>Seller may also recommend spares be purchased for certain components where anticipated obsolescence may limit future availability</li> </ul>									
A recommended spares list will be provided and finalized during the manufacture period and be provided to the Buyer with adequate time to ensure concurrent delivery.									
5. Special Tools									9 350 19
<ul> <li>Only common tools typically used to maintain aircraft and aircraft avionics are required to maintain the equipment.</li> </ul>									
6. Technical Publications		Carlo Chang		Mark Comments				100	
<ul> <li>Seller provides the following documents for the equipment:</li> </ul>									
<ul> <li>a. Operator Manual providing all instructions for operating the equipment and includes startstop instructions.</li> </ul>									
b. Maintenance Manual providing the experienced maintenance staff with the information needed to identify and repair equipment faults and to perform periodic maintenance. The Maintenance Manual includes system operation and components, preventive maintenance, calibration procedures, and use of diagnostics for troubleshooting.									
c. System Interconnects (electrical diagrams).									
<ul> <li>d. Approval Test Procedure e. Qualification Test Guide (optional, per qualification standard)</li> </ul>									
7. Product Support Information									
<ul> <li>Within the warranty period, Seller incorporates any revisions to the equipment into the affected publications and forward, them to the customer.</li> </ul>									
<ul> <li>Seller supplies technical data, manuals, and parts-lists for vendor equipment and assemblies in original form.</li> </ul>									
8. Warranty Program									
The supplier shall cover One (1) year warranty period for the Helicopter Flight Training Device FAA Level 7.									
			Grand Total	271,772,631.76	-				

Prepared By:

ARIES MASSEM T DELA CUADRA MAJ (SC) PA AC of 8 for Logistics, G4

Approved By:

ANORE B SANTOS OL (MNSA) PA commanding Officer

**AVNRX** 

10 May 2022

# Summary of Program Implementation (SPI) Proposed Tier 2 Projects

Projects Calendared and Processed for the Month Broken Down by Mode of Procurement - Program Implementation (In Number of Transaction)

Indicators	Jan	Feb	Mar	1st Qtr	Apr	May	June		2nd Qtr	Jul	Aug	Sep	3rd Qtr	Oct	Nov	Dec	4th Qtr	Total
Projects Calendared	and Processed	for the M	onth Bro	ken Down by N	lode of Pr	ocurement		A2343.65										
Public Bidding						5			5								NAME OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OWNER, OWNER, OWNER, OWNER, OWNER,	5
Total:						5			5									5

Projects Calendared and Processed for the Month Broken Down by Mode of Procurement - Program Implementation (In Amount)

Mode of Procurement	Jan	Feb	Mar	1st Qtr	Apr	May	June	2nd Qtr	Jul	Aug	Sep	3rd Qtr	Oct	Nov	Dec	4th Qtr	Total
Public Bidding							271,772,631.76	271,772,631.76									271,772,631.76
Total:							271,772,631.76	271,772,631.76		ALUS SERVICE				Market			271,772,631.76

Prepared By:

ARIES MASSEM T DELA CUADRA MAJ (SC) PA AC of S for Logistics, G4 Approved By:

ANDRE B SANTOS COL (MNSA) PA Commanding Officer

**AVNRX** 

10 May 2022

# Program of Expenditures (POE) Proposed Tier 2 Projects

CODE (PAP)	General Description	Qty /	Size	Estimated Bud	dget (PhP)	End User
CODE (PAP)	General Description	Qty	Unit	Unit Price	Total Price	Ellu Osei
	Public Bidding					
5-06-04-060-03	Mobile Air Traffic Control Tower	1	lot	26,272,894.00	26,272,894.00	
5-06-04-060-03	Aircraft Refueler Truck	1	lot	15,286,535.00	15,286,535.00	
5-06-04-050-09	Firetruck with Foam Tank	1	lot	20,570,000.00	20,570,000.00	AvnR (P),
5-06-04-060-03	Ground Power Unit (GPU)	1	lot	9,643,202.76	9,643,202.76	PA
5-06-04-060-03	Helicopter Flight Training Device Level 7 (Flight Simulator)	1	lot	200,000,000.00	200,000,000.00	
			Tot	al Amount >>>>>	271,772,631.76	

Prepared By:

ARIES MASSEM T DELA CUADRA MAJ (SC) PA

MAJ (SC) AC of S for Logistics, G4 Approved By:

ANDRE B SANTOS COL (MNSA) PA

Commanding Officer

**AVNRX** 

10 May 2022

## Program of Expenditure Proposed Tier 2 Projects

General Description	Part Number	End-User		Qt	y / Size 4	Total
1	2	3	Qty	Unit	U/P	5
Mobile Air Traffic Control Tower		AvnR (P), PA	1	lot	26,272,894.00	26,272,894.00
BASELINE REQUIREMENT						
1, Mobile Cabin						
• The size of the Cabin shall approximately be as follow: Minimum Length excluding Balcony: 3700mm x Width: 2360mm x Height: 2020mm. The length of the cabin including the balcony shall not be more than 6042 mm. Total gross weight of the cabin including all equipment shall not be more than 3800kg.						
Minimum standing height within the ATC cabin of 1.9 m, floor to ceiling.						
With an unobstructed field of view of 360 degrees in azimuth with the exception of the six support columns. The column dimensions shall be minimized (maximum dimensions of 7.62 cm x 7.62 cm) or better.						
The overall unobstructed glass dimension on the vertical from the sill level to the ceiling edge shall be minimum of 91.5 cm (36 in.) or better sloping outward from the vertical.						
2. Interior floor						
• Covered with an anti-static, high friction, resilient, non-flammable, and textured material.						
3. Wall						
• Enclosures shall be a minimum of 1m or better high and shall be of						
sandwich construction with interior and exterior aluminum layers enclosing polyurethane foam providing a rigid thermal insulated structure resistant to						
moisture.						

•The walls shall be made of polyurethane sandwich panels covered by steel metal 0.5mm sheets or Aluminum metal 3.2 mm sheets. The thickness of the wall panels shall be at least 40mm to maximum 84 mm.				
4. Roof				
<ul> <li>The roof shall be of sandwich construction with interior and exterior aluminium skins enclosing polyurethane foam to provide a rigid structure and thermal insulation resistant to moisture.</li> </ul>				
5. Glass				
<ul> <li>The 25mm (1-inch) double-glazed glass panel shall be composed of a 6mm (1/4-inch) clear interior glass pane and a 6mm (1/4-inch) Solargray outdoor glass pane separated by 13mm (1/2-inch) hermetically sealed air space.</li> </ul>				
6. Air Conditioner				
<ul> <li>A dual Heat Pump Air Conditioning System, minimum 6.8 kW (24,000 BTU) cooling capacity per unit shall be used.</li> </ul>				
●The Main Power Supply shall be 415±15/240±10V, 50 Hz 3-phase		 	 	
7. Ladder				
<ul> <li>The material shall be square aluminum profile, aluminum tubes and the steps shall be provided from anti-sliding aluminum sheet. Ladder shall have on lower part two wheels or on skis (no wheel) and on the upper part fixed by hooks and chains.</li> </ul>				
8. Configuration				
The tower shall include Console with three (3) controller positions, each comprising:				
> Flight Strips Tray (2 x 10 Flight Strips)			 	
> Flight Strips		 	 	
> Task Lamp			 	
> Controller Chair			· · · · · · · · · · · · · · · · · · ·	
9. Vehicle Configuration				
2022 model year				
Wheeled type				
Diesel Engine				
Set back axle				
► L/H primary steering				
Euro IV Emission	<u> </u>	 		
Engine should at least 320 HP at optimum RPM		 	 	
10. Electronic Parameters				
At least 80 km/hr road speed limit				
Cruise control speed same as road speed limit	<u> </u>			
EDC Engine regulation				
PTO mode engine				
11. Engine Equipment				
DR 12 v 160 amp 28-SI quadramount pad alternator with remote battery				
volt sense or better option.			 	

Battery box with aluminum cover.				
Air compressor 1 cylinder 360 ccm with internal safety valve or better.				
All compressor regulation does com with internal safety valve of better.				
Electronic engine integral shutdown protection system: Standard exhaust		 		
system, Standard radiator and 12v HD starter with integrated magnetic				
switch.				
12. Transmission Equipment				
Aluminum clutch housing, PTO available ,PTO mounting, bottom of main				
Itransmission, Transfer case oil cooler and Synthetic transmission lube.				
13. Front Axle				
• Single front axle with HR carrier , Stabilizer for front axle , Power steering				
with auxiliary gear and Synthetic 75W-90 front axle lube.		 		
14. Front Suspension				
Taper leaf or Parabolic or better front suspension		 ,		
Front shock absorbers.				
15. Rear Axle				
Manufacturer standard Rear axle				 
Synthetic 75W-90 front axle lube.				 
Differential lock or better				
16. Rear Suspension				
• flat leaf/Parabolic spring rear suspension with helper and radius rod.				
17. Brake System				1.00
Air brake package/electronic brake system				
BS without traction control				
Steel air brake reservoirs, Air dryer, heated				
18. Wheelbase and Frame				
Within 175-245 inch wheelbase				
• steel frame			,	
Within 98-108 inch rear frame overhang or suitable				
Calculated overall frame length				
19. Chassis Equipment				
Three piece 14 inch painted steel bumper with collapsible ends				
Front tow hooks				
Hostler 3500 lb capacity rear cross member				
Mudflaps				
20. Fuel Tanks				
80 gallon/302 to 380 liter rectangular aluminum fuel tank.				
21. Wheels				
• Suitable size, quality and standard recommended by Manufacturer taking				
consideration Philippine Road standard while travelling to cemented and				
rough road.		 		
22. Cab Exterior				
• 2 1/2 inch fender extensions.				
	···	 		 

	T				<del>r</del>	<del>,</del>
• Integral headlights, Integral LED stop/tail/backup lights , Standard front				ĺ		i
turn signals, Dual west coast mirrors, Dual level cab entry steps on both						
sides , Centre locking system, Tinted door glass , Window cleaning set.	Ì		}			
sides, Centre locking system, Tinted door glass, vviidow cleaning set.						
23. Cab Interior	3.00					
<ul> <li>Opal grey interior/Door interior paneling washable ,Main HVAC controls</li> </ul>						
with circulation switch ,Standard heater plumbing ,Heavy duty air					1	
24. Trailer Mounted Generating Set						
<ul> <li>Diesel Generator ,Minimum rating of 13.5 KVA, 400/220V, 50 Hz 3-phase</li> </ul>						
(Standby Power), Automatic voltage regulation, Digital Control panel				l	ŀ	
Automatic Transfer Switch (ATS), Starting time: within 15 seconds, Degree						
of protection: IP54 , Power cable: up to 33 meters from the ATC Mobile						
Tower, Fuel Autonomy: 24 hours minimum.						<u> </u>
Single Axle trailer.						
25. UPS System			77 77			
Shall be a single module of on-line technology, provide connection control				<b></b>		
circuits, disconnection control circuits, system instrumentation, system						
status indicators, system alarms and system diagnostic.	1					
Shall have a minimum 6kVA rating, 240 Vac, 50 Hz input/output.						
Maintenance-free and leak-free battery with at least 1 hr autonomy.						
26. Voice Communication and Control System/Controller Working		<u> </u>				
Position(CWP)						
One (1) VCCS/CWP central equipment shall have the following minimum						
, , , , , , , , , , , , , , , , , , ,						
specifications:  ➤ It shall employ client-server architecture, with open platform software						
and commercial off-the-shelf hardware.						ļ
➤ A single failure in VCCS/CWP shall not result in the loss of large system						
parts. The digital audio processors shall be fully redundant and in parallel						
processing mode.						
		•	<del></del>			
> It shall include hot swappable radio and telephone interfaces Integrated						
with VCCS/CWP or Telephone Interface can be separately provided with						
IP-PABX with minimum 3G/4G GSM Port, 3 VoIP Ports, 3 FXS Ports, etc.						
Three (3) VCCS/CWP positions, each position shall have the following						
minimum specifications:						
➤ Minimum 10.1" Color Touch Screen Display			-			
> Indications: Squelch (incoming call), PTT, radio selection(M/S) and						
alarms						
> Controls: Radio selection (M/S), Squelch override						
> Resolution, Contrast: 800X600 pixels, 500:1						
➤ Reliability: MTBF at least 200,000 hours						
> Connectors: for microphone, headset, foot switch and recording						
> Power Supply: 230V AC						
➤ Power Supply: 230V AC  ➤ Loudspeaker						
			-		<del></del>	
> Dual Jack-Box (operator and instructor)/Microphone Interface Facility						
➤ Headset w/in-line PTT o Handset w/PTT						
			<del></del> -			

➤ Footswitch w/connector	 l	r	<u>-</u>	
27. Voice Recording				
Once (1) 24-Channel Digital Recorder System shall comprising;	 			 
> Analogue interfaces				
➤ Blu-Ray Drive				
➤ USB Port	 			
➤ Replay Portable PC	 	<b></b>		
➤ Replay Portable PC  ➤ Ten (10) Blue Ray Disks				 
> Two (2) Portable Hard disks	 	<del>                                     </del>		
28. HF System				
One (1) HF Radio System shall include:		<del>                                     </del>		
➤ TX Frequency range: 2.0 to 30 MHz				
> RX Frequency range: 250 KHz to 30 MHz				
> Power Output: 125 Watts (PEP)	 			 
> Receiver Sensitivity: -121 dBm (0.2uV) for 10 dB SINAD.	 			 
> Shock and Vibration standard: MIL-STD 810G	 	<del></del>		 
HF Antenna shall include:				
> Power Capacity: 150W PEP	 			 
> VSWR: 2:1 maximum	 			 
> Shock and Vibration Standard: MILSTD 810G				 
➤ Integrated Antenna Coupler	 ·			 
29. VHF System			100	
VHF Radio System:	 -			
> Three (3) Operational Frequencies in Main/Standby Configuration				
> Six (6) VHF-AM Transceivers shall be provided with the following				
characteristics:				
> Frequency Range: 118-136 MHz • Power Output: 50W				
> Adjacent channel power: > 70dBc				
> Receiver Sensitivity: 10dB SINAD(CCITT)	*			
> Channel Spacing: 8.33/25 KHz				
> Recording Output: VoIP ED137B Interface o Channel unto 99				
> Manufacturer Certified to ISO 9001, ISO 14001, OHSAS, etc.				
> Certified with EC Declaration of conformity, Type approval certificate,				
Declaration of conformity, etc.				
➤ Power Supply: 230V AC/50Hz and 24V DC	 			
➤ Duty cycle: 100% continuous operation				
➤ Three (3) Single VHF Cavity Filters	 			
> Three (3) sets of Antenna Change Over Unit, Surge Protectors are to be				
included or provide dual port VHF antenna as mentioned below	 			
➤ Radio shall have VoIP ED137B interface for Recording purpose				
> Three (3) Single/dual Port (VHF) Antennas;				
➤ Frequency range: 118-136 MHz				
Number of Elements:				
➤ VSWR: (typical 1.5:1)				
> Polarization: Vertical				 
> Pattern: Omni-directional				
➤ Minimum Power Capacity: 150W	 			

➤ Single Obstruction LED Light		l	Γ.	[		
> Lightning Rod			<del></del>			
30. Handheld Transceiver						
One (1) VHF-AM Handheld Transceiver shall include:			<u> </u>			
➤ Internal Battery						
> Battery Charger						
> Extra Battery						
> Heavy Duty Leather Case			·			
> Operating Frequency: 118.000 to 136.975 MHz						
> Number of memory channel: 200						
> Channel Spacing: 8.33/25 KHz					· · · · · · · · · · · · · · · · · · ·	
> Power Output: 5W (PEP), 1.5W (CW)						
> Reception Sensitivity: better than 0.8 uV for 6dB S/N						
31. Master Clock					<del> </del>	
One (1) GPS Timing System which shall include:			<b></b>			
➤ GPS Antenna/Receiver w/surge protection.						
> NTP Master Clock.		<u> </u>				
> Three (3) Secondary Clocks (controller) which shall include;						
> Red digits						
> Format: HH:MM:SS						
Character Height: 20 mm Height minimum						
32. MET Sensors						
All Sensors and MET Display shall be of WMO and ICAO Standard.						
Sensors(Relative Humidity and Temperature Sensor, Wind Speed and				<del></del>		
Direction Sensor, Pressure Sensor)						
One (1) Ultrasonic Wind Direction/Speed Sensor shall have the following						
minimum specifications:						
> Wind Direction Sensor:						
> Range: 0- 360degrees						
> Resolution: 0.01°						
> Accuracy: ±2 degrees						
33. MET Display						
• 5.7" TFT LCD display with touchscreen, designed for viewing real-time						
wind, pressure, and temperature weather information in accordance with						
ICAO and WMO standards and recommendations.						
Wind Speed and Direction: 2 Minute Average, 10 Minute Average, 10						
Minute Maximum, and 10 Minute Minimum.						
Temperature and Humidity-Air Temperature, Dew Point, Relative Humid,					<del></del>	
Pressure-Air Pressure, QNH, QFE, etc.						
34. Signal Light Gun						
Completely portable and cordless	<u> </u>	<del></del>				
Press button colour selectors ensure the correct color is activated						
RED/WHITE/GREEN						
LED light cluster to provide in excess of 50,000 hours of use, with minimal						
power consumption						
Lithium battery including charger						
- manant agent training and dat						

8 hours continuous use on one charge				
Power Consumption not more than 100W	 <del></del>	 		
Range greater than 4kM		 		
Kange greater than 4kW     Light Intensity: More than 12000 cd(White), 10000 cd(Red), 12000				
cd(Green)				
Power Supply 230V AC				
Lamp: Dichroic reflector Lamp		 		
35. Binoculars				
• Diameter: 50 mm		 		
Magnification: 4 x				
Magnification: 4 x     Day/Night application	 	 		
Battery standard				
Accessories included: carrying case  26. Fire Evaluations and accessories included: carrying case		 		
36. Fire Extinguisher				
ABC Multi-Purpose Stored Pressure Dry Chemical	 	 	<del></del>	
37. Rotating Beacon	 <u> </u>			<u> </u>
To be mounted on the roof of the ATC Mobile Tower		 		
Visibility: up to 48 Km (30 miles)	 	 		
• RPM: 12		 		
Lamps: Two sealed beam 500W PAR 56    ■ Beam Width: 5° wide x 32°				
high		 		
Power supply: 240 Vac, 50 Hz	 			
38. Crash Alarm		 	e William Committee	
Siren shall be mounted on the roof of the ATC Mobile Tower	 			
Power Supply 240V AC		 		
Sound Level: minimum ≥112 dB	 		<u> </u>	
IP43 IP Rating	 			
Operating Temperature -30°C to 40°C				
Crash alarm local switch shall be mounted in the console				
39. Accessories	14.			
One (1) lot sunshades, Solar Grey	 			
One (1) lot window covers for protection during transport				
One (1) First Aid Kit				
One (1) Smoke detector)				
One (1) Ladder (affixed to tower cabin for roof access)	 			
One (1) Additional Ladder for maintenance purposes				
40. Tools				
One (1) Tool Kit to maintain the CNS/ATM Electronic equipment shall be	 -			
provided.		 		
41. Test Equipment				
One (1) Portable PC; Last generation (Core i5, 8GB RAM, 512 GB SSD).	 			
One (1) Adapter Kit; for HF/VHF Electronic equipment.				· · · · · · · · · · · · · · · · · · ·
One (1) Attenuator Kit; for HF/VHF Electronic equipment.	 <del></del>			
One (1) RF Cable Kit; for HF/VHF Electronic equipment.	 		··	
- One (1) The Capital National Partit Electronic Equipment.	 		L	

INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT	T			
1. Integration service			 	 
The supplier shall deliver as one fully integrated mobile control tower		· · · · · · · · · · · · · · · · · · ·		
mounted on a 4x4 or 6x6 or suitable size (for their propose Mobile ATC				
Tower) prime mover (Vehicle) with trailer-mounted genset for inspection by				
TIAC.				
The supplier shall conduct Factory Acceptance Testing (FAT) in the			 	 
presence of TIAC representatives.				
2. Training Program				 
It must cover the operator, maintenance, and mission support training			 	 
requirements.				
Supplier shall address all training and training support elements to				
operators and maintenance personnel involved on the operation of the				
Mobile Air Traffic Control Tower.				
Training should be at least in English and shall combine theoretical and			 	
practical techniques.				
	<del></del>			 
• Trainings must be completed within thirty (30) days. It will at least include:				
> Technical Operations and Maintenance Training for Air Traffic Safety				
Electronics Personnel (at least 2 participants).				
> Technical Operations and Maintenance Training for Mechanical				
Personnel (at least 2 participants).				
> On-site Operation and Maintenance Training (at least 4 participants).				
3. Ground Support Equipment (GSE		-	 	
The GSE must be provided for servicing, handling and maintenance of				
the Mobile Air Traffic Control Tower in both Organizational and Field				
Levels. These are:			 	 
a. Field Maintenance Tools				
b. Special Tools			 	
c. Test Diagnostic Equipment			 	 
4. Technical Manuals			 	 -
Original copy and electronic copy of the following technical manuals:				 
> Operators manual				 
> Wiring diagram manual				
> Maintenance Instruction Manual				 
➤ Illustrated Parts Catalog				
Consumable Material List			 	
> Illustrated Tools and Equipment Manual			 	
> Ground Service Equipment (GSE) Technical publication				
➤ General Information and Servicing Manual		<del></del>	 	
> Equipment Inventory List			 	
> Other Technical Orders and ATC Equipment System Manuals			 	
5. Spare Parts Program				

• The Supplier shall provide spares sufficient for two (2) years of operation						
with an annual utilization rate of one hundred (100) operating hours. Fast-						
moving items and consumables shall be delivered together with the						ļ.
GOODS.						
• The supplier shall provide the complete list of TCI, RCA, fast-moving				1		
items and consumables during the Opening of Bids (Price List to be						
included in the financial documents).						
6. Product Support Information						
As part of the product support information, publications and technical						
bulletins shall also be provided as long as the Philippine Army is operating				1		
the Mobile ATC Tower. It shall include among others;						
> Information Bulletins						
> Service Bulletins						
➤ Modification Bulletins						
7. Interim Contract Support			<u> </u>			
• The Supplier shall be required to have an Interim Contract Support (ICS)						
to ensure the proper operation, maintenance, and trouble-shooting upon						
acceptance of the delivery of the Mobile ATC Tower.						
• One (1) technical representative from the proponent to cater the in-						
country services for the Philippine Army is required upon acceptance of the						
project and will end one (1) year after its final acceptance. Same tech rep						
will work as a Maintenance and On the Job Training (OJT) Consultant of						
our maintenance crew. The in-country technical representative will work						
five (5) days (Monday – Friday) a week for at least four (4) hours a day and						1
make himself available on weekends (Saturday and Sunday) and holidays			İ			
whenever his services deemed necessary.			ŀ			
-				ļ		
8. Warranty Program						
• The supplier shall cover Two (2) years warranty period for the Mobile						]
ATC Tower System, which will commence upon acceptance of the Mobile				1		
ATC Tower System.  The technical representative shall correct any discrepancy due to material						
failure/factor expeditiously, which should not exceed sixty (60) days upon						
receipt of notice. If sixty (60) days turnaround time is not possible, the						
supplier is under obligation to replace the affected component with a new						
one or provide a temporary replacement in order not to hamper the						
one or provide a temporary replacement in order not to namper the operational requirements of the AFP.						
10. Life Cycle Management Information				<del> </del>	<del></del>	
Information/ references/ software regarding Mean Time Between Failures						
(MTBF), lead time, shelf life, total life, repairable cycle assets, as well as						
information for repair and overhaul of components to include repair		•				
turnaround time and cost shall be provided. Likewise, the proponent shall						
also identify all the authorized repair facilities, local and abroad, where the			1			
litems would be repaired or overhauled.						
11. Support Equipment and Structures						
i i. Support Equipment and Structures	· · · · · · · · · · · · · · · · · · ·					

<ul> <li>Supplier shall provide information regarding the support equipment and structures required for the maintenance and operation of the Mobile ATC Tower System. Support equipment may include test equipment for the Mobile ATC Tower System and field equipment. On the other hand, support structures shall include, among others, system test facilities.</li> </ul>						
12. Spares and Components Storage Procedures						
<ul> <li>Supplier shall provide storage procedures of sensitive spares and</li> </ul>						
components.						
Aircraft Refueler Truck		AvnR (P), PA	1	lot	15,286,535.00	15,286,535.00
BASELINE REQUIREMENT						
1. Aircraft Refueler Truck						
Diesel engine.						
<ul> <li>turbo charged engine straight six or V8 engine</li> </ul>						
type.						
Automatic Transmission or manual transmission.						
Euro-IV compliant.						
FAA compliant.						
Left hand drive vehicle.						
<ul> <li>Minimum 5,000 liters (1,320 gallons)capacity.</li> </ul>						
Aluminum or Stainless-Steel fuel tank.						
<ul> <li>Dispensing system 50 GPM (185LPM) dispensing system w/ one reel</li> </ul>						
for overwing fueling.						
<ul> <li>Overwing nozzle w/ 100-mesh strainer, grounding cable, swivel inlet</li> </ul>						
and dust cap.						
• Filter separator canister style w/ air elimination, pressure relief and						
spring-loaded drain.						
• Temperature kit TCS meter w/ electronic register head and						
temperature compensation kit.						
<ul> <li>Loading system bottom load system w/ dual high level shut-off.</li> </ul>						
<ul> <li>Switches and gauges Pump pressure gauge, differential pressure</li> </ul>						
gauge w/ test valve, interlock system, pressure control system master						
disconnect switch, emergency shut-off system, static ground reel.	~					
<ul> <li>JIG secondary high level shut-off interlock status lights, and 4-liter</li> </ul>						
visual sampler per JIG.						
INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT						
1. Integration service						
The supplier shall deliver the equipment to the unit and performed the						
initial safety check and test evaluation.						
The supplier shall provide the FAA approved Certificate upon the						
transfer of equipment.						
2. Training Program						
It must cover the operator, maintenance, and mission support training						
requirements.						

<ul> <li>Supplier shall address all training and training support elements to</li> </ul>				i
operators and maintenance personnel involved on the operation of the	1			1
Aircraft refueler truck.				
Training should be at least in English.				
<ul> <li>Supplier shall perform the training at Aviation Regiment's</li> </ul>				
Headquarters.				
a. Operators Training				
All operators shall undergo the provided free training of the supplier				
and also undergo CAAP approved training or the equivalent of Petron fuel				
handling training for fuel truck.				
b. Maintenance/ Specialist Personnel Training				
Maintenance NCO shall undergo maintenance training provided by the				
supplier				
3. Ground Support Equipment (GSE)				
The GSE must be provided for servicing, handling and maintenance of				
the Aircraft refueller truck These are:				
a. Field Maintenance Tools		 		
b. Special Tools				
c. Test Diagnostic Equipment				
4. Technical Manuals				
Original copy and electronic copy of the following technical manuals:				
- Operators manual				
- Wiring diagram manual		 	<del></del>	
5. Spare Parts Program				
• The Supplier shall provide spares sufficient for two (2) years of				
operation.				1
6. Product Support Information				
As and of the graduat appared information publications and to be incl				
As part of the product support information, publications and technical     As part of the product support information, publications and technical				
bulletins shall also be provided as long as the Philippine Army is operating				
the Aircraft Refueller Truck. It shall include among others;				
- Information Bulletins				
- Service Bulletins		 		
- Modification Bulletins				
7. Interim Contract Support				
The Supplier shall be required to have an Interim Contract Support				
(ICS) to ensure the proper operation, maintenance, and trouble-shooting	1			
upon acceptance of the delivery of the Aircraft refueller truck.		 		
8. Warranty Program				
The supplier shall cover Two (2) years warranty period for the Aircraft				
refueller truck, which will commence upon acceptance of the fuel truck.				
retuener truck, which will confirmence upon acceptance of the fuel truck.	 			

	T	Г				
The technical representative shall correct any discrepancy due to						
material failure/factor expeditiously, which should not exceed sixty (60)						
days upon receipt of notice. If sixty (60) days turnaround time is not						
possible, the supplier is under obligation to replace the affected component						
with a new one or provide a temporary replacement in order not to hamper						
the operational requirements of the AFP.						
9. After Sales Support						
<ul> <li>After sales services shall include supply of spares for the Aircraft</li> </ul>						
refueller truck and components, interim contract support, technical support,						
and warranties. Technical support shall include query and answering (to						
include open/free access to online information) and assistance on defect						
investigation while the Philippine Army is operating the Aircraft refueller						
truck.						
10. Life Cycle Management Information						
Information/ references regarding Mean Time Between Failures						
(MTBF), lead time, shelf life, total life, repairable cycle assets, as well as						
information for repair and overhaul of components to include repair						
turnaround time and cost shall be provided. Likewise, the proponent shall						
also identify all the authorized repair facilities, local and abroad, where the						
items would be repaired or overhauled.						
						00 570 000 00
Firetruck with Foam Tank		AvnR (P), PA	1	lot	20,570,000.00	20,570,000.00
BASELINE REQUIREMENT						
1. Engine						
<ul> <li>Type (Diesel Fed, Turbo Charged In-line six (6) cylinders at least,</li> </ul>						
Direct Injection)						
<ul> <li>Cooling System: Water Cooled</li> </ul>						
Power Output: at least 240 horsepower						
Euro-IV compliant or Euro V compliant						
Equipped with EGR (Exhaust Gas Recirculation) system.						
2. Chassis						
<ul> <li>The chassis is 4x2, consisting of two (2) channels fastened together by</li> </ul>						
cross members and provided with supports prepared to mount all vehicle						
components. Turbo charged diesel engine, manual transmission with						
power take off (PTO) which allows the pump drive to engage.						
Dimensions:						
Length: not to exceed 7,800mm		(*)				
Width: as per manufacturer's standard						
Height: as per manufacturer's standard						
<ul> <li>Gross Vehicular Weight Rating (GVWR): as per manufacturer's</li> </ul>						
standard						
Under Chassis:						
Steering:  Leadle recition Left Hand Drive						
Handle position: Left Hand Drive						

Type: Re-circulating ball with integral power assisted by oil	 Γ				<u> </u>
Steering Column: Tilt and telescopic     Transmission and Clutch	 				
• Manual	 				
Speed: Six (6) forward and one (1) reverse	 				
Clutch Type: as per manufacturer's standard	 				
Brake System (Shall be equipped with Anti-lock Brake System (ABS)					
Service Brake: as per manufacturer's standard					
Parking Brake: as per manufacturer's standard					
Auxiliary Brake: as per manufacturer's standard					
Wheel Configuration: 4x2					
Axles and Suspension					
Front Axles: as per manufacturer's standard					
Front Suspension: as per manufacturer's standard					
Rear Axles: as per manufacturer's standard					
Rear Suspension; as per manufacturer's standard					
Wheels and Tires: The wheels and tires shall be able to withstand the					
load during the service of the vehicle and not exceeding its axle loading					
Front: as per manufacturer's standard					
Rear: as per manufacturer's standard				7	
Disc Wheel: as per manufacturer's standard					
Spare: Spare wheel equal to front					
No. of Wheel Stud: as per manufacturer's standard.					
Front: Single					
Rear: Double				· · · · · · · · · · · · · · · · · · ·	
Tire Accessories					
Flaps and Tubes (for all tire sets)					
Mud Guards (for all wheel)	***			*	
• Frame: The chassis frame is provided with the adequate cross					
member without the engine supports and is designed to support the gross					
weight and load of the fuel, the body, the power supply and all other					
equipment under the specified operating conditions.					
The bumper shall be mounted to the front of the frame structure.					
Type: "H" type and ladder frame with channel sectional side rail and					
cross members					
Size: as per manufacturer's standard					
Front and Rear bumper as per manufacturer's standard	 				
Front and Rear towing eyes and hook					
Rust proofing/ Undercoating provided	 				
3. Cabin	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 X 41			
[4: Annii			<u> </u>		

<ul> <li>Double cab – Two (2) persons in front and four (4) persons in rear</li> </ul>					
cabin. The manufacturer has an option to separate the cabin into	İ				
independent fully enclosed drivers compartment and crew compartment					1
each to be served by a service door on both sides. A separate crew		ļ			
compartment prohibiting direct voice communication shall require a two-					
way voice intercom system.			ļ		
<ul> <li>Adequately insulated against noise, vibration, and tropical temperature</li> </ul>					
range.		ļ	1		
The cabin shall have a total of four (4) service doors, composed of two					
(2) on each sides serving each row.					
• The doors of the cabin shall have four (4) doors with wide opening					
angle. Each door shall have a window operated by electric or manual	1				
means.				 	
Cab suspension and Tilt system: as per manufacturer's standard. In					
case of independent cabin the driver's compartment shall only be provided.					
All steel welded construction with safety zone design.					
Heavy duty rubber matting.					
AM/FM Radio with external antenna.					
<ul> <li>UHF Digital Mobile Radio, 380 – 400 MHz frequency.</li> </ul>					
<ul> <li>Three (3) units UHF portable radio, 380 – 400 MHz frequency</li> </ul>					
4. Fuel Tank					
Capacity: ≥ 200 Liters					
Material: Made of pressing steel.					
Cap: Equipped with key lock and impress with the words Diesel fuel.					
5. Power Supply System					
• The battery is fitted in the position to be assessed easily. All electric					
circuit has separate fuses and they are grouped into the common box on				•	
the dash panel.					
Alternator: as per manufacturers standard					
Battery: 2 x 12V 100AH (minimum)					
6. Driving Console					
• The main console, styled to reflect the clean modern lines of the					
interior, positioned centrally and forward of the driver and will contain					
necessary information and facilities relating to automotive.			L		
The gear shift, pump drive and hand brake controls should be located					
within a console adjacent to the driver. The dashboard shall be equipped					
with all necessary gauges, pilot lamps and switch.					
Switches/Control					
As per applicable manufacturer's standard.					
Equipment compartment as per manufacturer's standard.					
Warning light					
Strobe light					
PTO Engage					
Gauges as per manufacturer's standard.					

Monitor Meters as per manufacturer's standard.		<u> </u>		 ſ	
Lights, Indicator and Alarm.		<u> </u>		 · · · · · · · · · · · · · · · · · · ·	
As per manufacturer's standard.				 	
Reverse Audible Alarm (external)				 	
		<u> </u>			
Open roller shutter indicator light					
7. General Built-Up Body Features				 	
The apparatus body frame structure shall be made of stainless 304					
square tube with 0.120 inch minimum wall thickness constructed of into a					
superstructure by means of bolts and nuts or welding or combination of					
both.				 	
<ul> <li>The apparatus body design shall be rugged with suitable ventilation</li> </ul>					
and good visibility to front, sides and rear.				 	
<ul> <li>Panel of the superstructure is made of dull finished gauge 18 stainless</li> </ul>					
SS304 sheets or gauge 18 aluminum connected to the superstructure					
frame by means of metal glue or riveting or welding or bolts and nuts or					
combinations thereof.					
All horizontal surface, steps and top deck, etc. shall be covered with					
chequered aluminum plates that are slip resistant. The roof/top deck of the					
superstructure and tank shall be provided with non-skid aluminum plate					
having thickness not less than 4.0mm.				 	
<ul> <li>Access ladder and/or steps shall be mounted on the rear side of the</li> </ul>					
body.					
The pump compartment shall be at the rear portion of the body.					
The lockers on the left Hand Side and Right Hand Side of the body					
shall have roller shutters and/or doors. Suitable lockers having adequate					
volume or space shall be fitted for keeping the equipment and accessories.					
The roller shutter shall be constructed from aluminum extruded slats					
which have a flexible seal between each slat for proper sealing of the door.					
The roller shutter shall be equipped with a lift bar style latch mechanism					
which will latch at the bottom of the door mounting extrusion. The roller					
shutter assembly shall be furnished with a spring loaded, counter balance					
assembly to assist in door actuation.					
All lockers shall be properly illuminated.					
<ul> <li>All lockers shall be provided with 1/16 inch diameter drain holes</li> </ul>	•				
located at the bottom of each locker.					
8. Metal Finishing, Painting, Identification and Markings					
<ul> <li>Preparation: Prior to painting, all weldment of the body, pump</li> </ul>					
compartment and piping shall be inspected and cleaned, to ensure removal					
of any surface imperfections and to ensure superior paint adhesions to the					
metal. All compartment un-welded seams exposed to high moisture					
environments and all seams between adjoining pieces that are not					
continuously welded shall be sealed using permanent pliable caulking prior					
to paint finish to inhibit corrosion. The weldment shall be primed with epoxy					
primer.					
CRUMPAC				 ·	

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<ul> <li>Painting: All painting shall be conducted in an atmosphere controlled</li> </ul>		1	1 1			1
spray booths. The vehicle body, cab exterior, body compartment and a	11	1	1			1
exposed ferrous metal surfaces shall be painted on polyurethane painting	al .		1 1			
system using standard "YELLOWISH-GREEN" color polyurethane paint. A	λĺ					l i
clear coat paint finish shall be provided for greater protection on the quality		1	i I			1
of exterior paint finish.		ļ	1			
• The rear portion of the vehicle shall have a Chevron pattern (standard	1					
Emergency Red and White reflectorized sticker slopping downward at 45c			1			
langle)	1					l
All bright fittings shall be hard plated with chromium and surfaces shall	1					
be "Dull Finished".	`		1 1			
Logos and markings shall be made of prismatic tape engineer grade			† †			
reflectorized sticker; and	1		1			
	<del> </del>		<del>                                     </del>			
Marking's design and location shall be subject to AvnR, PA standard.					•	
9. Water Tank	<del> </del>	<del> </del>	<del> </del>		· · · · · · · · · · · · · · · · · · ·	
The water tank shall be fully protected with the superstructure of the	<u> </u>	<del> </del>	<del>                                     </del>			
vehicle. It should be cradled, cushioned and spring-mounted.	1					
Capacity: 1000 gallons capacity with provision for expansion and	d		<del> </del>			
Imoving water.	1					1
Material: Stainless steel 304	<del> </del>	<del> </del>	<del>                                     </del>			<u> </u>
Thickness: ≥5mm (tank shell and partition plate)	<del> </del>	<del> </del>	<del>                                     </del>			
Mounting: Torsion free design on strong rubber	<del> </del>		<del> </del>			
Nounting: Torsion free design on strong rubber						
Manhole: 450mm diameter (for top filling, maintenance and inspection)						
Drain Outlet: Drain outlet shall be located behind the rear axle.		<u></u>				
<ul> <li>Piping: Overflow 3 inch, water supply 2.5 inch, water refilling 2.5 inch</li> </ul>	,					
water suction 5 inch, water drain 2 inch.			ļ			
Baffle plate: Provided with baffle having ≥4mm thickness.						
<ul> <li>Detachable water tank equipped with a method for lifting or removing</li> </ul>						
the tank from the chassis.						
Tank level gauge: Glass tube type or Electronic Type						
10. Foam Tank						
<ul> <li>The foam tank shall be fully protected within the superstructure of the</li> </ul>			i i			
vehicle.						
Capacity: 200 Liters						
Material: Glass Reinforced Fiber (GRF) or Polypropylene Plastic (PP)			]			
Thickness: 6mm for GRF or 12.5mm for PP		1				
					······································	***
Manhole: 200mm diameter (for top filling maintenance and inspection)						
Piping: as per manufacturer's standard						
Tank level gauge: Glass tube type or Electronic type						
11. Water Monitor			<del>                                     </del>	-		
The wheel operation type monitor is permanently mounted on the top		<u> </u>				
deck of the rear body.						
door of the real body.	L	l	<b></b>			L

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The vertical and horizontal travel is controlled by hand wheel and worm						
gear drive. Inside located gear box protects gear from dust and other dirty						
materials.						
Material: Cast Iron						
Movement: Vertical -40o up to +80o, Rotation 360o						
Connection:						
Inlet: 2.5 inch diameter						
Outlet: 2.5 inch diameter						
12. Nozzie						
Lightweight						
Flow rate: 1900 L/min or 500 gals per min.						
Material: Aluminum		***			*	
Surface: Black hard anodizing						
Connection: 2.5 inch (female thread)				-		
Minimum Shooting range: 60m horizontal, 24m vertical.						
13. Fire Pump						
The pump shall be mounted on a common frame located at the rear						
portion of the body.		;				
The pump shall be powered by the vehicle's engine via a full torque.						
clutch independent Power Take Off (PTO) and balanced propeller shaft, for						
operation while it is stationary.  • Pump engagement control shall be located inside the cab provided						
with appropriate warning lights and label.  ISO Certified Manufacturer of Fire Pump	-1					
Type: Centrifugal, two (2) stage						
Maximum discharge: Low pressure 3000L/min@10 bar High pressure						
250L/min@40 bar						
Material:      Material:						
Pump body: Corrosion resistant anodized aluminum or bronze or						
stainless steel.						
High-pressure impeller: bronze or stainless steel.						
Low-pressure impeller: aluminum or bronze or stainless steel						
Impeller shaft: Stainless steel						
Shaft seal: Maintenance free mechanical seal.						
Drive:						
Full clutch independent Power Take-off (PTO)						
Sandwich type (between the chasis, engine and the transmission).						
Pneumatic driving mode by means of the electric solenoid valve.						
Design Features:						
Meets EN 1028 or NEPA or JIS Standards, Certificate of compliance to						
be issued by an ISO 17025 certified Third Party testing facility.						
Designed to pump both high and low pressure simultaneously.						
Lightweight, corrosion resistant construction.						
Automatic piston primer.						
Easily accessible high pressure strainer.				_ , , _ , ,		

Built-in high pressure relief valve.				
Automatic thermal relief valve.				
Warranty: Five (5) years warranty.				
14. Foam Proportioner				
• The round pump foam proportioner consist of an educator, foam	 			
proportioning valve and foam control (On/Off) valve.				
<ul> <li>When activated, a portion of the pump discharge flow is directed to the</li> </ul>				
educator. This flow causes a pressure drop on the educator which draws	ł			
foam concentrate through the proportioning valve.		 		
The foam mixes with water flowing through the educator and the foam				
solution flows through the pump and delivered to the discharge outlets.				İ
	 	 	· · · · · · · · · · · · · · · · · · ·	
Proportional Type: Round the pump proportioning system.	 	 		
• Foam Mixing Ratio: Preset positions for 1%, 3% and 6% foam				
proportioning.	 	 		
15. Pipe Works		 		· · · · · · · · · · · · · · · · · · ·
All pipe works and valves shall be manufactured from stainless steel				
<ul> <li>grade 304.</li> <li>All pipes shall be designed to enable valves and components to be</li> </ul>	 	 		
removed without having to detach other components and/or pipe work.		 		
All valves within the system are of the quarter turn type.				
16. Hose Reel				
<ul> <li>The one (1) unit hose reel should be mounted inside the body at the rear portion of the vehicle.</li> </ul>				ŀ
Type: Electric rewind and manual override.				
Hose: Non-collapsible rubber multi-lined ply.				
Hose bore/length; 25mm/30 meters				
Pressure rating: 40 bar		 		
Nozzle: Easy turn of fog and straight stream.		 		
17. Pneumatic Service Panel		 		
A service panel shall be located in the pump compartment, suitably		-		
marked and labeled including filters, air driers, lubricators and valves.				
Valves shall be activated by a pneumatic solenoid type switch. In case	 <del></del>			
of failure, valves shall be manually operated. All pneumatic piping should				
be nylon type and color coded.				
18. Control Devices	 	 		
Control Panel Cab: In addition to the standard motor vehicle switches,	 			
gauges and monitors, the following shall be provided:				
Warning Light Switch		 		
Fire Pump PTO and Lamp		 		
Water Tank Main Valve Switch and Lamp		 		
Working Light Switch			· · · · · · · · · · · · · · · · · · ·	
Siren Control Switch and Microphone				
Control Panel-Fire Pump Compartment:	 			
Tachometer / Hour meter	 <u></u>			
Indicator Lamp (high pressure)	 			
indicator Earry (riigh pressure)	 	 		

Indicator Lamp (low pressure)					
Indicator Lamp (main valve)					
Indicator Lamp (PTO)					
Compound Gauge					
Normal Pressure Gauge					
Tank Level Display (water)					
Tank Level Display (foam)					
Cooling Valve					
Main Valve Switch					
RPM Up Switch					
RPM Down Switch	-				
Deck Light Switch					
Compartment Light Switch					
Pressure Direction (high/low lever)					
Control Valves:					
Water Tank Main Valve – 5 inch pneumatic type					
Water Filler Valve with Screen Mesh Strainer – 2.5 inch, ball type					
Water Discharge Valve – 2.5 inch, non-return type					
Water Supplier Valve with Screen Mesh Strainer – 2.5 inch, ball type					
Suction Inlet Valve with Screen Mesh Strainer-4 inch, disc type					
Hose Connection Valve- 2.5 inch, ball type					
Water Tank Drain Valve- 2.5 inch, ball type					
<ul> <li>Pump Low Pressure Drain Valve – ¼ inch, ball type</li> </ul>					
Pump High Pressure drain Valve – ¼ inch ball type					
Monitor Discharge Valve- 2.5 inch, ball type					
Foam Tank Valve- 1 inch, ball type					
Foam Main Valve- 1 inch, ball type					
Foam Control Valve					
Foam Proportioning Valve					
Foam Eductor					
Foam Eductor Drain Valve- ¼ inch, ball type					
19. Electric Lights and Warning Devices					
Main Flashing LED Lights- 1 unit					
Body (side and rear) Flashing LED Lights- 6 units					
External Working Lights – 2 Units					
Locker LED Lights- Each locker					
Electric Motor Siren- 1 unit					
Public Address System-1 unit.					
20. Mirrors and Optical Reflectors			,		
Side Mirror- 1 pair					
Driver's Compartment Rear View Mirror- 1 set					
Front Bumper Mirror- 1 set					
Side Optical Reflectors -1 pair					
Rear Optical Reflectors-1 pair		· · · · · · · · · · · · · · · · · · ·			
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Rear Optical Reflectors-1 pair					
21. Fire Fighting Equipment					
<ul> <li>Hose 2.5 inch x 50 feet (double jacket)- 6 rolls</li> </ul>					
<ul> <li>Hose 1.5 inch x 50 feet (double jacket)- 10 rolls</li> </ul>					
Suction Hose- 4 inch x 2.5M -4 units					
Suction Hose (First and second strainer)- 1 unit					
<ul> <li>Wye connection 2 ½" to 1 1/2"- 2 pcs</li> </ul>					
• 1 ½" Hose Wrench -1 unit					
• 2 1/2" Hose Wrench -1 unit					
<ul> <li>Pistol Type Nozzle (1 ½ inch) – 2 units</li> </ul>					
<ul> <li>Pistol Type Nozzle (2 ½ inch) – 1 unit</li> </ul>		-			
Extension Ladder- 1 unit					
Axe -1unit Flathead axe and 1 unit pick axe					
Pick Pole -1 unit					
Traffic Cone- 6 pcs					
Bolt Cutter- 1 unit					
Hammer – 1 unit					
Wheel Block- 2 units					
INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT					
1. Tools (1 Set)					
Oil Jack – 20T capacity					
Spare Tire Handle					
Plier Set					
Wrench Monkey					
Open Wrench					
Tool Bag					
One (1) set Combination Wrenches					
Ratchets and accessories					
Screw Driver sets			 		
Auto LED work lights and flashlights					
Wheel Nut Wrench and Handle					
2. Warranty					
<ul> <li>All equipment / apparatus / devices made as component of the fire</li> </ul>					
truck shall have a warranty of at least three (3) years or 200,000 kms					
mileage whichever comes first, issued by the source- manufacturer.					
Three (3) years LTO Registration (RED PLATE)					
<ul> <li>Unit/s shall be registered under the name of: Aviation Regiment,</li> </ul>					
Philippine Army (AvnR, PA)					
Three (3) years TPL Insurance			 		
Three (3) years GSIS			 		
Comprehensive Insurance with AOG			 		
All other requirements stated in the BFP Technical Specifications					
Number: BFP-TC-2017-01 as of August 29, 2018 that is not included in the	İ				
Section VII: Technical Specifications shall form part of the same			 		

Ground Power Unit (GPU)	AvnR (P), PA	1	lot	9,643,202.76	9,643,202.76
BASELINE REQUIREMENT					
1. Engine					
Doosan 34, Diesel Fed					
<ul> <li>Turbo Charge, four (4) cylinder, four-stroke engine</li> </ul>					
Direct injection					
12 volt electrical system					
<ul> <li>121 HP, 90.3kW at 2000 rpm</li> </ul>					
Water cooled					
2. Capacity					
35 gallon fuel tank					
<ul> <li>3.4 gallon tank with filtering lubricating oil</li> </ul>					
1.41 gallon coolant tank					
3. Physical					
<ul> <li>Length: 113 ½ in (288cm)</li> </ul>					
<ul> <li>Width: 79 1/8 in (201 cm)</li> </ul>					
<ul> <li>Height: 74 7/16 in (189 cm)</li> </ul>					
<ul> <li>Weight: 4000 lbs (1814 Kg)</li> </ul>					
30 ft (9.1m) long (AC and DC) output cable					
<ul> <li>Tronair blue, powder coated and corrosion resistant</li> </ul>					
Trailer mounted with fifth wheel steering frame					
Front wheel scrub brake					
4. Alternator					
<ul> <li>Mecc Alte: Synchronous Generator</li> </ul>					
28.5 DCV maximum power outlet					
Speed 2000 rpm					
40 °C ambient Temperature					
<ul> <li>150 °C Temperature Rise</li> </ul>					
Class H, IP21 insulation					
Pre-lubricated single sealed bearing					
5. Power Requirement					
28.5 DCV maximum power outlet					
12V-14V Input Voltage					
6. Interface Types					
<ul> <li>Murphy MPC20 &amp; PV380 Digital Controller/Displays</li> </ul>					
7. Functional Interfaces and Features					

versatile applications. The ease of initial setup of the I/O does not leave the user feeling paralyzed when an input is needed for a specific function. This allows for quicker uptime and less headache while on the manufacturing floor or in the field  • Software Suite of display configuration tools. The software interface	
enables users to modify the display to their own specific needs.	
INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT	
1. Integration service	
The supplier shall provide the delivery of the said item to Aviation Regiment, Philippine Army at Fort Magsaysay, Nueva Ecija.	
The Supplier shall provide all the necessary documents from the	
manufacturer (Certificate, manuals, logbooks)	
2. Training Program	
It must cover the operator, maintenance, and mission support training	1
requirements.	
Supplier shall address all training and training support elements to	
operators and maintenance personnel for the safety procedures concerning	
use of the GPU in and around the intended aircraft at the intended aircraft	1
servicing location.  Training should be at least in English.	
Supplier shall pay the cost of training and its incidentals such as	
airfares, board and lodging, local transportation, subsistence allowance of	
trainees for all training programs connected with the Ground Power Unit	
acquisition.	
Trainings must be completed within thirty (30) days. It will at least	
include:	
a. Operators Training	
All operators shall undergo theoretical and actual training on the safety	
operation of the GPU.	
b. Maintenance/ Specialist Personnel Training	
Maintenance personnel shall undergo maintenance training of the GPU	
3. Maintenance Equipment	
The ME must be provided for servicing, handling and maintenance of	
the Ground Power Unit in both Organizational and Field Levels. These are:	1
a. Field Maintenance Tools	
b. Special Tools	
4. Technical Manuals	
Original copy and electronic copy of the following technical manuals:	

		r				
- Operators and Service Manual		<u> </u>	<u> </u>	<u> </u>		
- Maintenance Instruction Manual				<u> </u>		
- Illustrated Parts Catalog						
- Consumable Material List						
- Illustrated Tools and Equipment Manual						
- Tools and Equipment						
- Scheduled maintenance requirements						
- Other Technical System Equipment Manuals				<del> </del>		
5. Spare Parts Program	<del></del>					
<ul> <li>The Supplier shall provide spares sufficient for two (2) years of operation with an annual utilization rate of one hundred (100) operating hours. Fast-moving items and consumables shall be delivered together with the GOODS</li> </ul>						
The supplier shall provide the complete list of TCI, RCA, fast-moving items and consumables during the Opening of Bids (Price List to be included in the financial documents).  Product Support Information						
o. Product Support information						
<ul> <li>As part of the product support information, publications and technical bulletins shall also be provided as long as the Philippine Army is operating the Ground Power Unit. It shall include among others;</li> </ul>						
- Information Bulletins						
- Service Bulletins						
- Modification Bulletins			<u> </u>		······································	
7. Interim Contract Support			<b></b>	<b></b>		
The Supplier shall be required to have an Interim Contract Support (ICS) to ensure the proper operation, maintenance, and trouble-shooting upon acceptance of the delivery of the Ground Power Unit (GPU)						
One (1) technical representative from the proponent to cater the incountry services for the Philippine Army is required upon acceptance of the project and will end one (1) year after its final acceptance. Same tech rep will work as a Maintenance and On the Job Training (OJT) Consultant of our maintenance crew. The in-country technical representative will work five (5) days (Monday – Friday) a week for at least four (4) hours a day and make himself available on weekends (Saturday and Sunday) and holidays whenever his services deemed necessary.						
8. Warranty Program						
The supplier shall cover One (1) years warranty period for the Ground Power Unit which will commence upon acceptance of the unit.						
The technical representative shall correct any discrepancy due to material failure/factor expeditiously, which should not exceed sixty (60) days upon receipt of notice. If sixty (60) days turnaround time is not possible, the supplier is under obligation to replace the affected component with a new one or provide a temporary replacement in order not to hamper the operational requirements of the AFP.						

9. After Sales Support					
After sales services shall include supply of spares for the Ground					
Power Unit and components, interim contract support, technical support,					
and warranties. Technical support shall include query and answering (to					
include open/free access to online information) and assistance on defect					
investigation while the Philippine Army is operating the Ground Power unit					
(GPU)					
10. Life Cycle Management Information					
<ul> <li>Information/ references/ software regarding Mean Time Between</li> </ul>					
Failures (MTBF), lead time, shelf life, total life, repairable cycle assets, as					
well as information for repair and overhaul of components to include repair					
turnaround time and cost shall be provided. Likewise, the proponent shall					
also identify all the authorized repair facilities, local and abroad, where the					
items would be repaired or overhauled.					
11. Support Equipment and Structures					
Supplier shall provide information regarding the support equipment     index to the County Power Unit					
required for the maintenance and operation of the Ground Power Unit					
(GPU).  12. Spares and Components Storage Procedures					
Supplier shall provide storage procedures of spares and components.					
Helicopter Flight Training Device Level 7 (Flight Simulator)	AvnR (P), PA	1	lot	200,000,000.00	200,000,000.00
BASELINE REQUIREMENT					
1. Mechanical/Technical					
<ul> <li>Display system uses projection on a spherical screen with a nominal 9-</li> </ul>					
foot radius made of fiberglass					
<ul> <li>The Visual field of view is at 200° horizontal by 68° vertical.</li> </ul>					
<ul> <li>22 x 20 ft in dimension</li> </ul>					
a. Static load					
<ul> <li>Trainer in cueing system = 5000 LBS acting over six 10" x 12"</li> </ul>					
pads					
pads • Electronic, IG and I/O cabinet = 2000(500 LBS each)					
<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> <li>Visual system = 3500 LBS</li> </ul>					
<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> </ul>					
<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> <li>Visual system = 3500 LBS</li> <li>Instructor cab + steps (cueing system air tanks are under IOS floor) = 2500 LBS</li> </ul>					
<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> <li>Visual system = 3500 LBS</li> <li>Instructor cab + steps (cueing system air tanks are under IOS floor) = 2500 LBS</li> <li>Dynamic load</li> </ul>					
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<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> <li>Visual system = 3500 LBS</li> <li>Instructor cab + steps (cueing system air tanks are under IOS floor) = 2500 LBS</li> <li>Dynamic load</li> <li>Maximum 300 LBS acting on any one 10" x 12" area at 25 – 35 Hz at any given time.</li> <li>Flight Deck and Instructor Cab</li> <li>The flight deck configuration and layout is based on the aircraft.</li> </ul>					
<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> <li>Visual system = 3500 LBS</li> <li>Instructor cab + steps (cueing system air tanks are under IOS floor) = 2500 LBS</li> <li>Dynamic load</li> <li>Maximum 300 LBS acting on any one 10" x 12" area at 25 – 35 Hz at any given time.</li> <li>Flight Deck and Instructor Cab</li> <li>The flight deck configuration and layout is based on the aircraft.</li> <li>The hardware simulation of the aircraft cockpit includes all portions</li> </ul>					
<ul> <li>Electronic, IG and I/O cabinet = 2000(500 LBS each)</li> <li>Cueing system cabinet = 800 LBS</li> <li>Visual system = 3500 LBS</li> <li>Instructor cab + steps (cueing system air tanks are under IOS floor) = 2500 LBS</li> <li>Dynamic load</li> <li>Maximum 300 LBS acting on any one 10" x 12" area at 25 – 35 Hz at any given time.</li> <li>Flight Deck and Instructor Cab</li> <li>The flight deck configuration and layout is based on the aircraft.</li> </ul>					

• The authenticity of cockpit components, furnishings, controls, and						
indicators replicates the appearance of the aircraft components in						
accordance with the qualification standard.						
The cockpit assembly is mounted on a steel base frame.						
The cockpit shell may be constructed from fiberglass or from a real			ŀ			
aircraft fuselage and is attached to the cockpit base frame assembly that						
supports the flooring, controls, seats, panels, consoles, and other cockpit						
contents.						
Electronic instrumentation is simulated by using either commercial			i			
flat panel displays driven by graphics computers or actual aircraft displays.						
These displays incorporate realistic bezels with appropriate knobs and						
buttons.	<u></u>					
Mechanical indicators are simulated using either:					<del></del>	
a. computer graphic representation of the indicators, behind bezel cutouts						
b. mechanical servomechanisms controlled by computer						
c. in some cases, real aircraft instruments						
Flight controls are installed in the cockpit and connected to the						
Control Loading system.						
Cockpit and door window openings are the same shape and size as						
in the aircraft ensuring a correct visual image. Transparencies are installed.						
Access to the cockpit is from crew access doors and steps,						
otherwise, through the Instructor Cab.  • Crew seats are representative of the aircraft to the extent that they are						
adjustable in the same manner as the aircraft and allow the pilots to						
correctly set their seating position as in the aircraft. Seat belts and shoulder			l			
harnesses are provided.			İ			
A low-profile Instructor Operating Station (IOS) Cab is included,						
from which the instructor controls the simulated flight.						
The IOS Cab is mounted behind the cockpit on a base frame						
Low walls provide a semi-private workspace for the instructor and an		*				· · · · · · · · · · · · · · · · · · ·
eventual observer.						
• An IOS Desk is included, which provides a workspace for the						
instructor and the user interface with the IOS software.						
Seats are provided for instructor and observer.						
3. Flight and Powertrain Simulation						
The flight performance allows exploration of the flight envelope						
including hover, approach-tohover, and autorotation conditions.						
moraumy novem approximation of an autoromation contained of						
The aerodynamics simulates a classic six degree-of-freedom					į	į
model accounting for typical forces, moments, and velocities.						
The reference model is tuned to perform like the specific aircraft		İ		ļ		
by manipulating appropriate multi-dimensional coefficients and				ŀ		
forces.		I				

				<u> </u>
Forces from the main rotor system are derived by a blade element	]			
rotor model.			<u> </u>	
The rotorcraft model incorporates six degree-of-freedom sub-				
models for the main and tail rotors, aerodynamic surfaces, ground				
contacts (skids or struts with tires), and engines.			<u> </u>	
The model allows for the flight performance of the simulator to	İ			
encompass the entire flight envelope, including ground reactions,				
translational lift, autorotation conditions, retreating blade stall,	ŀ			
settling with power, and tail rotor failures.				
Forces and Moments representing aerodynamic surfaces				
(fuselage, tail surfaces, and other surfaces as necessary) are based				
off of forces in the wind and body axes.				
Ground effects during takeoff, hover, and landing procedures are		1		
modeled and affect lift coefficients and airflow conditions of the main	]	l		
rotor.			<u> </u>	
The instructor can control the simulated aircraft load through the				
IOS.			<u> </u>	<u> </u>
Center of Gravity (CG) changes automatically according to the				
changes in payload weight and fuel load during simulated flight.	[ ]			
The atmospheric model derives from parameters of the	1			
International Standard Atmosphere tables. Realistic values for static				
air temperature, true air temperature, density altitude, pressure	i			
altitude, density ratio, and air density derive from the aircraft's Mean				
Sea Level (MSL) altitude, instructor-entered temperature deviation	j j			1
from standard, and the local barometric pressure corrected to sea				
level.	<del></del>			
The instructor can control wind values to produce uniform				
changes (both speed and direction), wind gusts, wind shear	[ ]			
(microburst), and turbulence.				
Engine, transmission, and rotor simulation are representative of		ļ		
the aircraft in accordance with the qualification standard and data		1		
package.				
Engine starting is simulated during flight and ground operations.	1			
		<del></del>	<del></del>	<del> </del>
Engine transients are realistic and correct in trend and magnitude.	į į			
	<del></del>		<del>                                     </del>	
The engine control levers utilize simulated hardware. Look, feel,	1 1			
and range of operation are in accordance with the qualification	1			
standard and data package.	<del></del>			
The IOS includes controls to allow the selection of various	1			
failures which are part of the engine model. Failures include the				
following (turbine engine example):			1	I
			·	<del> </del>
a. Hot starts b. Ignition failure				

	<del>,</del>	· · · · · · · · · · · · · · · · · · ·	 		
c. Chip Detection					
d. Torque failures					
e. Temperature Gauge Variation				···	
f. Fuel failures					
g. Instrument failures					
h. Oil pressure variation i. Immediate or gradual loss of power					
• Engine/rotor thrust computations are a function of appropriate					
variables (RPM, torque, atmosphere, collective setting, and					
autorotation) and representative of the aircraft in its normal flight					
envelope.					1
• Engine and gear box oil pressures and temperatures are					
simulated.					
4. Systems Simulation					
Aircraft systems are simulated to allow the execution of training			 		
requirements.					
Cockpit environmental systems are simulated and have an appropriate					
effect on cockpit indicators and on the rate of ambient air flow into the					
cockpit.					
Actual heating or cooling of the cockpit is not provided.					
• The Stability Augmentation Systems (SAS), Autopilot, and Flight					
Director are included as per configuration, and are a fully functional					
representation of the aircraft systems.					
Aircraft radio and intercom communications systems simulations		*			
allow the realistic incorporation of communication procedures into training					
sessions.					
• Instructor and observer can hear transmissions made by the crew,					
as well as navigation station identifiers.					
• Installed cockpit controls and indicators associated with the aircraft's					
electrical system are operational.					
All circuit breakers found in the aircraft cockpit are represented in the					
FTD.					
Those circuit breakers which are associated with normal, abnormal,					
and emergency procedures are pullable by the pilot and "poppable" by					
the Instructor, with appropriate effects on the affected subsystems.					
The voltage and current of the engine-powered starter/generators					
are based on engine Revolution per Minute (RPM) and applied load.					
The state of battery charge level and voltage relies upon charge or					
discharge currents.					
All major electrical loads are modeled. The automatic representation					
of minor electrical loads may be omitted. The electrical loads from					
simulated components are based on the data package. The instructor can		l			
adjust the overall electrical load in order to simulate an overload.					
aujust the overall electrical load in order to simulate all overload.					
		-	 		

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The fire detection and protection systems simulation allows the		1 1		
appropriate checklist test procedures, the annunciation of simulated engine				
fires, and the activation of fire protection systems.				
• IOS controls include a "fire" setting for the engine and, a "reset"				
control to refill fire extinguishers.				
Primary flight controls appear and operate as in the aircraft.				
Secondary flight controls (rotor brake) are functional.				
• Fuel system simulation includes tanks, indicators, valves, pumps,				
and cockpit controls.	 <u></u>		 	
• Features of fuel system simulation include the following: a.				
Instructor control of total fuel quantity			<del></del>	
b. Control of valves and pumps in the system	 		 	
c. Depletion rate dependent on fuel paths including cross-feed	 			
d. Fuel weight and center of gravity computed and applied to				
aerodynamics				
Cockpit controls and indicators associated with the aircraft hydraulic				
system are functional.			 	
Under control of the Instructor, ice may build up on airframe and				
rotors resulting in performance degradation, and Pitot tubes resulting in				
erroneous airspeed indications.			 	
Cockpit instruments are driven to display conditions as calculated by				
the simulation software.  Visual and aural annunciators are simulated.	 		 	
Visual and aural annunciators are simulated.	 		 	
Warning systems found in the aircraft cockpit section are simulated				
• The landing gear system is simulated as appropriate for the aircraft				
type.				
• The brake system of aircraft equipped with wheel-type landing gear is			-	
simulated to allow realistic ground handling procedures.	 			
• Lighting controls functions as in the aircraft and the method of		ŀ		
illuminating indicators and panels is representative of the aircraft.			 	
Emergency lighting in the cockpit is simulated as in the aircraft.	 			
Exterior lighting controls, such as landing lights and strobes, provide				
proper indications.	 		 	·
The Pitot-static system is modeled using static and dynamic				
pressures derived from the equations of motion and IOS atmospheric				
settings.		<del> </del>	 	
The magnetic variation at the aircraft's current location is derived     the magnetic variation at the aircraft's current location is derived				
from a polynomial model applicable to the whole world.  Mechanical directional gyros drift with time, unless periodically		<del>  -</del>	 	<u> </u>
1				
realigned by the pilot.  Simulated Very High Frequency (VHF) receivers and indicators are				
provided to allow reception of localizer and glideslope stations. Operation				
of test and other modes are simulated.	ĺ			
Weather radar may be provided as an option.	 	<del></del>	 	
Treatier radar may be provided as an option.			 	L

• A radio altimeter is included, as per configuration, and provides indications of height above ground level.				
<ul> <li>As an option, a Traffic Advisory System (TAS) or Traffic and</li> </ul>	 <del></del>			
Collision Alerting System (TCAS) may be provided.	 	 		
Distance Measuring Equipment (DME) is provided     A Transponder is provided	 			
<ul> <li>Simulated Very High Frequency (VHF) receivers and indicators are provided to allow reception of Omni directional Range (VOR) beacons.</li> </ul>				
Automatic Direction Finder (ADF) receiver is provided				
A Global Positioning System (GPS) is provided as per agreed				
<ul> <li>aircraft configuration</li> <li>As an option, a Flight Management System (FMS) may be provided,</li> </ul>	 	 	· · · · · · · · · · · · · · · · · · ·	
per aircraft configuration.				
Maintenance computer operations are not simulated unless				
needed for specific pilot training requirements.			····	
<ul> <li>Relevant systems and power train malfunctions are simulated to</li> </ul>				
enable abnormal and emergency procedures of the aircraft.		 		
5. Navigation Simulation				
• The Navigation Simulation consists of software which monitors				
cockpit navigation controls and drives cockpit instruments and avionics.				
The navigation database is initially loaded with Jeppesen® data for				
the entire world				
6. Simplicity IOS Software		 		
<ul> <li>Simplicity™ is a Frasca developed COTS software suite provided at the Instructor Operator Station (IOS).</li> </ul>				
It provides the operator with control over the simulation and access				
to various training management and maintenance tools.  It includes large buttons for easy interaction via touchscreen, with	 	 		
functionality similar to that of smartphones.		 		
Simplicity has dark background colors to avoid excess light spill into				
the cockpit, with primary colors conveying specific meanings.		 		
<ul> <li>A scenario is an ordered list of actions in the widget bar which can be executed sequentially by the system.</li> </ul>				
Aircraft page allows injecting malfunctions for Avionics, Powertrain,				
and Aircraft Systems. It also allows actual "popping" the fully functional (not 2D or 3D mockups) Circuit Breakers that are installed, with appropriate				
response of the corresponding aircraft system.				
The Loading (Weight & Balance) page controls individual fuel and				
payload weights, or direct control of aircraft CG and gross weight through a				
fully interactive display				

<ul> <li>The Conditions page provides specific control over all atmospheric conditions relative to the selected airport. Those include visibility, winds, precipitation, icing, clouds, temperature and pressure, surface conditions (season, runway contamination, sea state), and time of day.</li> </ul>				
<ul> <li>The Storm page allows positioning a storm selected from eight typical patterns anywhere on the map, with appropriate effects in the visual system and on weather radar if installed.</li> </ul>	1			
<ul> <li>The Traffic page allows the operator to place air and ground traffic in the vicinity of the aircraft. A crash will occur if the traffic collides with the training aircraft (ownship).</li> </ul>				
<ul> <li>ATIS module is provided that simulates ATIS transmitters which can be tuned by the pilot. Messages can be generated automatically based on current environmental conditions, edited by the operator, or recorded with a microphone on some systems.</li> </ul>				
<ul> <li>ATC Chatter module is provided.</li> <li>Map page is provided that provides detailed graphical data concerning the current flight.</li> </ul>				
<ul> <li>Custom Reposition page is provided that provides a mechanism for positioning the aircraft to a location not associated with a station.</li> </ul>				
<ul> <li>Approach page is provided that provides a two-in-one view of an Instrument Landing System (ILS) approach, including a glideslope view and a localizer view.</li> </ul>				
<ul> <li>Monitor page is included that allows the operator to view one or more simulated parameters from an extensive list.</li> </ul>				
<ul> <li>Record/Replay page is also included that allows the operator to record flight data, save it to a file, or replay the recording in the training device with corresponding indications in the cockpit, visual, and on the IOS. The recording can also replay on an optional Frasca Debrief Station (FDS). Flights up to 180 minutes in duration can be saved.</li> </ul>				
<ul> <li>System pages are used to perform various tasks such as controlling environmental and audio volume, displays, any special tools, units, exceedances (collisions, landing gear loads, gloads, rotation rates), engine and simulator time tracking, and overall simulator readiness status, depending on installed hardware and software modules.</li> </ul>				
• Freeze Page is included to freeze the whole simulator, or some components like attitude, altitude, airspeed, fuel consumption, or battery drain.				
<ul> <li>SimAssist™ is provide which is a patent-pending adaptive software utility which helps pilots to reduce time to proficiency for pilots learning new tasks in FSTDs.</li> </ul>				
SimAssist™ somewhat simulates the hand of the instructor on the copilot flight controls, nudging them in the right direction and at the correct time, as done in real aircraft with dual controls.				

and other tasks requiring remote access to IOS functions.		<u> </u>				
7. Control Loading				1.0		
Electric Control Loading (ECL) system is a Frasca COTS design						
which provides realistic levels of resistance and inertia to the pilot controls			ĺ			
during all phases of aircraft operation.				<u> </u>		
Each primary pilot control connects through a precision mechanical						
linkage to a separate electrical actuator.				<u> </u>		<u> </u>
A 20,000 count per revolution position encoder is integrally mounted						
to the aft end of the motor shaft.						
A highly integrated digital servo drive and an Actuator Control						1
Module are used to control the BLDC motor. Each Actuator Control Module			1			
has bidirectional Ethernet communication with a Control Loading						1
computer, itself linked to the Host Computer.						
Software for the control loading system runs at a 3000 Hz iteration rate						
under the Windows operating system and follows object oriented			1			1
programming techniques.						
Control Loading system accounts for the significant forces that act on						1
the aircraft controls and include but are not limited to the following:			ļ			
a. Inertia						ļ
b. Trim effects						
c. Static friction d. Control stops						
e. Rate Damping					<u></u>	<del> </del>
f. Breakout force				ļ		ļ
g. Backlash (or deadband)						ļ
h. Hydraulics failure						ļ
i. Autopilot/SAS actuators						<b>↓</b>
The Control Loading system automatically boots up and performs self-						İ
test and auto calibration when commanded after power is applied to the						
system.						ļ
The Control Loading system is designed to ensure safe operation and						
minimize the potential for user harm.						<u> </u>
8. Sound Simulation						ļ
Simulation of significant aural cues is provided.						<u> </u>
Speaker placement in the cockpit is such that the location of the						İ
sound is similar to that in the aircraft.						<del> </del>
Communication equipment is simulated to allow two-way						
communications between the pilots and instructor.				L		<b></b>
Audio panels and cockpit controls for communications equipment						
are fully functional.	·					<b> </b>
Jacks for the instructor microphone and headphones are provided. A			1			
headphone jack is provided for the observer.						<b></b>
Sound Simulation System provides the following engine and				1		
environmental sound simulations that are applicable to aircraft make		I	l	I	1	1

a. Engine Spool-up					
b. Main Rotor Noise					
c. Fuel Pumps					
d. Hydraulic pumps					
e. Tire or skid screech					
f. Slip stream (varies in intensity with airspeed)					
g. Gear extension and retraction					
h. Environmental sounds				 · · · · · · · · · · · · · · · · · · ·	
I. Navigation tones				 	
I. Malfunction effects					
k. Aural warning tones					
I. Crash		<del></del>			
During the design phase actual sounds are recorded, digitally		<del></del>		 	
analyzed and sampled.			-		
A multi-channel amplifier boosts the audio sounds generated in the					
sound simulation system and drives speakers placed in the cockpit. The					
instructor can control the overall sound volume from the IOS.					
instructor can control the overall sound volume noin the 105.					
• Sound simulation also generates and presents to the audio					
distribution system aural indications, warnings, and annunciations.					
<ul> <li>Communications systems permit simulation of normal radio</li> </ul>					
communication between the pilot and copilot in the cockpit and the					į
instructor who may simulate either Air Traffic Control communications or					Ī
other aircraft communications.					
Instructor's microphone can be set to "hot" at all, times.					
• The observer receives all audio transmissions from the pilot, copilot,					
and instructor. Configuration files set who the observer will be able to					
speak to.					
Communications systems are compatible with helicopter headsets		-		 	
and microphones.					
9. Visual System					
J. Visual System				 	
Display system uses projection on a spherical screen with a nominal 9					
foot radius made of fiberglass internally structured to provide rigidity. The					
display is internally coated with a seamless matte off-white finish.					
The display utilizes up to 8 low-maintenance laser-phosphor					ļ
projectors to display the image with an average surface resolution less					
than 2 arc-minutes with a brightness more than 3 ft-L Projectors have a	ļ				.
1920 x 1080 or greater pixel resolution.					
The projectors are mounted on adjustable plates affixed on a steel					
framework above the structure.					İ
The diameter of the screen sphere is large enough to create less than				- ' ' ' - ' - ' - ' - ' - ' - ' - ' - '	
8° of geometric error between visual system design eye point and either					
pilot or copilot eye point.					
[pilot of copilot eye point.		l		 	

	 <del></del>		
• Image Generator (IG) is provided which consists of proprietary	1		
software to generate the scenery and is based on TruVision Global™			1
technology			 
Scene is generated at runtime from available data sources including			1
vector data, elevation data, hydrography data, 3D models, and geo-			1
referenced satellite imagery.			
<ul> <li>Representative terrain is generated in real-time anywhere in the world</li> </ul>			
based on 1-km resolution geo-specific data.			
At low altitudes, the terrain renders with micro textures for improved			
low altitude cues, especially useful for hovering rotorcraft.			
Coastlines are included in the default set of source data with			
worldwide accuracy of 100-meter resolution.			
<ul> <li>The ocean supports a 3D sea state, with 6 sea state levels, and water</li> </ul>			
reflections from the sun are supported.			
• The IG software supports 256 levels of transparency for			
atmospheric effects, with an adjustable visibility range of 175 km.			
Ground fog is supported with the ability to adjust visibility distance, fog			
height, and coverage amount.			
Two cloud layers can be enabled simultaneously with selectable base			
and tops.			
• Cloud coverages of Overcast, Broken, Scattered and Few are			
supported.			
• Lightning bolts with associated flash are supported for the overcast			
cloud type.	 		
• Falling rain and snow of variable intensity are also supported,			1
including the effects of wind and speed of the aircraft.			
Rotorcraft white out and brown out conditions are supported.			
The visual effect of the rotor wash when flying low over water and		•	
appropriately encoded terrain (such as snow or dirt) is displayed.	 		
Variable time of day and discreet day, dusk, night conditions are			
simulated, for a given date set by the instructor.	 		
The IG software supports season-correct representations for the			
sun, moon position, moon phase, and stars. Illumination of the scene by the			
moon varies depending on moon phase.	 		
A winterized mode can be selected that switches in snow covered			1
terrain and airport surface textures which are automatically generated from			
the normal appearance texture.	 		
IG support for mission functions such as line-of-sight, height-above-		ł	
terrain, height-of-terrain, and collision is supported.	 		
Collision detection with buildings, trees, and power lines is	İ	- 1	
supported.			
IG provides worldwide coverage that includes terrain, geotypical			
imagery, and airfields.			
It has a default scenery that contains:			
a. Worldwide Terrain Elevation based off of 1 km resolution.	 	I	

b. Worldwide geotypical imagery based on land classification data of at						
least 300 meter resolution						
c. Worldwide coastlines based on 100 m resolution data. d. Runways				ŀ		
and taxiways for every airfield in the Jeppesen database (over 10,000		i				1
airfields).						
e. Airfields are generated with representative runway surface types,						
runway markings, runway lighting, approach lighting systems, and PAPI /	1					
VASI systems.						
• For maritime scenes, ships include the ability to pitch, roll and heave						
with the sea state set by the instructor						
The IG software allows the instructor to add static objects such as						
oil rigs to the scene						
A high-detail helicopter Missions Database is furnished.					<u> </u>	
• Imagery has a resolution of approximately 1 m and elevation has a 1						
km standard resolution for the entire state.						
10. NVG Options						
The Flight Training Device cockpit (lights and displays) and IOS Cab						
may be filtered and modified to permit the use of real night vision goggles						
(NVGs).						
11. FLIR Options						
<ul> <li>As an option, a gimbaled Forward-Looking Infrared (FLIR) system may</li> </ul>						ļ
be simulated for display on a dedicated monitor, together with a hand						1
controller.					~~~	
12. Vibration (option 1)						
The qualification standard mandates a system to provide characteristic						
helicopter vibrations to the pilots.						
<ul> <li>In the vibration system, the steel frame supporting the cockpit is</li> </ul>						
loosely connected to the floor via elastomeric pads.						
The design of the system provides vibrations up to 2000 RPM or 33.3						
Hz.						
The Vibration System can simulate:						
a. Main rotor vibration						
b. Effective Translational Lift (ETL) shudder						
c. Vortex ring vibrations						
d. Ground contact						
e. Ground skidding						
f. Vertical ground reaction force						
g. Abnormal vibrations		· · · · · · · · · · · · · · · · · · ·				
13. Motion Cueing Systems (option 2)						
The Motion Cueing System (MCS) provides limited motion in 6						
Degrees of Freedom to create both cueing and vibration						
The system capitalizes on the fact that human body motion sensors						
(inner-ear, muscle & joints, and skin contact pressures) register motions						
			. I			
within milliseconds compared with the corresponding visual cues.			1			1

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The cockpit frame is connected to the floor through 3 pneumatic and 6			
electric control actuators.	 		
The three pneumatic actuators are pressurized so as to bear most of			
the static weight of cockpit base, cockpit interior, and pilots.	 	 	
• The six electric actuators are arranged as a Stewart Platform to			
provide 6 Degrees of Freedom like a Motion Base, but with smaller stroke			
amplitude (sixinch) and much higher frequency response.	 	 	
A Motion Cueing System PC computes what amplitudes and			
frequencies to command the actuators with, as a function of equations of			
motion (accelerations and velocities) and any special effect vibrations			
provided by the Host PC.		 	
Controllable in amplitude and phase up to 60 Hz (compared to 10 Hz)			
for a Motion Base) and can reproduce frequencies above 200 Hz, albeit			
with very low amplitude.		 	
The system provides cueing response times that are better than for			
a Helicopter Level D Full Flight Simulator (FFS) equipped with a vibration			İ
system atop the motion base, and a similar vibration performance.			
Thanks to its compact size, the Motion Cueing System has			
significantly fewer facility requirements than for a FFS, as well as a			
lower cost.			
14. Computer and Interface System			
The simulation runs on Computer and Interface System computers			
linked together through data communications interfaces.			
A modular IO system based on CAN-Bus provides the interface			
between the various cockpit components and the Host computer.			
A Remote Diagnostics utility is provided.			
Buyer is responsible for internet connection			
The computer systems have the following features:			
a. Standard computer architecture			 
b. Intel® Core™ based processor			
c. 4.0 Gigabytes RAM minimum			
d. 250 Gigabyte hard drive minimum			
e. CD/DVD Burner			
f. 10/100/1000Mb Ethernet adapter			
g. Windows operating system		 	
The computer systems and software are designed to ensure that			
software runs reliably and sufficient spare capacity exists to allow minor			
software features to be added without requiring a computer system			
upgrade.		 	
The Host receives input data from the I/O system, the host computes			
the model states on the basis of this data, and then sends the results of the			
computations to the appropriate sub-system	 	 	 
Computations to the appropriate sub-system	 	 	 L

The I/O (Input / Output) Subsystem utilizes a family of devices (modules) with a common interface to provide a modular approach for expandability, smaller wiring harnesses, and ease of maintenance.				
It has a CAN Bus I/O subsystem which consists of the following types of devices.				
a. The Input Module is typically used to read switch positions. Inputs have pull-up resistors to +5 Volts. Pairs of channels can be configured to read 2- wire encoders				
b. 3-Wire Encoder/Input Module is primarily used to read and determine directional movement of a rotary switch which has its pins wired in groups of 3.				
c. The Output Module is typically used for lighting annunciators.				
d. The Analog to Digital Converter (ADC) Module is typically used to read				
potentiometers for lighting dimming or for control positions.				
e. The Digital to Analog Converter (DAC) Module typically used to drive				
Direct Current resolver based instruments or servo instruments.			 	
f. The Combo Module is used for many functions; typically, they are used				
for lighting annunciators, and reading switch positions.			 · · · · · · · · · · · · · · · · · · ·	
g. The CAN Matrix Module primary purpose is to trip circuit breakers and to read the state of breakers.		İ		
h. The Lighting Module is typically used to provide panel lighting, which				
commonly has a high current requirement.				
I. The SPI/I2C Module provides SPI (System Packet Interface) and I2C				
(Inter-Integrated Circuit) interfaces to support various simulated				
instruments or control heads.			 	
15. Maintenance Software				
• Computer Generated Instruments (CGI) Software Calibration is				
provided			 · . · · · · · · · · · · · · · · · · · ·	
CAN Bus Packet Sniffer is provided to allow the user to monitor lower				
level traffic on the CAN Bus interface.				
CAN Module Software Upgrade Utility; the CAN Flash programmer				
utility is provided to allow in-system upgrades to CAN module software if necessary.				
Software includes error trapping for certain conditions and events.				
Standard window maintenance utilities are provided to allow the user to troubleshoot standard windows hardware and software.				
All computers have TeraByte Image for Windows Drive Image	 	<del>                                     </del>		
Backup and Restore Software installed to provide the ability to backup				
each system computer in the event of a failure.				
The Control loading and motion systems includes real time safety				
checking software.				
16. Electrical Requirements				
Trainer and Cueing 480V, 3-phase, 48A				
Image Generators and Projectors 220 V, 1-phase 40 A				
	 <del></del>			

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17. Environmental Requirements				
The equipment must be operated in a dust-free environment:		 	 <del></del>	
• Temperature: 60 - 75 °F (15 - 24 °C)			 <u> </u>	
Relative Humidity: 30 - 70 %, non-condensing.		 	 	
18. Room Requirements				
Recommended ceiling height 15' 6"				
<ul> <li>Minimum Door and Hallways 120" width x 96" height</li> </ul>				
INTEGRATED LOGISTIC SUPPORT (ILS) REQUIREMENT				
1. Integration service				
• The supplier will provide the installation of the Helicopter Flight			***	
Training Device FAA Level 7 to the end user.				
2. Training Program				
<ul> <li>Supplier will shoulder the training and training support elements to</li> </ul>				
operators and maintenance personnel involved on the operation of the				
Helicopter Flight Training Device FAA Level 7.				
English language will be used.				
3. Product Support Concept				
Seller will support the Buyer in its support responsibilities by providing				
training and technical assistance via electronic means.				
These electronic means can include telephone, fax, and email support,				
as well as, remote diagnostic assistance via modem/internet connections to				
the equipment.				i
4. Spare Parts Program				
<ul> <li>In order to ensure the highest availability, the equipment must be</li> </ul>				
supported with adequate spare parts onsite, based on MTBF values when				ļ.
available.				
<ul> <li>In addition, onsite spares are required because certain components</li> </ul>				
may have long lead-times or limited availability.				
Seller may also recommend spares be purchased for certain				
components where anticipated obsolescence may limit future availability.				
<ul> <li>A recommended spares list will be provided and finalized during the</li> </ul>				
manufacture period and be provided to the Buyer with adequate time to				
ensure concurrent delivery.				
5. Special Tools				
<ul> <li>Only common tools typically used to maintain aircraft and aircraft</li> </ul>				
ayionics are required to maintain the equipment.				
6. Technical Publications				
Seller provides the following documents for the equipment:				
a. Operator Manual providing all instructions for operating the equipment				
and includes startstop instructions.			 	
b. Maintenance Manual providing the experienced maintenance staff with				
the information needed to identify and repair equipment faults and to				
perform periodic maintenance. The Maintenance Manual includes system				
operation and components, preventive maintenance, calibration				
procedures, and use of diagnostics for troubleshooting.		 		

c. System Interconnects (electrical diagrams).			
d. Approval Test Procedure e. Qualification Test Guide (optional, per			
qualification standard)			
7. Product Support Information			
Within the warranty period, Seller incorporates any revisions to the equipment into the affected publications and forward, them to the customer.			
Seller supplies technical data, manuals, and parts-lists for vendor			
equipment and assemblies in original form.			
8. Warranty Program			
• The supplier shall cover One (1) year warranty period for the Helicopter			
Flight Training Device FAA Level 7.			

Prepared By:

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Approved By:

ANDRE B SANTOS COL (MNSA) PA Commanding Officer

## TABLE OF CONTENTS

- A. Annual Procurement Plan (APP)
- **B. Project Procurement Management Plan (PPMP)**
- C. Summary of Program Implementation (SPI)
- D. Program of Expenditure Summary
- E. Program of Expenditure (POE)

## H E A D Q U A R T E R S AVIATION (HIRAYA) REGIMENT (P), PHILIPPINE ARMY Fort Ramon Magsaysay, Palayan City, Nueva Ecija



Annual Procurement Plan (APP),
Project Procurement Management Plan (PPMP),
Summary of Program Implementation (SPI)
and
Program of Expenditure (POE)

of
AvnR (P), PA Proposed Tier 2 Projects