

INDIGENOUS DEVELOPMENT OF LINE REPLACEABLE UNITS (LRU's) FOR LCA-TEJAS

ADA is the Nodal agency involved in the design and development of Tejas Aircraft along with HAL as a principal partner and in coordination with nearly 100 work centres spread across the country. The Tejas development program is in advanced stage, completed Initial Operation Clearance (IOC) requirements and marching towards final operation clearance (FOC). Tejas has completed over 2000 flights so far and continuing system performance and evaluation towards reaching Final Operational Clearance (FOC). There are 358 LRU's (Components) in the Tejas aircraft, out of which 53% of total LRU's are indigenously developed with in India. In view to reduce the remaining 47% of the import LRU's, ADA has initiated the Indigenous development programme for indigenization of the import LRU's.

The List of Components (LRU's) which belong to different systems of Aircraft, ADA is looking to indigenus is given in the table below.

Sl. No.	System	Equipment / LRU
1	Avionics	Enhanced – Video cum Digital Recorder (E-VDR)
2	Avionics	E-VDR Remote Cassette Unit Holder (RCUH)
3	Avionics	E-VDR Removable Mass Memory Device
4	Avionics	Global Positioning System (GPS)- Antenna
5	Avionics	Gyro Reference Unit [GRU]
6	Avionics	HMDS (Head Mounted Display System) - Guillotine Assembly
7	Avionics	HMDS-Line of sight computer Unit
8	Avionics	HMDS-Magnetic Transmitter Coil Unit [MTCU]
9	Avionics	HMDS-Seat Position Sensor Assembly
10	Avionics	HMDS-System Control Panel
11	Avionics	Marker Antenna
12	Avionics	MMR (Multi Mode Radar) - Ethernet switch
13	Avionics	Multi Function Display Unit [MFD]
14	Avionics	Radio Altimeter (RAM)-Antenna
15	Avionics	RWR (Radar Warning Receiver) - Antenna
16	Avionics	RWR - Power Divider
17	Avionics	RWR - Switch Filter Assembly (RF Units)
18	Avionics	Tactical Navigation (TACAN) - Antenna
19	Avionics	Very/ Ultra High Frequency (V/UHF) Blade Antenna
20	Avionics	Very/ Ultra High Frequency (V/UHF) Radio ACR 500LA
21	Avionics	VHF Omni Range – Instrument Landing System (VOR – ILS) Blade Antennas

22	Avionics	VOR - ILS Diplexer
23	Environmental Control	Bypass Valve PHE (Primary Heat Exchanger)
24	Environmental Control	Cabin Pressure Control Valve
25	Environmental Control	Cabin Pressure Safety Valve
26	Environmental Control	Cabin Shut-Off Valve
27	Environmental Control	ECS-Shut-Off Valve
28	Environmental Control	Ejector Shut Off Valve (ESOV)
29	Environmental Control	Filter Cabin Pressure Control
30	Environmental Control	Flow Control Valve - Avionics cooling
31	Environmental Control	Inward Relief Valve
32	Environmental Control	Pressure Reducer-Radar and Cabin Seal Pressurization
33	Environmental Control	Pressure Sensor Avionics Inlet
34	Environmental Control	Pressure Sensor P26 (Condenser)
35	Environmental Control	Pressure Sensor- P79(Avionics Flow Control)
36	Environmental Control	Pressure Sensor P24 - Bleed Air Inlet
37	Environmental Control	Pressure Switch (Bleed Air Inlet)
38	Environmental Control	Pressure Switch-High
39	Environmental Control	Pressure Switch-Low
40	Environmental Control	Pressure Transducer-Cabin
41	Environmental Control	PRV-SOV (Pressure Reduction Valve/Shut off Valve)
42	Environmental Control	PRV-SOV- Control Unit
43	Environmental Control	Seal Inflation / Deflation Valve
44	Environmental Control	Temperature Control Valve
45	Environmental Control	Temperature Sensor (High)
46	Environmental Control	Temperature Sensor (Low)
47	Environmental Control	Temperature Sensor-Pneumatic
48	Environmental Control	Water Separator
49	Electrical	0.35 kVA HMDG (Hydraulic Motor Driven Generator) – LH (Left Hand)
50	Electrical	0.35 kVA HMDG – RH (Right Hand)
51	Electrical	0.35 kVA HMDG – VRU (Voltage Regulator Unit)
52	Electrical	30 / 40 kVA IDG (Integral Drive Generator)
53	Electrical	30 / 40 kVA IDG-GCU (Generator Control Unit)
54	Electrical	5 kVA HMDG
55	Electrical	5 kVA HMDG -GCU
56	Electrical	Ground Power Receptacle (GPR)
57	Electrical	Light - Anti Collision
58	Electrical	Light Taxi/Landing
59	Electrical	Light-Wander
60	Electrical	Power Supply Unit - Anti Collision Light
61	Electrical	Undercarriage display unit

62	Electrical	Undercarriage Selector Lever
63	ESCAPE	Ejection Seat
64	Flight Control	Air Data Probe [NADP]
65	Flight Control	Air Data Sensor - Left Side [LADP]
66	Flight Control	Air Data Sensor - Right Side [RADP]
67	Flight Control	AoA (Angle of Attach) Sensor [AoA / AoSS vanes]
68	Flight Control	Pilot Control Grip
69	Flight Control	Leading Edge Vane Controller (LEVCON) Servo Actuator Assembly
70	Flight Control	Probe Total Temperature [TATP]
71	Flight Control	Sensor Assembly, Accelerometer [ASA]
72	Flight Control	Sensor Assembly Rate [RSA]
73	Health and Utility Management System (HUMS)	HUMS-Data Acquisition unit
74	Hydraulic	Control cable - Park Brake Control
75	Hydraulic	Control cable - Under carriage Emergency
76	Hydraulic	Emergency Undercarriage Selector Valve
77	Hydraulic	Flow Synchronizer
78	Hydraulic	Pressure Gauge
79	Hydraulic	Pressure Switches
80	Hydraulic	Pressure Switch – EMDP (Electric Motor Driven Pump)
81	Hydraulic	Pressure Switch - P/B
82	Hydraulic	Pressure Transducers
83	Hydraulic	Progressive Pressure Control Valve
84	Hydraulic	Slide & Swivel Joints
85	Landing Gear	Antiskid Brake Manifold
86	Landing Gear	Brake Feel Module Input Potentiometer
87	Landing Gear	Free castor valve for Nose Wheel Steering (Solenoid valve)
88	Landing Gear	Nose Wheel Steering Input Potentiometer
89	Landing Gear	Nose Wheel Steering Manifold
90	Landing Gear	Nose Wheel Steering Position Sensor (Feedback potentiometer)
91	Propulsion and Fuel	Air / No Fuel Float Valve
92	Propulsion and Fuel	Differential Pressure Switch
93	Propulsion and Fuel	Electric Re-fuelling Valve
94	Propulsion and Fuel	Engine third mount pin
95	Propulsion and Fuel	Float Valve
96	Propulsion and Fuel	Fuel Drain Valve
97	Propulsion and Fuel	Fuel Filler Cap
98	Propulsion and Fuel	Fuel flow straighter
99	Propulsion and Fuel	Fuel flow Transmitter

100	Propulsion and Fuel	Fuel Shut Off Cock
101	Propulsion and Fuel	Fuel/No Air Valve
102	Propulsion and Fuel	Low Pressure Fuel Shut Off Cock dia 25 mm
103	Propulsion and Fuel	Motorized Fuel Transfer Valve
104	Propulsion and Fuel	Pressure Reducing Valves
105	Propulsion and Fuel	Surge Relief Valve - F1 & F2 tanks
106	Propulsion and Fuel	Surge Relief Valve - F1A tanks
107	Propulsion and Fuel	Surge Relief Valve - Wing tanks
108	Propulsion and Fuel	Throttle Grip
119	Propulsion and Fuel	Throttle Quadrant Assembly
110	Propulsion and Fuel	Transfer Cum Refueling Valve
111	Utility Services and Monitoring (USMS)	Charge Amplifier (Pre Amplifier)

ADA is inviting the vendors/developers who are willing to take up the development of above components. ADA will provide all the information about components, Such as Technical Specifications, Test Requirements etc. Hence interested vendors may contact the following personnel for details of respective systems:

Contact Details:

1.	Dr. C. Ranganayakulu, Scientist 'G' General Systems Ph: 080-25087242 Mob: 9844503774 Email: ranganayakulu@jetmail.ada.gov.in	Convenor for development of LRU's.
2.	Mr. Sankaraiah Mada, Scientist 'F' General Systems Directorate Ph: 080-25087257/7245 Mob: 9449832487 Email: sankaraiahmada@jetmail.ada.gov.in	For the Mechanical system LRU's. (Hydraulics, Fuel, Environmental Control, ESCAPE, Landing Gear)
3.	Mr. A.K.Shukla, Scientist 'F' Avionics and Weapons Directorate Ph: 080-25087811 Mob: 8892062934 Email: akshukla@jetmail.ada.gov.in	For Avionics LRU's. (Avionics, USMS, Electrical)
4.	Mr. K.S. Nagesh, Scientist 'E' IFCS Directorate Ph: 080-25087376 Mob: 9449021037,9449021037 Email: ks_nagesh@jetmail.ada.gov.in	For development of Actuators and Flight Control Components.