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Chapter 8.2.1

Maintained SNS - Generic

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1 General

The SNS is used in this specification as a method to describe the functional and/or physical breakdown of items of the Product. Its position in the data module code and structure is defined in Chap 4.3.3. This is an SNS that will be maintained by the S1000D Steering Committee and is subject to normal CPF action in accordance with Chap 1.5.

2 Generic SNS

The coding and definitions for the generic SNS is appropriate for common and system level information for all products and is described in Table 2. However, projects can decide not to use this generic SNS.

Table 2 Index of standard systems

System	Title
00	Product, General
01	Not available for projects
02	Available for projects
03	Available for projects
04	Worthiness (fit for purpose) limitations
05	Scheduled/unscheduled maintenance
06	Dimensions and areas
07	Lifting, shoring, recovering and transporting
08	Leveling and weighing
09	Handling and maneuvering
10	Parking, mooring, storing and return to service
11	Placards and markings
12	Servicing
13	Available for projects
14	Product loading and offloading
15	Crew information
16	Change of role
17	Available for projects
18	Vibration and noise analysis and attenuation
19	Available for projects **Note** This system is used for breaking down the information for land and sea systems. Refer to Chap 5.2.3.5.

2.1 Definitions of systems and subsystems

The SNS for the basic systems of the Product are given in Table 3 thru Table 16.

Table 3 System 00 - Product, General

System	Subsystem	Title	Definition
00		Product, General	General information for the complete Product, procedures for the Product safety and general Product maintenance, use of the Product safety and protective devices, information on the technical publication required to support the Product.
	-00	Product, Description	General description with illustrations of the Product and its systems to include type of Product, its roles, accommodation, salient constructional features, power system installation, systems and operational equipment.
	-10	Product, General maintenance	Those instructions necessary for the Product maintenance condition, electrical (static) grounding.
	-20	Product, Safety	Those specific or Product peculiar instructions necessary to make safe and prepare the Product for maintenance action. Includes instructions for returning the Product to its serviceable state.
	-30	Safety and protective devices	Those instructions necessary for the use or operation of devices such as safety pins, safety locks, safety pin flag assemblies, safety struts, safety strut extensions, etc. Instructions for removal and installation of protective covers, bungs, blanks, etc, are to be included.
	-40	Technical publication	Information on the technical publication required to support the Product (not a technical publication project in its own right) such as the Lists of Applicable Publications, Publication Guide, the coding system of technical publications, instruction for handling and updating technical publication.
	-41	Publications	Information on the suite of publications that are required by the customer.
	-42	Information Sets	Information on the information sets that were used to produce the suite of publications that are required by the customer.
	-50	Material data	Information concerning all material (products) used for the maintenance of the complete Product and its systems.
	-60 thru -80	Available for projects	
	-90	Battle damage repair	Information and data which cannot be allocated to a specific SNS because the involved zone of the Product contains more than one hardware "system".

Table 4 System 04 - Worthiness (fit for purpose) limitations

System	Subsystem	Title	Definition
04		Worthiness (fit for purpose) limitations	This System provides guidance for the calculation of lives for critical items/components and defines the operating parameters for such calculations.

System	Subsystem	Title	Definition
	-00	General	
	-10	Fatigue index calculations	Procedures and formulae for calculating Fatigue Index/Fatigue Lives of the Product structure from Fatigue Meter readings.
	-20	Operating spectrums	Assumed operating spectrums for the Product from which the safe fatigue lives are calculated.

Table 5 System 05 - Scheduled/unscheduled maintenance

System	Subsystem	Title	Definition
05		Scheduled/ unscheduled maintenance	Manufacturers' recommendation for time limits inspection (both scheduled and unscheduled).
	-00	General	
	-10	Time limits	Those manufacturer recommended time limits for maintenance and overhaul of the Product, its systems and subassemblies, and life of its parts.
	-20	Scheduled maintenance checks lists	A list of the manufacturer recommended scheduled and unscheduled maintenance checks and inspections, including operating tests applicable to the Product, its systems and subassemblies. The checks listed at -40, -50 and -60 must be included.
	-30	Available for projects	
	-40	Scheduled maintenance checks	Those manufacturer recommended maintenance checks and inspections of the Product, its systems and subassemblies dictated by the time limits specified in -10 above. This section lists in more detail the items which are outlined on the user job forms (usually by title only) and cross references the detailed procedures included in the individual maintenance practices.
	-50	Unscheduled maintenance checks	Those maintenance checks and inspections on the Product, its systems and subassemblies which are dictated by special or unusual conditions which are not related to the time limits specified in -10 above.
	-60	Acceptance and functional check usage	Those current status functional checks necessary to fulfill inspection requirements to prove the safety/usage of all components and systems following delivery or maintenance activities.
	80	Maintenance allocation	The maintenance authority and responsibility for the performance of maintenance functions on a Product, including grouped maintenance functions (where necessary), lists of tools and lists of remarks.

Table 6 System 06 - Dimensions and areas

System	Subsystem	Title	Definition
06		Dimensions and areas	Those illustrations and text which show the principal dimensions and shapes of the Product and the zones, areas and reference lines used to locate subassemblies/components. It also includes all access and drainage provisions.
	-00	General	
	-10	Principal dimensions	To include a conventional 3-view illustration of the Product with principal dimensions.
	-20	Reference lines	To include a system for locating subassemblies/components in relation to the Product reference lines.
	-30	Zones and areas	To include Product subdivision by zone/area to identify the zone/area in which the maintenance task is done.
	-40	Access provisions	To identify all access doors and panels, and maintenance access points. **Note** Walkways are covered in System 12.
	-50	Master shapes	To define the master shape by representing in three dimensions the exterior and interior shapes of the Product, including: – Internal and external product master shapes to be used by lead function as reference surfaces to design product parts – Simplified and adapted master shapes for physical mock-up manufacturing (for tests, for exhibitions, etc) – Specific shape profiles provided for aerodynamics studies and computation (as wind tunnel test, computational fluid dynamics, etc) – Specific proposals of style and shape for system and equipment integration

Table 7 System 07 - Lifting, shoring, recovering and transporting

System	Subsystem	Title	Definition
07		Lifting, shoring, recovering and transporting	Includes all necessary procedures to lift the Product with jacks or slings, and to recover it in any of the conditions to which it can be subjected, including maintenance and repair. It also includes information on recovering the Product from any condition to which it can be subjected (including emergency recovering) and how to transport it by air/road/rail, etc.
	-00	General	
	-10	Jacking	Information on jacking points, adapters, balance weights, jacking procedures and the jacks used to lift the Product during Product maintenance, repair and recovery.
	-20	Shoring	Information on shoring points, shoring procedures and the shoring equipment used during Product maintenance, repair and recovery.

System	Subsystem	Title	Definition
	-30	Slinging	Information on slinging points, slinging procedures and the slings used to lift the Product during maintenance, repair and recovery.
	-40	Recovering	Information on recovery procedures and the tools and equipment required to recover the Product from any condition to which it can be subjected, including emergency recovery.
	-50	Transporting	Information on how to dismantle the Product to a standard of breakdown consistent with the Product in which it can have to be transported. Information for the manufacture of transportation sledges or pallets. For removal procedures and maintenance information, refer to appropriate system/subsystem.

Table 8 System 08 - Leveling and weighing

System	Subsystem	Title	Definition
08		Leveling and weighing	This System includes the necessary information to level the Product for any of the various maintenance, overhaul or major repairs which becomes necessary during the life of the Product. It also includes those on- Product subassemblies or components which are specifically dedicated to record, store or compute mass and balance data. Includes those maintenance practices necessary to prepare the Product for weighing and the weighing procedure. Mass and center of gravity (c.g.) data also to be included.
	-00	General	
	-10	Mass and balance	Those subassemblies or components on the Product dedicated to the specific function of recording, storing or computing mass and balance data.
	-20	Leveling	Those instructions necessary to prepare the Product for leveling and the leveling procedure. Includes information on the leveling equipment used.
	-30	Weighing	Those instructions necessary to prepare the Product for weighing and the weighing procedure. Includes information on the weighing equipment used. To include limits of variation allowed between physical recorded mass and calculated mass based and specific Product record.

System	Subsystem	Title	Definition
	-40	Mass and c.g. data	Mass and moment or index information characteristic of the Product, limitations, datum points and lines, center of gravity, range, mass and balance management of the fuel and other expendable loads, residual fuel, ballast and the effects of role change. Can include: - Expression of c.g. as a percentage of Mean Aerodynamic Chord (MAC) - Diagram of c.g. envelope and equipment location charts if necessary - Effect on the c.g. position of dropping or picking up stores (with an example) Relevant equipment included in the basic mass, plus variable equipment (ie, "role" or "fit-list" equipment), tabulated and showing mass, load arm and moment or index of each item. Relationship between the Product and ECU datum lines including the jet pipe and/or propeller datum lines and the effect of an ECU change (with a worked example).
08	-50	Static stability	Information detailing the static stability limits of the Product. Can include information required to determine the minimum nose wheel reaction necessary to ensure that the Product is stable about its main wheels whilst being moved and whilst static during servicing operations, and to ensure the Product remains stable during jacking operations. Can include tabular and graphical data for the calculation of nose wheel reaction in relation to Product mass and residual moment for both a fully equipped Product and for situations where items of equipment/stores have been removed or the fuel state is outside the normal sequence. Safety precautions and limitations cover de-fueling sequences, maximum movement speeds and movement on gradients or over rough ground.

Table 9 System 09 - Handling and maneuvering

System	Subsystem	Title	Definition
09		Handling and maneuvering	Those instructions necessary to handle and taxi the Product. Illustrations showing the location of attachment points, turning radius, etc, are included. Includes those maintenance procedures necessary to prepare the Product for handling and taxiing.
	-00	General	
	-10	Handling	Those instructions necessary to tow, winch or handle the Product in normal or other conditions such as towing and handling with engines removed, berthing sea vessels, etc. It includes the equipment and materials required such as tow bars, steering arms, towing cables/bridles, etc, safety precautions and limitations.

System	Subsystem	Title	Definition
	-20	Maneuvering	Those instructions necessary to maneuver or taxi the Product in normal or abnormal conditions such as adverse weather conditions, etc. It includes procedures to be used such as use of engines, interphone and brakes, ground turning techniques, etc, safety precautions and limitations such as exhaust danger areas, minimum turning radius, friction coefficients for various ground conditions, etc.

Table 10 System 10 - Parking, mooring, storing and return to service

System	Subsystem	Title	Definition
10		Parking, mooring, storing and return to service	This System is to contain the necessary information to park, moor and/or store the Product in all conditions to which it can be subjected. Where appropriate, it is to include the procedures to prepare for parking, mooring and storing and any related return to service requirements. Illustrations, where appropriate, are to show, for example, locations of any fixing or mooring points and any controls used in the parking/mooring and storing procedure.
	-00	General	
	-10	Parking	Information necessary to park the Product in all weather conditions, where parking is considered as a routine short-term activity (eg, overnight, over-weekend) performed on a serviceable Product (ie, where return to service can normally be expected to be accomplished by a standard pre-operation check). Includes equipment required.
	-20	Mooring	Information necessary to moor the Product under all weather conditions, where mooring is considered as a long or short-term activity whose purpose is to tie down or otherwise secure the unit. Must also include information such as special techniques applicable to ballasting, installation and use of special support equipment applicable to mooring (eg, installation of tie-down rings to strong points) precautions and limits for the safety of the Product in high wind conditions, etc.

System	Subsystem	Title	Definition
	-30	Storing	Information necessary to store the Product in normal or abnormal conditions under all weather conditions, where storing is considered as a non-operational period of long or short-term duration in excess of that defined for parking. It includes all appropriate inspection and preventive maintenance to safeguard structural and system integrity during storage. Where applicable, a stored Product can also be moored. Mooring during storage is covered under Section -20, not integrated within Section -30. This includes equipment required. It also includes information concerning, but not limited to: – techniques for entry into and removal from storage (eg, cleaning and inhibition/de-inhibition), fluid system draining/replenishing, static grounding, protective blanking, etc – timescales for routine in-storage maintenance such as wheel rotation, pressure checks, engine running, etc – procedures or techniques uniquely applicable to long or short-term storage (project-defined terms) – preparation of the Product after storage and return to service
	-40	Return to Service	Those instructions necessary to prepare the Product for operation following mooring, parking or a period of storage.

Table 11 System 11 - Placards and markings

System	Subsystem	Title	Definition
11		Placards and markings	All procurable placards, labels, etc, is included in the Illustrated Parts Catalog. They are illustrated, showing the part number, legend and location. The maintenance publications must provide the approximate location (eg, FWD UPPER RH) and illustrate each placard, label, marking, self-illuminating sign, etc, required for safety information, maintenance significant information or by government regulations. Those required by government regulations are so identified.
	-00	General	
	-10	Exterior color schemes and markings	The specifications and requirements covering Product exterior color schemes and markings.
	-20	Exterior placards and markings	Those placards and markings required for ground servicing instructions, inspections, cautions, warnings, etc.
	-30	Interior placards and markings	Those placards, markings self-illuminating signs, etc, required for interior general and emergency information, instructions, cautions, warnings, etc.

Table 12 System 12 - Servicing

System	Subsystem	Title	Definition
12		Servicing	Those instructions for the replenishment and depletion of fluids, scheduled and unscheduled servicing, applicable to the whole Product. The information is concise and preferably in tabular or chart form. Precautions to be observed in servicing a particular container (eg, tank, reservoir, bottle, LOX converter, tire) such as grounding and prevention of fire hazards, is clearly stated. A diagram showing the location of regular and emergency servicing points is included. "No-step" areas or walkways, with necessary precautions, are indicated.
	-00	General	
	-10	Replenishing and depleting	Those instructions necessary for the replenishment or depletion of fluids. Container capacities in US, imperial and SI units of measure are included. ANA or other standard specification number and grade (if applicable) of fuel, oil, fluid, and other material used are given. Specifications and grades should be shown grouped on one page to facilitate revisions. For fuel, give expansion volume, total fuel capacity, sump capacity, net fuel capacity (as applicable) for each tank. For oil give allowance for expansion.
	-20	Scheduled servicing	Those instructions necessary to carry out servicing that can be scheduled. Includes instructions such as those for periodic lubrication of components, radioactivity decontamination, Product external and internal cleaning, etc. It does not include lubrication procedures required for the accomplishment of maintenance practices.
	-30	Unscheduled servicing	Those instructions necessary to carry out servicing that is normally unscheduled. Includes instructions such as those for ice and snow removal from parked Product.

Table 13 System 14 - Product loading and offloading

System	Subsystem	Title	Definition
14		Product loading and offloading	This System contains those procedures and illustrations necessary to load and offload internal and external stores and munitions and cargo. The System also contains information on the support equipment and special tools required. Cross-references are made to applicable systems for information on the Product attachment points, pylons and carriers.
	-00	General	
	-10	Support equipment	A list of all support equipment and special tools, also information and illustrations as necessary on those items not covered in other documentation.

System	Subsystem	Title	Definition
	-20	Cargo	Examples of loading and offloading techniques, interior layout, floor loadings, location and strength of lashing points, methods of stowing and securing, capacities and dimensions of compartment and doors.
	-30	Internal and external stores	A list of stores carried and the carrier/adapter on which they are fitted.
	-31	Basic information	Includes the basic information on internal and external stores.
	-32	Supplementary information	Includes any supplementary information on internal and external stores.
	-33	Loading procedures	Includes the loading procedures for internal and external stores.
	-34	Offloading procedures	Includes the offloading procedures for internal and external stores.
	-35	Loading and offloading procedures checklists	Includes the checklists for loading and offloading of internal and external stores.
	-40	Non-nuclear munitions	A list of the non-nuclear munitions (eg, rockets, missiles, bombs, ammunition) and the carrier/adapter on which they are fitted.
	-41	Basic information	Includes the basic information on non-nuclear munitions.
	-42	Supplementary information	Includes any supplementary information on non-nuclear munitions.
	-43	Loading procedures	Includes the loading procedures for non-nuclear munitions.
	-44	Offloading procedures	Includes the offloading procedures for non-nuclear munitions.
	-45	Loading and offloading procedures checklists	Includes the checklists for loading and offloading for non-nuclear munitions.
	-46	Integrated combat turnaround procedures	Includes information on integrated combat turnaround procedures.
	-47	Integrated combat turnaround procedures checklists	Includes the checklists for integrated combat turnaround procedures.
	-48	Cross servicing checklists	Includes the checklists for cross servicing for non-nuclear munitions.

System	Subsystem	Title	Definition
	-50	Nuclear munitions	A list of the nuclear munitions and the carrier/adapter on which they are fitted.

Table 14 System 15 - Crew information

System	Subsystem	Title	Definition
15		Crew information	This System provides all specific information given to crew for performing all the designed missions of the Product. Description and function of the Product systems, system controls and installed equipment are included only to the extent that the information is essential to crew/operators and is not covered in the relevant system (21 and up). **Note** Sub-subsystem 15-04, 15-05 and 15-06 are used for breaking down the information for land and sea systems. Refer to Chap 5.2.3.1 and Chap 5.2.3.2.
	-00	General	This section contains an introduction which gives a general overview of the salient features of the Product.
	-10	Aircraft release/operating limitations	This section contains all limitations that must be observed throughout the cleared operating envelope.
	-20	Operational characteristics	This section contains a comprehensive description of the operational characteristics of the Product including both those advantageous and those undesirable.
	-30	Normal procedures	This section contains in narrative and/or checklist form all normal procedures required to accomplish operation. Procedures for special conditions such as scramble or missions requiring intermediate operational stops re included. This section also contains the handling of installed equipment, which is not satisfactorily covered in the systems with regard to crew.
	-40	Emergency procedures	This section contains in narrative and/or checklists form the procedures to be followed to meet any emergency that could reasonably be expected.
	-41	General	Includes general information on crew/operator emergency procedures.
	-42	Ground emergencies	Includes information on crew/operator ground based emergency procedures.
	-43	Initialization emergencies	Includes information on crew/operator initialization emergency procedures.
	-44	System related emergencies	Includes information on crew/operator system related emergency procedures.

System	Subsystem	Title	Definition
	-45	Single or multi-engine failures	Includes information on crew/operator single or multi-engine emergency failure procedures.
	-46	Arrival/Disembarking emergencies	Includes information on crew/operator arrival/disembarking emergencies.
	-47	Control system failures	Includes information on control system failures.
	-48	Other emergencies or failures	Includes information on other emergencies or failures.
	-49	Multi-function display readouts giving emergency information	Includes information on crew/operator multi-function display related emergencies.
	-50	Special conditions	This section contains information pertaining to the operation of the Product under special conditions (eg, adverse weather and climatic conditions).
	-60	Performance data	This section contains the Product performance data required by the project and agreed upon in the Performance Substantiation document.
	-70	Role Operation/Weapon system procedures	This section contains in narrative and/or checklist form all normal and reversionary procedures relating to role operation and the role/weapons systems not covered in the relevant systems (21 and up). All relevant safety requirements must be specified.
	-80	Configuration	This section contains the various stores configurations, including weapons and fuel tanks, carried both internally and externally and should include details of the effect on weight, drag index, limitations.

Table 15 System 16 - Change of role

System	Subsystem	Title	Definition
16		Change of role	Those instructions necessary to change the Product from one role to another.
	-00	General	List of the primary and secondary roles of the Product, and the role equipment to be removed/installed, presented in tabular format.
	-10	Role changes	Individual procedures to cover all changes from any one role to any other role including any necessary testing.

Table 16 System 18 - Vibration and noise analysis and attenuation

System	Subsystem	Title	Definition
18		Vibration and noise analysis and attenuation	This System provides the necessary information to enable operators to monitor and diagnose vibration and noise levels in order to identify imbalance, damage or misalignment in the Product dynamic and structural components. It also includes those Product and components which furnish a means of automatically controlling and/or reducing the force and/or value of the levels of vibration and/or noise within the Product through the use of active or passive systems/equipment.
	-00	General	
	-10	Vibration analysis	Those instructions necessary to monitor, measure, diagnose and locate sources of vibration in dynamic and structural components.
	-20	Noise analysis	Those instructions necessary to monitor, measure, diagnose and locate sources of noise in dynamic and structural components.
	-30	Active attenuation/actuation	That portion of the system which from a power source ensures distribution to the system and provides a physical means of reducing vibration. Included are items such as actuating mechanisms, control valves, motors, plumbing, etc.
	-40	Sensing	Those subassemblies or components which provide a means of detecting vibration levels and conveying information to the control computing or indicating systems. Includes items such as accelerometers.
	-50	Control/computing	Those Product or components used for processing data, from multiple sources, employed to activate and control attenuation systems. Includes items such as computers, switches, etc.
	-60	Passive attenuation	Those Product and components which provide a means of passive attenuation. Includes items such as vibration absorbers, suspension bars, etc.

Chapter 8.2.5

Maintained SNS - Air vehicle, engines and equipment

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1 General

The SNS is used in this specification as a method to describe the functional and/or physical breakdown of items of the Product. Its position in the data module code and structure is defined in Chap 4.3.3. This is an SNS that will be maintained by the S1000D Steering Committee and is subject to normal CPF action in accordance with Chap 1.5.

This chapter gives the definitions for the systems and subsystems, which relate to systems and subsystems, for Air Vehicle, Engines and Equipment (AVEE). For details on how to use this SNS within the data module code, refer to Chap 4.3.3.

2 Air vehicle, engines and equipment SNS

The coding and definitions for the AVEE SNS is appropriate for common and system level information for all Products and is described in Table 2 and shown in Fig 1. However, projects can decide not to use this SNS.

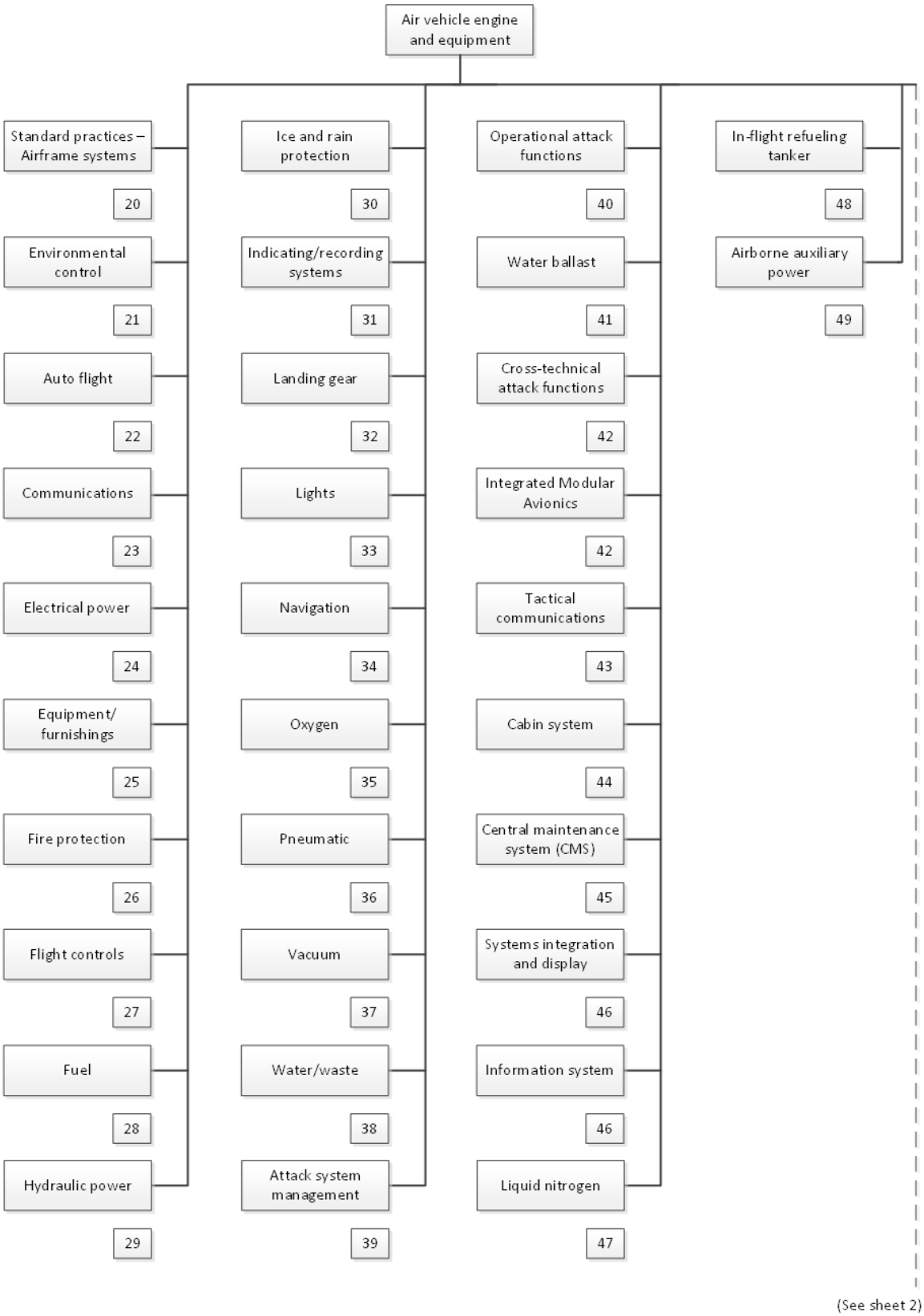

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Fig 1 Top level breakdown for AVEE (Sheet 1 of 3)

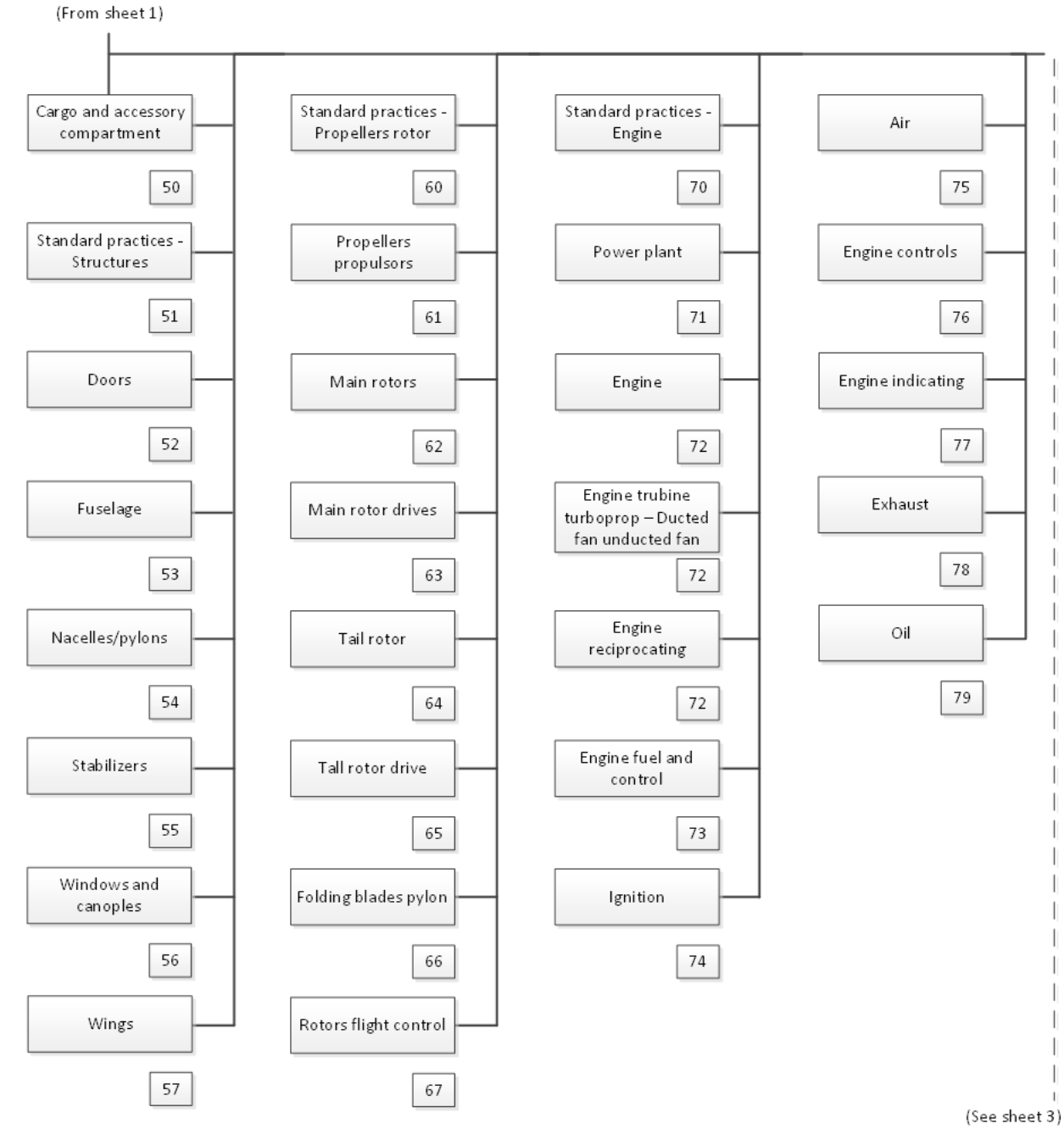

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Fig 1 Top level breakdown for AVEE (Sheet 2 of 3)

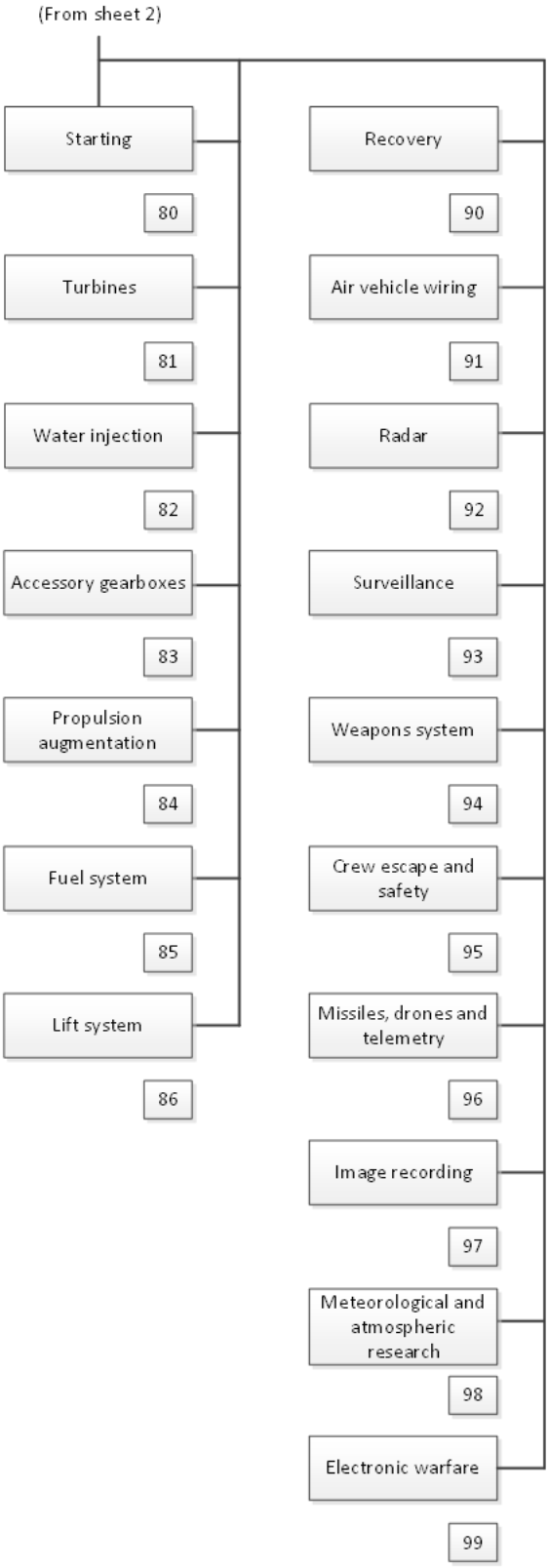

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Fig 1 Top level breakdown for AVEE (Sheet 3 of 3)

2.1 System breakdown

2.1.1 Main systems

This AVEE SNS is divided into 72 main systems.

Table 2 Top level breakdown for AVEE

System	Title
20	Standard practices, Airframe systems
21	Environmental control
22	Auto flight
23	Communications
24	Electrical power
25	Equipment/furnishings
26	Fire protection
27	Flight controls
28	Fuel
29	Hydraulic power
30	Ice and rain protection
31	Indicating/recording systems
32	Landing gear
33	Lights
34	Navigation
35	Oxygen
36	Pneumatic
37	Vacuum
38	Water/waste
39	Attack system management
40	Operational attack functions
41	Water ballast
42	Cross-technical attack functions
42	Integrated Modular Avionics
43	Tactical communications
44	Cabin System
45	Central maintenance system (CMS)
46	Systems integration and display
46	Information system

System	Title
47	Liquid nitrogen
48	In-flight refueling tanker
49	Airborne auxiliary power
50	Cargo and accessory compartment
51	Standard practices, Structures
52	Doors
53	Fuselage
54	Nacelles/pylons
55	Stabilizers
56	Windows and canopies
57	Wings
58	Not available for projects
59	Not available for projects
60	Standard practices, Propeller/rotor
61	Propellers/propulsors
62	Main rotors
63	Main rotor drives
64	Tail rotor
65	Tail rotor drive
66	Folding blades/pylon
67	Rotors flight control
68	Not available for projects
69	Not available for projects
70	Standard practices, Engine
71	Power plant
72	Engine
72	Engine turbine/turboprop Ducted fan/inducted fan
72	Engine reciprocating
73	Engine fuel and control
74	Ignition
75	Air
76	Engine controls

System	Title
77	Engine indicating
78	Exhaust
79	Oil
80	Starting
81	Turbines
82	Water injection
83	Accessory gearboxes
84	Propulsion augmentation
85	Fuel cell system
86	Lift system
87	Not available for projects
88	Not available for projects
89	Not available for projects
90	Recovery
91	Air vehicle wiring
92	Radar
93	Surveillance
94	Weapons system
95	Crew escape and safety
96	Missiles, drones and telemetry
97	Image recording
98	Meteorological and atmospheric research
99	Electronic warfare

2.1.2 Definitions of systems and subsystems

This SNS is to be supplemented with the generic SNS given at Chap 8.2.1.

2.1.3 System 20 - Standard practices - Airframe systems

Table 3 System 20 - Standard practices - Airframe systems

System	Subsystem	Title	Definition
20		**Standard practices - Airframe systems**	This System contains those standard mechanical and electrical electric/engineering practices applicable to more than one airframe system task which are not covered in systems 21 thru 49. It excludes those practices which are recognized as standard trade practices and also those practices/processes which are only applicable to manufacture. Practices for a particular application must be included in the appropriate airframe system as part of the procedure.
	-00	General	Standard practices applicable to all airframe systems.
	-10 thru -90		Sections -10 thru -90 are used to describe standard practice. The manufacturer or manufacturing partners can assign the section numbers to suit generic standard practices related to more than one airframe system.

2.1.4 System 21 - Environmental control

Table 4 System 21 - Environmental control

System	Subsystem	Title	Definition
21		**Environmental control**	Those units and components which furnish a means of pressurizing, heating, cooling, moisture controlling, filtering and treating the air used to ventilate the areas of the fuselage within the pressure seals. Includes cabin supercharger, equipment cooling, heater, heater fuel system, expansion turbine, valves, scoops, ducts, cabin seals, etc. Also includes such systems as canopy/door seals, anti-g, demisting, waveguide pressurization, etc.
	-00	General	
	-10	Compression	That portion of the system and its controls which supplies compressed air. Includes items such as controls and indicating systems related to the compressors, wiring, etc. Does not include the pressure control and indicating system for the cabin pressurization.
	-20	Distribution	That portion of the system used to induct and distribute air. Includes equipment rack cooling, canopy/door seals, anti-g, demisting, waveguide pressurization system and items of such systems like blowers, scoops, ducting, inlets, valves, wiring, etc. Does not include valves which are part of pressurization and temperature control.
	-30	Pressurization control	That portion of the system used to control the pressure within the fuselage. Includes items such as control valves, relief valves, indicators, switches, amplifiers, wiring, etc.

System	Subsystem	Title	Definition
	-40	Heating	That portion of the system and its controls which supply heated air. Includes items such as heater units, fuel system and control, ignition indicating systems related to heater operation, wiring, etc. Does not include temperature control and indicating systems.
	-50	Cooling	That portion of the system and its controls which supply cooled air. Includes items such as the cooling unit, indicating systems related to the cooler operation, wiring, etc. Does not include temperature control and indicating systems.
	-60	Temperature control	That portion of the system used to control the temperature of the air. Includes items such as control valves, thermal sensing devices, switches, indicators, amplifiers, wiring, etc.
	-70	Moisture/air contaminant control	That portion of the system used to control moisture in the air, to control ozone concentrations, to filter radioactive debris and chemical/biological contaminants from conditioned air, and to treat the air with deodorizers, insecticides, etc.
	-80	Liquid/gas coolant	Those components required to supply liquid/gas coolant to an equipment cooling system.
	-90	Integrated environmental control system (ECS)	That portion of the system which provides integrated functionality for conditioned, cooled, heated, pressurized air, NBC filtration, and emergency ventilation to sustain crew and component operation over wide range of temperatures. This includes avionics (component racks) cooling.

2.1.5 System 22 - Auto flight

Table 5 System 22 - Auto flight

System	Subsystem	Title	Definition
22		**Auto flight**	Those units and components which furnish a means of automatically controlling the flight of the air vehicle. Includes those units and components which control direction, heading, attitude, altitude and speed.
	-00	General	
	-10	Autopilot	That portion of the system that uses radio/radar signals, directional and vertical references, air data (pitot static), computed flight path data, or manually induced inputs to the system to automatically control the flight path of the air vehicle through adjustment to the pitch/roll/yaw axis or wing lift characteristics and provide visual cues for flight path guidance (ie, Integrated Flight Director). This includes power source devices, interlocking devices and amplifying, computing, integrating, controlling, actuating, indicating and warning devices such as computers, servos, control panels, indicators, warning lights, etc.

System	Subsystem	Title	Definition
	-20	Speed-attitude correction	That portion of the system that automatically maintains safe flight conditions by correcting for effects of speed and out-of-trim conditions by such means as automatic trim, mach trim or speed stability and mach feel. This includes sensing, computing, actuating, indicating, internal monitoring, and warning devices, etc.
	-30	Auto throttle	That portion of the system that automatically controls the position of the throttles to properly manage engine power during all phases of flight/attitude. This includes engaging, sensing, computing, amplifying, controlling, actuating and warning devices such as amplifiers, computers, servos, limit switches, clutches, gear boxes, warning lights, etc.
	-40	System monitor	That which provides separate or external monitoring/remote readout (for maintenance or other purposes) not directly related to the internal system monitoring (for system integrity flight crew warning). This includes sensing, computing, indicating and warning devices, control panels, etc.
	-50	Aerodynamic load alleviating	The system or portion of the system that automatically corrects/provides for gust loading/ upset, aerodynamic augmentation/ alleviations/ suppression, ride control, etc. This includes sensing, computing, actuating indicating internal monitoring, warning devices, etc.

2.1.6 System 23 - Communications

Table 6 System 23 - Communications

System	Subsystem	Title	Definition
23		**Communications**	Those units and components which furnish a means of communicating from one part of the air vehicle to another and between the air vehicle or ground stations. Includes voice, data C-W communicating components, PA system, intercom and tape reproducers-record player.
	-00	General	
	-10	Speech communication	That portion of the system which utilizes voice modulated electromagnetic waves to transmit and/or receive messages from air to air, or air to ground installations. Includes HF, VHF, UHF, etc, in-flight telephone, communication transmitting and receiving equipment.
	-15	SATCOM	That portion of the system which utilizes satellite communication systems (SATCOM).
	-20	Data transmission and automatic calling	That portion of the system which presents information derived from pulse coded transmissions. Includes Teleprinter, Selcal, Calsel, ACARS, etc.

System	Subsystem	Title	Definition
	-30	Passenger address and entertainment	That portion of the system used to address and entertain the passengers. Includes items such as amplifiers, speakers, handsets, reproducers, control panels, etc. Also includes items of audio, video and film equipment.
	-40	Interphone	That portion of the system which is used by flight and ground personnel to communicate between areas on the air vehicle. Includes items such as amplifier, handset, etc. Does not include the interphone system within the flight compartment which is part of the integrating system.
	-50	Audio integrating and voice command systems	That portion of the system which controls the output of the communications and navigation receivers into the flight crew headphones and speakers and the output of the flight crew microphones into the communications transmitters. Includes items such as audio selector control panel, microphones, headphones, cockpit loudspeakers, etc. Also includes those items which provide for voice command systems used by the operating crew members. (Not including items which are components of an associated air vehicle system).
	-60	Static discharging	That portion of the system which is used to dissipate static electricity.
	-70	Audio and video monitoring	Those installations that record, or monitor crew or passenger conversation or movement for security of safety purposes. Includes voice recorders, television, monitors, etc.
	-80	Integrated automatic tuning	That portion of the system which maintains integrated control of the operating frequencies of communication and navigation transmitter/receivers after either a manually inserted command or a preprogrammed integrated flight system command. Includes such items as integrated frequency selector panels, digital frequency control computers, integrated frequency display panels, etc.

2.1.7 System 24 - Electrical power

Table 7 System 24 - Electrical power

System	Subsystem	Title	Definition
24		**Electrical power**	Those electrical units and components which generate, control and supply AC and/or DC electrical power for other systems, including generators and relays, inverters, batteries etc, through the secondary busses. Also includes those units and components which provide for multiplexing of electrical power and common electrical items such as wiring, switches, connectors, etc.
	-00	General	

System	Subsystem	Title	Definition
	-10	Generator drive	Mechanical devices that drive the generators at a desired RPM. Includes items such as oil system, connecting devices, indicating and warning systems for the drive, ram air turbine, etc.
	-20	AC generation	That portion of the systems used to generate, regulate, control, and indicate AC electrical power. Includes items such as inverters, AC generators/alternators, control and regulating components, indicating systems etc, all wiring to but not including main busses.
	-30	DC generation	That portion of the systems used to generate, regulate, control and indicate DC electrical power. Includes items such as generators/alternators, transformers, rectifiers, batteries, control and regulating components, indicating systems etc, all wiring to but not including main busses.
	-40	External power	That portion of the system within the air vehicle which connects external electrical power to the air vehicle's electrical system. Includes items such as receptacles, relays, switches, wiring, warning lights, etc.
	-50	AC electrical load distribution	That portion of the system which provides for connection of AC power to using systems. Includes items such as main and secondary busses, main system circuit breakers, power system devices, etc.
	-60	DC electrical load distribution	That portion of the system which provides for connection of DC power to using systems. Includes items such as main and secondary busses, main system circuit breakers, power system devices, etc.
	-70	Electrical monitoring and protection	That portion of the system used to supply aircraft or ground power to use the ground power switching system, avionics low cooling protection system, essential 28 V DC bus monitoring system and system monitoring. Also includes air vehicle grounding receptacles.
	-80	Electrical power multiplexing	Those units or components which provide for multiplexing of electrical power. Includes computers, remote terminals and related interfaces to transmit electrical power control signals.
	-90	Multipurpose equipment	Those units or components which are applicable to more than one system or system interfaces, such as junction boxes, relay panels, terminal blocks, etc.

2.1.8 System 25 - Equipment/furnishings

Table 8 System 25 - Equipment/furnishings

System	Subsystem	Title	Definition
25		**Equipment/furnishings**	Those removable items of equipment and furnishings contained in the flight and passenger compartments. Includes emergency, buffet and lavatory equipment. Does not include structures of equipment assigned specifically to other systems.
	-00	General	
	-10	Flight compartment	The compartment above the floor and between the forward passenger partition and the forward pressure dome. Includes items such as flight crew seats, tables, pilot check lists and food containers, wardrobes, curtains, manuals, electronic equipment rack, spare bulbs, fuses, etc. Does not include cargo compartments.
	-20	Passenger/operating crew compartment	The areas in which the passengers/operating crew are accommodated. Includes lounges but not dressing rooms. Includes items such as seats, consoles, equipment racks, berths, overhead storage compartments, curtains, wall coverings, carpets, magazine racks, movable partitions, wall type thermometers, spare bulbs, fuses, etc.
	-30	Buffet/galley	The areas in which food and beverages are stored and prepared. Includes items such as removable and fixed cabinets, ovens, refrigerators, garbage containers, dish racks, coffee maker and dispensers, containers, electrical outlets, wiring, etc.
	-40	Lavatories	The toilet and dressing room areas containing wash basins, dressing tables and water closet. Includes items such as mirrors, seats, cabinets, dispensing equipment, electrical outlets, wiring, etc. Wash basins and water closets are included in System 38.
	-50	Additional compartments	Those additional compartments for the use of passengers and/or crew. Includes such compartments as crew rest compartments, sleeping compartments etc.
	-60	Emergency	Those items of equipment carried for use in emergency procedures. Includes items such as evacuation equipment, life rafts, life jackets, emergency locator transmitters, underwater locator devices, first aid kit, incubators, oxygen tents, medical stretchers, landing and signal flares, drag parachutes, evacuation signaling systems, etc. Does not include fire extinguishers, oxygen equipment or masks.
	-70	Available for projects	

System	Subsystem	Title	Definition
	-80	Insulation and lining	Those blankets which are used for heat and sound insulation. Includes flight compartments, passenger compartment, additional compartment insulation etc.

2.1.9 System 26 - Fire protection

Table 9 System 26 - Fire protection

System	Subsystem	Title	Definition
26		**Fire protection**	Those fixed and portable units and components which detect and indicate fire or smoke and store and distribute fire extinguishing agent to all protected areas of the air vehicle; including bottles, valves, tubing, etc.
	-00	General	
	-10	Detection	That portion of the system which is used to sense and indicate the presence of overheats, smoke or fire.
	-20	Extinguishing	That portion of those fixed or portable systems which is used to extinguish fire.
	-30	Explosion suppression	That portion of the system which is used to sense, indicate and extinguish a flame propagating into the fuel system to prevent an explosion.

2.1.10 System 27 - Flight controls

Table 10 System 27 - Flight controls

System	Subsystem	Title	Definition
27		**Flight controls**	Those units and components which furnish the means of controlling the flight attitude characteristics of the air vehicle. Also includes the functioning and maintenance of the primary and secondary flying control surfaces and lift augmenting systems but not the maintenance of the structure of control surfaces which is covered by the system structures. Includes items such as control stick grips, rudder pedals, gearboxes, control rods and cables, linkages, hydraulic valves, actuators, control units, controls and indicators, computers, transducers, transformers, sensor units, displays, gyros, accelerometers, servos, warning systems and control locking devices. This includes rotorcraft rotor controls which are covered in the rotor systems.
	-00	General	
	-10	Roll control	That portion of the system which controls the roll axis of the aircraft. Includes items such as the control wheels, cables, booster, linkages, control surfaces, indicators, etc.

System	Subsystem	Title	Definition
	-20	Yaw control	That portion of the system which controls the yaw axis of the aircraft. Includes items such as the rudder pedals, tab control wheel, cables, boosters, linkages, control surfaces, position indicators, etc.
	-30	Pitch control	That portion of the system which controls the pitch axis of the aircraft. Includes items such as the control column, stickshaker units, automatic stall recovery devices, tab control wheels, cables, boosters, linkages, control surfaces, position indicators, stall warning systems etc.
	-40	Horizontal stabilizers	That portion of the system which controls the position and movement of the horizontal stabilizer/canard. Includes items such as control handle, cables, jackscrews, motors, warning systems, linkages, control surfaces, position indicators, etc.
	-50	Flaps	That portion of the system which controls the position and movement of the trailing edge flaps. Includes items such as control handles, cables, actuators, warning systems, linkages, control surfaces, position indicators, etc.
	-60	Spoilers, drag devices and variable aerodynamic fairings	That portion of the system which controls the position and movement of the spoilers, drag devices and variable aerodynamic fairings. Includes items such as control handles, cables, warning systems, linkages, spoilers, drag devices, position indicators, etc.
	-70	Gust lock and damper	That portion of the system which protects the control surfaces from movement by wind while the aircraft is on the ground. Does not include locking the control by means of flight control boost system.
	-80	Lift augmenting	That portion of the system which controls the position and movement of variable opening wings slots, leading edge wing flaps and similar auxiliary devices used for increasing aerodynamic lift. Includes items such as control handles, cables, actuators, linkages, warning systems, control surfaces, position indicators, etc. This does not include trailing edge flaps.
	-90	Primary Flight Control System (PFCS)	That portion of the system, which centralizes all controls and computing means common to multiple primary flying control surfaces. This includes items such as flight control computer, flight data concentrator, side sticks, BUS coupler, rate gyro meter, accelerometer, etc.

2.1.11 System 28 - Fuel

Table 11 System 28 - Fuel

System	Subsystem	Title	Definition
28		**Fuel**	Those units and components which store and deliver fuel to the engine. Includes engine driven fuel pumps for reciprocating engines, includes tanks (bladder), valves, boost pumps etc, and those components which furnish a means of dumping fuel overboard. Includes integral and tip fuel tank leak detection and sealing. Does not include the structure of integral or tip fuel tanks and the fuel cell backing boards which are covered by the system structures, and does not include fuel flow rate sensing, transmitting and/or indicating, which are covered in System 73.
	-00	General	
	-10	Storage	That portion of the system which stores fuel. Includes tank sealing, bladder type cells, venting system, drainage provisions for tank pumps, cell and tank inter-connectors, over wing filler necks and caps, etc. Also includes reservoir feed pumping systems and reservoirs within the tanks which are not part of the distribution system.
	-20	Distribution	That portion of the system which is used to distribute fuel from the filler connector to the storage system and from the storage system to and including the power plant fuel quick disconnect. Includes items such as plumbing, pumps, valves, controls, etc.
	-30	Dump	That portion of the system which is used to dump fuel overboard during flight. Includes items such as plumbing, valves, controls, chutes, etc.
	-40	Indicating	That portion of the system which is used to indicate the quantity, temperature and pressure of the fuel. Includes pressure warning systems for pumping systems within the tank, etc. Does not include engine fuel flow or pressure.
	-50	In-flight refueling	That portion of the system which provides the means of accepting in-flight refueling. This will include access door controls/actuators, fuel receptor, distribution system to fuel storage or interface with standard fuel distribution system, flow controls and indicators, and audio interconnections with the tanker aircraft. Includes manual transfer and refueling controls but excludes automatic systems based on fuel quantity and c.g. constraints which are covered in Fuel/c.g. Management (System 28-60) on air vehicles so equipped.
	-60	Fuel/center of gravity management	That portion of the system which controls fuel distribution during aerial and ground refueling to maintain a safe c.g. configuration. Utilizes fuel quantity and stores data to compute air vehicle c.g. Includes fuel quantity and c.g. indication for in-flight and ground refueling operations.

2.1.12 System 29 - Hydraulic power

Table 12 System 29 - Hydraulic power

System	Subsystem	Title	Definition
29		**Hydraulic power**	Those units and components which furnish hydraulic fluid under pressure (includes pumps, regulators, lines, valves etc) to a common point (manifold) for redistribution to other defined systems.
	-00	General	
	-10	Main	That portion of the system which is used to store and deliver hydraulic fluid to using systems. Includes items such as tanks, accumulators, valves, pumps, levers, switches, cables, plumbing, wiring, external connectors, etc. Does not include the supply valves to the using systems.
	-20	Auxiliary	That portion of the system which is classified as auxiliary, emergency or standby, and which is used to supplement or take the place of the main hydraulic system. Includes items such as tanks and accumulators which are separate from the main system, hand pumps, auxiliary pumps, ram air turbine, valves, plumbing, wiring, etc.
	-30	Indicating	That portion of the system which is used to indicate the quantity, temperature and pressure of the hydraulic fluid. Includes items such as transmitters, indicators, wiring, warning systems, etc.

2.1.13 System 30 - Ice and rain protection

Table 13 System 30 - Ice and rain protection

System	Subsystem	Title	Definition
30		**Ice and rain protection**	Those units and components which provide a means of preventing or disposing of formation of ice and rain on various parts of the aircraft. Includes alcohol pump, valves, tanks, propeller/rotor anti-icing system, wing heaters, water line heaters, pitot heaters, scoop heaters, windshield wipers and the electrical and heated air portion of windshield ice control. Does not include the basic windshield panel. For turbine type power plants using air as the anti-icing medium, engine anti-icing is contained in System 75.
	-00	General	
	-10	Airfoil	That portion of the system which is used to eliminate or prevent the formation of ice on all airfoil surfaces. Includes wings, airfoil sections of the empennage and pylons.
	-20	Air intakes	That portion of the system which is used to eliminate or prevent the formation of ice in or around air intakes. Includes power plant cowling anti-icing.

System	Subsystem	Title	Definition
	-30	Pitot and static	That portion of the system which is used to eliminate or prevent the formation of ice on the pitot and static systems.
	-40	Windows, windshields, canopies and doors	That portion of the system which is used to eliminate or prevent the formation and accumulation of ice, frost or rain on the windows, windshields, canopies and doors.
	-50	Antennas and radomes	That portion of the system which is used to eliminate or prevent the formation of ice on antennas and radomes.
	-60	Propellers/rotors	That portion of the system which is used to eliminate or prevent the formation of ice on propellers or rotors. Includes all components up to but not including rotating assembly.
	-70	Water lines	That portion of the system which is used to prevent the formation of ice in water supply and drain lines.
	-80	Detection	That portion of the system which is used to detect and indicate the formation of ice.

2.1.14 System 31 - Indicating/recording systems

Table 14 System 31 - Indicating/recording systems

System	Subsystem	Title	Definition
31		**Indicating/recording systems**	Pictorial coverage of all instruments, instrument panels and controls. Procedural coverage of those systems which give visual or aural warning of conditions in unrelated systems. Includes units which record, store or compute data from unrelated systems and those units/systems that integrate indicating instruments into a central display system and instruments not related to any specific system.
	-00	General	
	-10	Instrument and control panels	Coverage of all panels fixed or movable with their replaceable components such as instruments, switches, circuit breakers, fuses, etc. Also includes general coverage of instrument panel vibrators and other panel.
	-20	Independent instruments	Those instruments, units and components which are not related to specific systems. Includes items such as inclinometers, clocks, etc.
	-30	Recorders	Those systems and components used for recording data not related to specific systems. Includes items such as flight recorders, performance or maintenance recorders, VG recorders, etc.

System	Subsystem	Title	Definition
	-40	General computers	Those systems and components used for computing data from a number of different sources without a preponderance of functions in any one system. Includes items such as Digital Core Avionic System (DCAS), stored check list, emergency procedures, company regulations etc, for call up on a display, integrated instrument systems such as engine, air vehicle power and central warning indicators when combined into a central display.
	-50	Central warning systems	Those systems and components which give audible or visual warning of conditions in unrelated systems. Includes items such as master warning or flight warning systems, central instrument warning or caution and warning systems, tone generators, annunciators, etc.
	-60	Display systems	Those systems and components which give visual display of conditions in unrelated systems.
	-70	Automatic data reporting systems	Those systems and components used for collating and computing data from unrelated systems and transmitting same automatically. Includes ASDAR systems and components.

2.1.15 System 32 - Landing gear

Table 15 System 32 - Landing gear

System	Subsystem	Title	Definition
32		**Landing gear**	Those units and components which furnish a means of supporting, steering, and maneuvering the air vehicle on the ground or water, and make it possible to retract and store the landing gear in flight. Includes tail skid assembly, arresting hooks, landing assistance equipment, drag chutes, brakes, wheels, floats, skids, skis, doors, shock struts, tires, linkages, position indicating and warning systems, motor, control systems, power supplies or converter. Also includes the functioning and maintenance aspects of the landing gear doors but does not include the structure which is covered in System 52.
	-00	General	
	-10	Main gear and doors	That portion of the system which provides the major support for the air vehicle while on the ground. Includes items such as shock struts, bogie axles, drag struts, doors, linkages, attach bolts, etc.
	-20	Nose/tail gear and doors	That portion of the system which supports the nose/tail of the air vehicle while the air vehicle is on the ground. Includes items such as shock struts, drag struts, doors, linkages, attach bolts, etc.

System	Subsystem	Title	Definition
	-30	Extension and retraction	That portion of the system which is used to extend and retract the landing gear and open and close the landing gear doors. Includes items such as actuating mechanisms, bogie trim, bungees, up and down latches, operating controls, valves and motors, cables, wiring, plumbing, etc.
	-40	Wheels and brakes	That portion of the system which provides for rolling and stopping the air vehicle while on the ground and stopping wheel rotation after retraction. Includes items such as bearings, tires, valves, de-boosters, swivel glands, anti-skid devices, pressure indicators, plumbing, etc.
	-50	Steering and maneuvering	That portion of the system which is used to control the direction and the movement of the air vehicle on the ground. Includes items such as actuating cylinders, controls, bogie swivel unlock, motor, control systems, power supplies or converter, etc.
	-60	Position and warning	That portion of the system which is used to indicate and warn of the position of the landing gear/doors. Includes items such as switches, relays, lights, indicators, horns, wiring, etc.
	-70	Supplementary gear	Devices used to stabilize the air vehicle while on the ground and prevent damage by ground contact. Includes items such as shock strut, ski block, wheels, etc.
	-80	Drag chute	That portion of the system used to aid in slowing the speed of the air vehicle when landing.
	-90	Arresting hook/landing assistance equipment	That portion of the system which is used to extend, retract and indicate the position of an arresting hook. Alternatively, those items providing landing assistance, such as helicopter winch-down systems and Harpoon system.

2.1.16 System 33 - Lights

Table 16 System 33 - Lights

System	Subsystem	Title	Definition
33		**Lights**	Those units and components (electrically powered) which provide for external and internal illumination such as landing lights, taxi lights, position lights, rotating lights, ice lights, master warning lights, passenger reading and cabin dome lights, etc. Includes light fixtures, switches and wiring. Does not include warning lights for individual systems or self-illuminating signs. Does not include lamps/bulbs which are covered in System 25. **Note** For those aircraft that do not contain passenger compartments, and where the flight compartment(s) can be reasonably divided, subsystem - 20 can be used to aid in defining such division.
	-00	General	

System	Subsystem	Title	Definition
	-10	Flight compartment	The lighting subsystems in the compartment above the floor and between the forward passenger partition and the forward pressure dome. Does not include cargo compartment. Includes primary and secondary lighting and lighting control of work areas, panels, instruments, night vision goggles (NVG), lighting mode selection and lamp test operation. Includes master warning light and warning light dimming systems, where not integrated with a central audio or visual system under System 31-50.
	-20	Passenger compartments	The lighting subsystems in the areas in which the passengers are seated and in buffet/galley, lavatories, lounges and coat rooms. Includes items such as direct and indirect illumination, passenger call system, lighted signs, etc.
	-30	Cargo and service compartments	The lighting subsystems in the compartments for stowage or cargo and the housing of various components of accessories.
	-40	Exterior	The lighting subsystems used to provide illumination outside of the aircraft. Includes lights such as landing, navigation, position indicating, wing illumination, rotating, courtesy, taxi, etc.
	-50	Emergency lighting	The separate and independent subsystems used to provide illumination in case of primary electrical power failure. Includes items such as inertia flashlights, lanterns, etc.

2.1.17 System 34 - Navigation

Table 17 System 34 - Navigation

System	Subsystem	Title	Definition
34		**Navigation**	Those units and components which provide air vehicle navigational information. Includes VOR, pitot, static, ILS, flight director, compasses, indicators, etc.
	-00	General	
	-10	Flight environment data	That portion of the system which senses environmental conditions and uses the data to influence navigation. Includes such items as Central Air Data Computers, pitot/static systems, air temperature, rate-of-climb, airspeed, high speed warning, altitude, altitude reporting, altimeter correction system, air disturbance detection system, etc.
	-20	Attitude and direction	That portion of the system which uses magnetic or inertia forces to sense and display the direction or attitude of the air vehicle. This includes sensing, computing, indicating and warning devices such as magnetic compasses, vertical and directional references, magnetic heading systems, attitude director systems, symbol generators, turn and bank, rate of turn, amplifiers, indicators, etc. Includes Flight Director when it is not integral with the auto pilot computation.

System	Subsystem	Title	Definition
	-30	Landing and taxiing aids	That portion of the system which provides guidance during approach, landing and taxiing. Includes items such as localizer, glide slope, ILS, markers, paravisual director ground guidance systems, etc.
	-40	Independent position determining	That portion of the system which provides information to determine position and is mainly independent of ground installations or orbital satellites. Includes items such as inertial guidance systems, weather radar, Doppler, electronic/radar altimeter, proximity warning, collision avoidance, star tracker, etc. Also includes sextants/octants, etc.
	-50	Dependent position determining	That portion of the system which provides information to determine position and is mainly dependent on ground installations or orbital satellites. Includes items such as DME, transponders, radio compass, LORAN, VOR, ADF, OMEGA, GLOBAL POSITIONING, IFF, etc.
	-60	Flight management computing	That portion of the system which combines navigational data to compute or manage the air vehicle's geographical position or theoretical flight path. Includes items such as course computers, flight management computers, performance data computers and associated control display units, warning annunciators, etc.
	-70	Environment surveillance system	That portion of the system that integrates dependent and independent position determining, which identifies all kind of hazards external to the aircraft on its potential aircraft flight path and manage the actions to avoid these threads. Includes items that combine surveillance of weather events, windshear, turbulence, airborne collision, collision with terrain, etc. Functions are described under another 34 subsystem when they are managed as a standalone system.

2.1.18 System 35 - Oxygen

Table 18 System 35 - Oxygen

System	Subsystem	Title	Definition
35		**Oxygen**	Those units and components which store, generate, regulate, indicate, deliver and control oxygen to the passengers and crew, including bottles, relief valves, shut-off valves, outlets, regulators, masks, walk-around bottles, etc.
	-00	General	
	-10	Crew	That portion of the system which furnishes oxygen to the crew.
	-20	Passenger	That portion of the system which furnishes oxygen to the passengers.
	-30	Portable	That portion of the system which has an independent oxygen supply and which can be transported about the airplane.

System	Subsystem	Title	Definition
	-40	On board oxygen generating system	That portion of the system which generates oxygen for distribution in the other subsystems.

2.1.19 System 36 - Pneumatic

Table 19 System 36 - Pneumatic

System	Subsystem	Title	Definition
36		**Pneumatic**	Those units and components (ducts and valves) which deliver large volumes of compressed air from a power source to connecting points for such other systems as air conditioning, pressurization, deicing, etc.
	-00	General	
	-10	Distribution	That portion of the system which is used to distribute high or low pressure air to using systems. Includes items such as ducts, valves, actuators, heat exchangers, controls, etc. Does not include the supply valves to the using systems.
	-20	Indicating	That portion of the system which is used to indicate temperature and pressure of the pneumatic system. Includes temperature and pressure warning systems.

2.1.20 System 37 - Vacuum

Table 20 System 37 - Vacuum

System	Subsystem	Title	Definition
37		**Vacuum**	Those units and components used to generate, deliver and regulate negative air pressure, including pumps, regulators, lines etc, through and including the manifold.
	-00	General	
	-10	Distribution	That portion of the system which is used to distribute negative pressure air to using systems.
	-20	Indicating	That portion of the system which is used to indicate pressure. Includes pressure warning system.

2.1.21 System 38 - Water/waste

Table 21 System 38 - Water/waste

System	Subsystem	Title	Definition
38		**Water/waste**	Those fixed units and components which store and deliver for use, fresh water, and those fixed components which store and furnish a means of removal of water and waste. Includes wash basins, toilet assemblies, tanks, valves, etc.
	-00	General	
	-10	Potable	That portion of the system which is used to store and deliver fresh drinking water. Includes wash water system if the potable water is also used for washing.
	-20	Wash	That portion of the system which is used to store and deliver washwater which is not potable.
	-30	Waste disposal	That portion of the system which is used for disposal of water and waste. Includes items such as wash basins, water closets, flushing systems, etc.
	-40	Air supply	That portion of the system common to more than one subsystem which is used for pressurizing supply tanks to insure fluid flow.

2.1.22 System 39 - Attack system management

Table 22 System 39 - Attack system management

System	Subsystem	Title	Definition
39		**Attack system management**	Those functions and hardware used for attack system management. That includes digital information networking, crew-machine communication management (including knowledge-based help), stores management etc.
	-00	General	
	-10	Architecture management	General organization and its management depending on missions and their phases.
	-20	Attack system functions	Management of the different functions of the attack system depending on type of the missions and the different phases. In this section, the classification of these functions is indicated with the management of their activity during the missions.
	-30	Attack system resources	All the contributing resources of the attack system are listed and their role is presented depending on the missions and their different phases.
	-40	General rules of man-machine communication	Management of the man-machine communication by the system side (including knowledge based functions).

System	Subsystem	Title	Definition
	-50	Digital networks	Hardware and software related to digital networks (eg, MIL-1553B or Stanag-3810). Management of exchanges by these means is also to be presented.
	-60	Other information networks	These other networks needed in attack systems (eg, network for video signals, network for blanking signals, etc).
	-70	Stores management	Hardware and software within the air vehicle itself used for stores management.

2.1.23 System 40 - Operational attack functions

Table 23 System 40 - Operational attack functions

System	Subsystem	Title	Definition
40		**Operational attack functions**	Those functions and hardware used for attack system operational aim. Links of these functions with technical functions are included.
	-00	General	
	-10	Navigational functions	Include localization (with updating), flight management, approach and landing management etc.
	-20	Nap of the earth flight	Terrain following and obstacle avoidance management.
	-30	Self-protection	Defensive maneuvers and tactics elaboration against threats.
	-40	Information exchange and cooperation	Elaboration of pieces of information to be exchanged for cooperation with other air vehicles including AWACS-type air vehicles and ground or surface weapons systems.
	-50	Identification	Aerial and surface objects identification based on autonomous but also external (available through cooperation) identification means.
	-60	Air-to-air functions	Fire control functions related to air-to-air attacks. These sections can be divided as required to deal with bullet gun firing, short range missiles, medium range or beyond visual range missiles firing (for single or multiple targets attack). These functions are generally spread between weapons seekers and computers and aircraft sensors, computers, etc. This also includes air-to-air management after weapon launch (to guide or help the weapon for the target hitting).
	-70	Air-to-surface functions	Fire control functions related to air-to-surface attacks. These sections can be divided as required to deal with bombs delivery, rockets or missiles firing (either short range, medium range or of fire and forget type). These weapons can be guided or not. These functions are generally spread between weapons seekers, computers, and aircraft sensors, computers, etc. Management of guidance when made onboard is also to consider in these sections.

2.1.24 System 41 - Water ballast

Table 24 System 41 - Water ballast

System	Subsystem	Title	Definition
41		**Water ballast**	Those units and components provided for the storage, balancing, control, filling, discharge and dumping of water ballast. Does not include units or components covered in System 38.
	-00	General	
	-10	Storage	That portion of the system which stores water solely for the purpose of providing airship ballast. Includes removable tanks (bladder cells), interconnecting balance pipes, filler valves, etc.
	-20	Dump	That portion of the system used to dump water ballast during flight. Includes valves (remote/direct) manual/automatic controls, etc.
	-30	Indication	That portion of the system used to indicate quantity, condition and relative distribution of the water ballast.

2.1.25 System 42 - Cross-technical attack functions

Table 25 System 42 - Cross-technical attack functions

System	Subsystem	Title	Definition
42		**Cross-technical attack functions**	Those functions and hardware used for attacks execution. These technical functions considered in this System are common to many attack system operational functions, and therefore within the "crossroad" of the attack system.
	-00	General	
	-10	Mission system control and management	Functions in charge of scheduling and deciding about planned actions, priority management for resources consumption, etc.
	-20	Trajectory management	Functions dealing with trajectory constraints given by execution of operational functions and in charge of determination of the exact trajectory to follow (by autopilot) or to indicate (to the pilot).
	-30	Attack system compatibilities management	Function in charge of all the aspects related to electromagnetic compatibility between all the transmitters and receivers (including radios, ECM, radars, external stores, lasers, etc).
	-40	Tactical situation awareness	Functions in charge of establishing knowledge about tactical environment and its distribution to other functions (eg, fire control). The tactical situation awareness is based on information received from aircraft sensors, weapons seekers, cooperation, etc.

System	Subsystem	Title	Definition
	-50	Mission preparation	Embedded functions dedicated to deal with data given before flight and dispatch them to the other attack functions.
	-60	Mission restitution	Embedded functions dedicated to take care of all the data needed to replay the whole or part of the mission later on.
	-70	Warnings and cautions management	Functions in charge of telling crew or ground personnel bad events. Here is to consider only the result of each system warning and caution activity and mainly the filtering process (including knowledge based filters) to provide crew only with accurate messages depending on mission phases or aircraft status.

2.1.26 System 42 - Integrated modular avionics

Note

For this system the material item category code must be used in accordance with Chap 4.3.3.

Table 26 System 42 - Integrated modular avionics

System	Subsystem	Title	Definition
42		**Integrated modular avionics**	Generalize computing devices that can host software applications for system functions that had traditionally been implemented in dedicated hardware. The actual system functions are covered in their respective systems.
	-00	General	
	-20	Core System	
	-30	Network Components	

2.1.27 System 43 - Tactical communications

Table 27 System 43 - Tactical communications

System	Subsystem	Title	Definition
43		**Tactical communications**	Those units and components that furnish the crew with a means of communicating within the air vehicle, one air vehicle to another, and from the air vehicle to ground stations. Includes voice, C-W communicating components, PA system, intercom and recorder/record player.
	-00	General	
	-10	Ultra, super and extra high frequencies (UHF/SHF/EHF)	That portion of the system which is used for communications utilizing UHF/SHF/EHF carriers. Includes items such as transmitters, receivers, control panel, selcal decoder, antenna, etc.

System	Subsystem	Title	Definition
	-20	Very high frequency (VHF)	That portion of the system which is used for communications utilizing VHF carriers. Includes items such as transmitters, receivers, control panel, selcal decoder, antenna, etc.
	-30	High frequency (HF)	That portion of the system which is used for communications utilizing HF carriers. Includes items such as transmitters, receivers, power supply, control panel, antenna, coupler, etc.
	-40	Low and very low frequency (LF/VLF)	That portion of the system which is used for communications utilizing LF/VLF carriers. Includes items such as transmitters, receivers, power supply, control panel, antenna, coupler, etc.
	-50	Audio integrating	That portion of the system which controls the output of the communications and navigation receivers into the crews' headphones and speakers and the output of the crews' microphones into the communications transmitter. Includes items such as audio selector control panel, microphones, headphones, loudspeakers, etc.
	-60	Digital	That portion of the system which is used for air vehicle to air vehicle or air vehicle to ground stations utilizing C-W. Includes items such as teletypewriters, modems, keyers, encryption devices, etc.
	-70	Multiplex and audio switching	That portion of the system which is used for telephone communications between air vehicles or ground stations. Includes items such as telephones and multiplexing equipment.
	-80	Interphone and passenger address	That portion of the system used to address the passengers and which is used by the crew to communicate between areas of the air vehicle. Includes items such as amplifiers, speakers, handsets, control panels, audio, video and film equipment. Does not include the interphone system within the flight compartment which is part of the integrating system.
	-90	Satellite communications	That portion of the system which is used for air vehicle to satellite communications. Includes items such as receivers, transmitters, modems, amplifiers, etc.

2.1.28 System 44 - Cabin systems

Table 28 System 44 - Cabin systems

System	Subsystem	Title	Definition
44		**Cabin systems**	Those units and components which furnish a means of entertaining the passengers and providing communication within the aircraft and between the aircraft cabin and ground stations. Includes voice, data, music and video transmissions. Does not include SATCOM, HF, VHF, UHF, and all transmitting/receiving equipment, antennas, etc, which are covered in System 23 or System 46.
	-00	General	
	-10	Cabin core system	That portion of the system used to accomplish the integrated functional control, operation, testing and monitoring of cabin systems and the increase cabin comfort (such as active noise control). Includes items such as controllers, cabin control panels, handsets, signs, loudspeakers, etc.
	-20	Inflight entertainment system	That portion of the system used to entertain the passengers with music, video, information, games, etc. Includes items such as controllers, cabin control panels, audio and video equipment, etc.
	-30	External communication system	That portion of the system used by passengers and cabin crew to transmit and/or receive data/messages from air to air or from air to ground installations. Includes items such as telephones, telefaxes, modems, AM/FM radio units, etc.
	-40	Cabin mass memory system	That portion of the system used to store and process cabin related data, such as systems configuration data, multimedia programs, etc. Includes items such as controllers, terminals, keyboards, disk drives, printers, modems, etc.
	-50	Cabin monitoring system	The portion of the system used to monitor parts of the cabin area. Includes items such as surveillance cameras, monitors, etc. Does not include external anti-hijack devices or external video monitoring which are covered in System 23.
	-60	Miscellaneous cabin system	That portion of the system used to support miscellaneous cabin functions.

2.1.29 System 45 - Central maintenance system (CMS)

Table 29 System 45 - Central maintenance system (CMS)

System	Subsystem	Title	Definition
45		**Central maintenance system (CMS)**	Those units, components and associated system which interfaces with multiple air vehicle systems. Contains checkout and fault isolation procedures using a central computer complex and/or standard fault isolation procedures to locate a single system or component malfunction.
	-00	General	

System	Subsystem	Title	Definition
	-04 thru -19	CMS/Air vehicle general	CMS interfaces with general air vehicle systems and identification of maintenance functions related to air vehicles.
	-20 thru -44 and -46 thru -49	CMS/Airframe systems	CMS interfaces with airframe systems and identification of maintenance functions related to airframe systems.
	-45	Central maintenance system	That portion of the system which interfaces with other airplane systems, flight line mechanics and radio communications. Includes computers, storage devices, control and display devices.
	-50 thru -59	CMS/structures	CMS interfaces with structures and identification of maintenance functions related to structures.
	-60 thru -69	CMS/propellers	CMS interfaces with propeller and identification of maintenance functions related to propellers.
	-70 thru -89	CMS/power plant	CMS interfaces with power plant and identification of maintenance functions related to power plant.
	-91 thru -99	CMS/military systems	CMS interfaces with military systems and identification of maintenance functions related to military systems.
			Note Subsystem/Section code is selected to match applicable system interface. For example, 45-21-XX identifies all air conditioning monitoring and testing provided by the CMS and provides directions for using the CMS to execute those maintenance functions. Detailed testing not capable of coverage in System 45 is appropriately cross referenced and provided in System 21. Similarly, 45-32-XX identifies landing gear monitoring and testing provided by the CMS. 45-45-XX identifies the CMS itself.

2.1.30 System 46 - Systems integration and display

Table 30 System 46 - Systems integration and display

System	Subsystem	Title	Definition
46		**Systems integration and display**	The primary air vehicle system used to provide central acquisition, processing and display of data from multiple sources such as flight controls, navigation computation, air data computation, warnings, engine parameters, etc.
	-00	General	

	-10	Acquisition	Those units and components used to acquire data for integration and processing. Excludes components which are covered by the system dealing with the system/subsystem from which the data is being obtained.
	-20	Processing and integration	Those units and components used to integrate and process data acquired from a variety of sources and output signals to display or warning devices. Includes such items as interfaces, central processing units, data bus controls.
	-30	Display	Those units which display data warning units, remote displays, etc.
	-40 thru -79	Systems integration, software packages	These sections are used to provide information about those software packages which are applicable to more than one system of the air vehicle and can be classified as multi-system applicable software. This can be taken to mean software for computers which, in the event of failure of the computer(s) in another system, assume responsibility for the management of that system and thus provides backup to the failed systems, even though the computer which is providing backup normally has no connection with the system for which it is the backup.

2.1.31 System 46 - Information system

Note

For this system the material item category code must be used in accordance with Chap 4.3.3.

Table 31 System 46 - Information system

System	Subsystem	Title	Definition
46		**Information system**	Those units and components, which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm, or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the Electronic Library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.
	-00	General	
	-10	Airplane general information systems	
	-20	Flight deck information systems	That portion of the onboard information system that supports the flight deck systems, flight deck crew and flight operations.
	-30	Maintenance information systems	That portion of the onboard flight information system that supports all onboard maintenance system functions, maintenance technicians, and any ground based maintenance activity.

System	Subsystem	Title	Definition
	-40	Passenger cabin information systems	That portion of the onboard information system that supports the passenger cabin, cabin operations, and flight attendants.
	-50	Miscellaneous information systems	That portion of the onboard information system that supports other functions, as defined by the user that cannot be related to the flight deck, passenger cabin, or maintenance.

2.1.32 System 47 - Liquid nitrogen

Table 32 System 47 - Liquid nitrogen

System	Subsystem	Title	Definition
47		**Liquid nitrogen**	Those units and components used to generate, store, deliver and regulate liquid nitrogen to 2 or more using systems. Includes regulators, lines, manifolds, etc. Does not include liquid nitrogen handling components of the using system (ie, System 21-80).
	-00	General	
	-10	Generation/storage	That portion of the system which generates and/or stores nitrogen. Includes tanks, cells reservoirs, accumulators, etc. Does not include plumbing, pumps, valves, controls, etc.
	-20	Distribution	That portion of the system which is used to distribute nitrogen to the using systems. Includes plumbing, pumps, valves, regulators, etc.
	-30	Controlling	The nitrogen controls which meter the nitrogen to the distribution components and into the using systems. Includes items such as levers, switches, cables, etc.
	-40	Indicating	That portion of the system which is used to indicate the flow rate, temperature and pressure of the nitrogen. Includes items such as transmitters, indicators, etc.

2.1.33 System 48 - In-flight refueling tanker

Table 33 System 48 - In-flight refueling tanker

System	Subsystem	Title	Definition
48		**In-flight refueling tanker**	Those units and components which store, and deliver fuel to a receiver vehicle while in flight. Includes fuel storage units, distribution system, controls, sensors, etc, specifically used for in-flight refueling supply. Includes interfaces with other systems but does not include any dual purpose item that is identified with another system.

System	Subsystem	Title	Definition
			Note When systems and components serve both the operational and refueling system they are identified with the operational fuel system (System 28-00).
	-00	General	
	-10	Storage	That portion of the system which stores fuel specifically for the purpose of in-flight refueling. Includes tank sealing, bladder type cells, ventilating system, cell and tank inter-connectors, over wing filler necks and caps, etc. Also includes reservoir feed pumping systems and reservoirs within the tanks which are not part of the distribution system.
	-20	Distribution	That portion of the system which is used to distribute fuel from the filler connector to the storage system and from the storage system to and including the interface with the vehicle to vehicle transfer system. Includes such items as plumbing, pumps, valves, controls, etc.
	-30	Delivery	That portion of the system that accepts the fuel from the distribution portion and conducts it to the receiving vehicle. Includes refueling boom and nozzle or hose and drogue, boom control surfaces, actuators and hoist and stowage system. Does not include operator controls.
	-40	Controls	That portion of the system which is used to control the transfer of fuel from tanker to receiving vehicle. Includes operator controls, indicators, inter vehicle communications.
	-50	Indicating	That portion of the system which is used to indicate fuel quantity, temperature and pressure. Includes pressure warning systems for pumping within the storage and distribution areas.
	-60	Dump	That portion of the system which is used to dump fuel overboard during flight. When the tanker vehicle dump system (System 28-30) is used, the interface with it is identified in this system. Includes such items as plumbing, controls, indicators, chutes, etc.

2.1.34 System 49 - Airborne auxiliary power

Table 34 System 49 - Airborne auxiliary power

System	Subsystem	Title	Definition
49		**Airborne auxiliary power**	Those airborne power plants (engines) which are installed on the air vehicle for the purpose of generating and supplying a single type or combination of auxiliary electric, hydraulic, pneumatic or other power. Includes power and drive section, fuel, ignition and control systems; also wiring, indicators, plumbing, valves and ducts up to the power unit. Does not include generators, alternators, hydraulic pumps etc, or their connecting systems which supply and deliver power to their respective air vehicle systems.

System	Subsystem	Title	Definition
	-00	General	
	-10	Power plant	For definitions see System 71.
	-20	Engine	For definitions see System 72.
	-30	Engine fuel and control	For definitions see System 73.
	-40	Ignition/starting	For definitions see System 74 and 80.
	-50	Air	For definitions see System 75.
	-60	Engine controls	For definitions see System 76.
	-70	Engine indicating	For definitions see System 77.
	-80	Exhaust	For definitions see System 78.
	-90	Oil	For definitions see System 79.

2.1.35 System 50 - Cargo and accessory compartment

Table 35 System 50 - Cargo and accessory compartment

System	Subsystem	Title	Definition
50		**Cargo and accessory compartment**	Those compartments for storage of cargo and various components and accessories. Includes those systems used to load/unload cargo and other cargo related systems. Does not include aircraft structure which is in System 53.
	-00	General	
	-10	Cargo compartments	Those compartments for storage of cargo.
	-20	Cargo loading systems	Those systems which have components which are or can be mounted on the aircraft and used to load/unload, restrain, guide or service cargo. Includes drive systems rollers, latches, restraint nets, etc.
	-30	Cargo related systems	Those systems which are related to loading/unloading of cargo. Includes aircraft leveling, loader alignment systems etc. Does not include Cargo Loading Systems.
	-40	Aerial delivery	Those items required for air drop of cargo or personnel. Includes platforms, parachutes and drogue chutes, load release mechanisms and load transfer devices, anchor cables, static lines, retrieval winches, jump lines, etc.
	-50	Accessory compartments	Those compartments used for the housing of various components and accessories. Includes wheel wells, tell-hydraulic-electrical/electronic equipment racks, main battery structure, etc.

System	Subsystem	Title	Definition
	-60	Insulation	Those insulation blankets which are used for heat and sound insulation. Includes cargo compartments and accessory compartments, insulation, etc.

2.1.36 System 51 - Standard practices - Structures

Table 36 System 51 - Standard practices - Structures

System	Subsystem	Title	Definition
51		**Standard practices - Structures**	This System contains those standard practices, general procedures and typical repairs applicable to more than one structural task which are not specifically covered in Systems 52 thru 57. This excludes those standard practices which are recognized as standard trade practices, also those practices/processes which are only applicable to manufacture. Practices for a particular application are included in the appropriate structural system as part of the procedure.
	-00	General	Standard practices applicable to all structural systems. Air vehicle major structural breakdown and primary and secondary structure diagrams. Principal area and dimensional data. Restricted area diagram. Zoning diagram. Access door and panel identification. Glossary.
	-10	Investigation, cleanup and aerodynamic smoothness	Definition of damage classifications. Cleanup of dents, cracks, scratches, corrosion, etc. Aerodynamic smoothness requirements for the airplane, and permissible contour variations, gaps and mismatch data.
	-20	Processes	Special processes for use in the repair of the airplane. It does not include general engineering practices unless specific deviations are required. Unique processes such as welding specifications, etc., relative to a single repair are to be incorporated in the repair and only referenced here.
	-30	Materials	Description of materials (metallic and non-metallic) including extrusions, formed sections, sheet, sealants, adhesives, and special materials used in airplane repair. Where possible, permissible substitutes and sources of supply will be given.
	-40	Fasteners	Description of fastener types, materials, and sizes. Procedures for fastener installation and removal including hole preparation. Fastener strength values and substitution data.
	-50	Support of airplane for repair and alignment check procedures	Procedure for supporting the airplane to relieve loads during repairs. Includes location for supports and contour dimensions for required support equipment.

System	Subsystem	Title	Definition
	-60	Control-surface balancing	Procedures for adjusting the mass balance of control surfaces after repair. Where applicable, individual repairs will contain their own balancing instructions.
	-70	Repairs	Typical repairs suited for general use, not limited to one S1000D System
	-80	Electrical bonding	Topics concerning the electrical bonding of aircraft structures as well as electrical bonding of subsystems to aircraft structure.

2.1.37 System 52 - Doors

Table 37 System 52 - Doors

System	Subsystem	Title	Definition
52		**Doors**	Removable units used for entrance or exit and for enclosing other structure contained within the fuselage. Includes passenger and crew doors, cargo doors, emergency exits, etc. Electrical and hydraulic systems associated with door control are included as appropriate.
	-00	General	
	-10	Passenger/crew	Doors used for entrance and exit of the passengers and crew to and from the air vehicle. Includes items such as structure, latching mechanisms, handles, insulation, lining, controls, integral steps, ramps, handrails, attach/attached fittings, etc.
	-20	Emergency exit	Exit doors used to facilitate evacuation that are normally used for exit. Includes items such as structure, latching mechanisms, handles, insulation, lining, controls, attach/attached fittings, etc.
	-30	Cargo	Exterior doors used primarily to gain access to cargo compartments. Includes items such as structure, latching mechanisms, handles, insulation, lining, controls, integral steps, ramps, handrails, attach/attached fittings, etc.
	-40	Service and miscellaneous	Exterior doors used primarily to gain access for servicing air vehicle systems and equipment. Includes items such as structure, latching mechanisms, handles, insulation, lining, controls, integral steps, handrails, attach/attached fittings, etc.
	-50	Fixed interior	Doors inside the fuselage installed in fixed partitions. Includes items such as structure, latching mechanisms, handles, lining, attach/attached fittings, etc. Does not include doors installed in movable partitions which are covered in System 25.

System	Subsystem	Title	Definition
	-60	Entrance stairs	Stairs which operate in conjunction with but are not an integral part of entrance doors. Stairs whose primary structure is a door are covered under the appropriate topic. Includes items such as structure, actuating mechanisms and controls, handrails, attach/attached fittings, etc.
	-70	Door warning	That portion of the system which is used to indicate whether the doors are closed and properly latched. Includes items such as switches, lights, bells, horns, etc. Does not include landing gear door warning which is covered in System 32.
	-80	Landing gear	Structure of the doors used to enclose the landing gear compartments. Includes items such as structure, latching mechanisms, handles, insulation, lining, controls, attach/attached fittings, etc.

2.1.38 System 53 - Fuselage

Table 38 System 53 - Fuselage

System	Subsystem	Title	Definition
53		**Fuselage**	Structural units and associated components and members which make up the compartments for equipment, passengers, crew, cargo, plus the structure of the envelope and gondola of airships. Includes skins, belt frames, stringers, floor beams, floor, pressure dome, scuppers, tail cone, fuselage-to-wing-and-empennage fillets, attach/attached fittings, load curtains, cables, ballonets, etc. Also includes structural and removable pylons used for the carriage of external stores. Does not cover those pylons used for weapons which are covered in System 94-30.
	-00	General	
	-10 thru -90	Fuselage sections	Skins, main structure, secondary structure and fairings of the complete fuselage with any structural differences grouped together and highlighted by fuselage section location. The section locations are defined by manufacturing joints or other suitable demarcations in sequence from front to rear. Does not include movable partitions covered in System 25 nor the functional and maintenance aspects of variable aerodynamic fairings covered in System 27.

2.1.39 System 54 - Nacelles/pylons

Table 39 System 54 - Nacelles/pylons

System	Subsystem	Title	Definition
54		**Nacelles/pylons**	Structural units and associated components and members which furnish a means of mounting and housing the power plant or rotor assembly. Includes skins, longerons, belt frames, stringers, clamshells, scuppers, doors, nacelle fillets, attach/attached fittings, etc. Also includes the structure of power plant cowling inclusive of the structural portion of the inlet whether or not integral with the air vehicle. Structural portions of the exhaust systems are excluded where they are not integral with the airframe.
	-00	General	
	-10 thru -40	Nacelle section	Skins, primary structure, secondary structure, fillets and fairings of a complete nacelle with any structural differences grouped together and highlighted by specific nacelle designator. The section locations are defined by manufacturing joints or other suitable demarcations in a logical sequence.
	-50 thru -80	Pylon	Skins, primary structure, secondary structure, fillets and fairings of a complete pylon with any structure differences grouped together and highlighted by specific pylon designator. The section locations are defined by manufacturing joints or other suitable demarcations in a logical sequence.
	-90	Air management	Consists of those components which regulate and direct inlet air flow and/or provide engine air particle separation (EAPS).

2.1.40 System 55 - Stabilizers

Table 40 System 55 - Stabilizers

System	Subsystem	Title	Definition
55		**Stabilizers**	Horizontal and vertical stabilizers. Includes the structure of the elevator, rudder, auxiliary stabilizers and strakes.
	-00	General	
	-10	Horizontal stabilizer or canard	The horizontal airfoil of the tail or nose section to which an elevator can be attached. Includes items such as spars, ribs, stringers, skins, access covers, tips, attach/attached fittings, etc.
	-20	Elevator	Removable airfoil which is attached to the horizontal stabilizer or canard and used for pitch control. Includes items such as spars, ribs, stringers, skins, access covers, tabs, balance devices, attach/attached fittings, etc.
	-30	Vertical stabilizer	Vertical airfoil to which the rudder is attached. Includes items such as spars, ribs, stringers, skins, access covers, tips, attach/attached fittings, etc.

System	Subsystem	Title	Definition
	-40	Rudder	Removable airfoil which is attached to the vertical stabilizer and used for yaw control. Includes items such as spars, ribs, stringers, skins, access covers, tabs, balance devices, attach/attached fitting, etc.
	-50	Auxiliary stabilizers and strakes	Fuselage mounted auxiliary stabilizers and strakes includes items such as spars, ribs, stringers, skins, access covers.

2.1.41 System 56 - Windows and canopies

Table 41 System 56 - Windows and canopies

System	Subsystem	Title	Definition
56		**Windows and canopies**	Fuselage and crew compartment windows and canopies, inclusive of windshield; also those windows installed in doors. Associated electrical/hydraulic/pneumatic actuation systems are to be included.
	-00	General	
	-10	Flight compartment	Compartment in which the crew fly the aircraft. Includes items such as the transparent material and its frame of movable and fixed windows, windshields and canopies, handles, latching mechanisms and associated electrical/hydraulic/pneumatic actuation systems, etc. Does not include doors or inspection/observation windows.
	-20	Fuselage compartment	The compartment used for passengers/tactical crew/cargo, etc. Includes lounges, lavatories, buffets/galleys and coatrooms. Includes items such as transparent material, its frame, frost shield, etc.
	-30	Door	Doors in the flight and fuselage compartments. Includes items such as transparent material, its frame, etc. Does not include emergency exit windows.
	-40	Inspection and observation	Windows used for examining compartments and equipment in and about the air vehicle, astrodomes used for celestial navigation, and in-flight refueling operator’s windows. Includes items such as transparent material, its frame, etc.

2.1.42 System 57 - Wings

Table 42 System 57 - Wings

System	Subsystem	Title	Definition
57		**Wings**	Center wing and outer wing structural units and associated components and members which support the air vehicle in flight. Includes spars, skins, ribs, stringers, clamshells, scuppers etc, and integral fuel tank structure of the flaps, slats, ailerons or elevons (complete with tabs) and spoilers. Also includes structural and removable pylons used for carriage of external stores. Does not cover those pylons used for weapons which are covered in System 94-30.
	-00	General	
	-10	Center wing	Skins, primary structure, fillets and fairings of the center wing and attach/attached fittings.
	-20	Outer wing	Skins, primary structure, fillets and fairings of the outer wing and attach/attached fittings.
	-30	Wing tip	Skins and structure of the wing tip and attached fittings.
	-40	Leading edge and leading edge devices	Skins and structure of the wing leading edge and removable leading edge airfoils such as flaps, slats, attach/attached fittings, etc.
	-50	Trailing edge and trailing edge devices	Skins and structure of the wing trailing edge and removable trailing edge ailerons such as flaps and attach/attached fittings.
	-60	Ailerons, elevons and flaperons	The skin and structure of ailerons, elevons, flaperons and tabs including balancing devices and attach/attached fittings, etc.
	-70	Spoilers	Skins and structure of wing-mounted spoilers, airbrakes, lift dumpers, attach/attached fittings, etc.
	-80	Wing folding	System that controls the on-ground movement of any portion of the main wing structure. Includes mechanisms linkages, actuators, locks, indicating/warning systems, etc. **Note** This represents the wing stow system and is not to be confused with System 66 Folding blades/pylon.

2.1.43 System 60 - Standard practices, Propeller/rotor

Table 43 System 60 - Standard practices, Propeller/rotor

System	Subsystem	Title	Definition
60		**Standard practices, Propeller/rotor**	This system contains those standard mechanical and electrical/electronic engineering practices applicable to more than one propeller/rotor which are not covered in Systems 61 thru 69. It excludes those practices which are recognized as standard trade practices, also those practices/processes which are only applicable to manufacture. Practices for a particular application are included in the appropriate propeller/rotor system as part of the procedure.
	-00	General	Standard practices applicable to all propeller/rotor systems.
	-10 thru -90		Sections -10 thru -90 are used to describe standard practices. The manufacturer or manufacturing partners can assign the section numbers to suit generic standard practices related to more than one propeller or rotor system.

2.1.44 System 61 - Propellers/propulsors

Table 44 System 61 - Propellers/propulsors

System	Subsystem	Title	Definition
61		**Propellers/propulsors**	The complete mechanical or electrical propeller, pumps, motors, governor, alternators and those units and components external to or integral with the engine used to control the propeller blade angle. Includes propeller spinner synchronizers. Also includes propulsor duct assemblies, including aerodynamic fairing of mechanical components, stators, vectoring systems, etc.
	-00	General	
	-10	Propeller assembly	That portion of the system which rotates except the engine propeller shaft. Includes items such as blades, dome, hub, spinner, slip ring, deicer boot, distributor valve, etc.
	-20	Controlling	That portion of the system which controls the pitch of the propeller blades. Includes items such as governor synchronizers, switches, wiring, cables, levers, etc. Does not include any parts which rotate with the propeller assembly. Also includes all those units and components provided for the propulsor vector drive system. Includes flight deck control, drive motors, gearboxes, drive shafts, synchronizing shafts, etc.
	-30	Braking	That portion of the system which is used to decrease run-down time or stop propeller rotation during engine power-off conditions. Includes brake mechanisms, levers, pulleys, cables, switches, wiring, plumbing, etc.

System	Subsystem	Title	Definition
	-40	Indicating	That portion of the system used to indicate operation or activation of propeller/propulsor systems. Includes items such as light, switches, wiring, etc.
	-50	Propulsor duct	The complete duct assembly including vector drive attachment, fairings, stators, gearbox covers, etc.

2.1.45 System 62 - Main rotors

Table 45 System 62 - Main rotors

System	Subsystem	Title	Definition
62		**Main rotors**	Rotor head assemblies and rotor blades, including the swash plate assemblies and the rotor shaft units if not an integral part of the gearboxes. Does not include the rotor anti-icing system which is dealt with in System 30, Ice and Rain Protection.
	-00	General	
	-10	Rotor blades	Rotor blade assemblies, including the heating mat (electrical resistors) for anti-icing.
	-20	Rotor heads	Complete rotor heads, including blade folding systems. Includes sleeves, spindles, dampers, rotor head fairings as well as rotor shafts and swash plates if the rotor head and shaft constitute a non-dissociable assembly.
	-30	Rotating controls, rotor shafts/swash plate assemblies	Includes pitch change rods and swash plate assemblies if not included in Section -20.
	-40	Indicating	That portion of the system which indicates operation or activation of rotor systems. Includes items such as lights, gauges, switches, wiring, etc.

2.1.46 System 63 - Main rotor drives

Table 46 System 63 - Main rotor drives

System	Subsystem	Title	Definition
63		**Main rotor drives**	Includes all components transmitting power to the rotors: engine coupling components, drive shafts, clutch and free wheel units, gearboxes, it's (their) components, systems and securing elements.
	-00	General	
	-10	Engine/gearbox couplings	Drive shafts between engines and main gearboxes, gearbox to gearbox, and, if applicable, clutch and free wheel units.

System	Subsystem	Title	Definition
	-20	Gearboxes	Part of the system driving the rotors. Includes the mechanical power take-offs and accessory drives but does not include the accessories themselves (alternators, hydraulic pumps etc). Includes the gearbox lubricating systems and the rotor brakes if the latter forms part of the gearboxes.
	-30	Mounts and attachments	Suspension bars, vibration damping system providing attachment of the gearboxes to the airframe.
	-40	Indicating	That portion of the system which indicates operation or activation of rotor systems. Includes items such as lights, gauges, switches, wiring, etc.

2.1.47 System 64 - Tail rotor

Table 47 System 64 - Tail rotor

System	Subsystem	Title	Definition
64		**Tail rotor**	Assembly that rotates in a plane nearly parallel to the symmetry plane and delivers a thrust opposing to the main rotor torque thus ensuring yaw control. Includes the rotor blades and rotor head. Does not include the rotor anti-icing system which is dealt with in System 30, Ice and Rain Protection.
	-00	General	
	-10	Rotor blades	Blade assemblies, including the heating mats (electrical resistors) for anti-icing. **Note** For an integral unit, only one section will be used.
	-20	Rotor head	Tail rotor head **Note** For an integral unit, only one section will be used.
	-30	Rotating controls	Includes pitch control beams, links and associated components.
	-40	Indicating	That portion of the system which indicates operation or activation of rotor systems. Includes items such as lights, gauges, switches, wiring, etc. **Note** For an integral unit, only one section will be used.

2.1.48 System 65 - Tail rotor drive

Table 48 System 65 - Tail rotor drive

System	Subsystem	Title	Definition
65		**Tail rotor drive**	Includes all the components transmitting power to the tail rotor: drive shafts, bearings, gearboxes.

System	Subsystem	Title	Definition
	-00	General	
	-10	Shafts	Drive shafts, bearings, flexible couplings.
	-20	Gearboxes	Intermediate gearbox. Tail gearbox.
	-30	Not available for projects	
	-40	Indicating	That portion of the system which indicates operation or activation of rotor system. Includes items such as lights, gauges, switches, wiring, etc.

2.1.49 System 66 - Folding blades/pylon

Table 49 System 66 - Folding blades/pylon

System	Subsystem	Title	Definition
66		**Folding blades/pylon**	The whole of the system which provides automatic or manual folding and spreading of the rotor blades and/or tail pylon. **Note** Procedures produced in accordance with this system can also affect the components described by other systems.
	-00	General	
	-10	Rotor blades	Part of the system ensuring rotor blade folding and spreading; includes the mechanical, hydraulic and electrical means permanently fitted on the air vehicle.
	-20	Tail pylon	Part of system ensuring tail pylon folding and spreading; includes mechanical, hydraulic and electrical means permanently fitted on the air vehicle.
	-30	Controls and indicating	Part of the system intended for controlling folding/spreading sequences and for indicating the system operation. Includes the control units, caption lights, indicator, wiring, etc.

2.1.50 System 67 - Rotors flight control

Table 50 System 67 - Rotors flight control

System	Subsystem	Title	Definition
67		**Rotors flight control**	The system which provides means of manually controlling the flight attitude of the helicopter. Includes items such as control linkage and control cables for collective pitch, cyclic pitch, directional control, servo-controls and corresponding system. The trim system and the indicating and monitoring system.

System	Subsystem	Title	Definition
			Note This system includes the complete rigging of rotor control including the associated items not described under this system, such as auto-pilot, servo-control unit, automatic trim (System 22), blade pitch change rods, beams and swash plates (Systems 62 and 64).
	-00	General	
	-10	Rotor control	That portion of the system which controls the attitude by the angle of attack of the rotor blades. Includes items such as collective pitch lever, cyclic pitch stick and corresponding linkage and cable controls, coupling and mixing units and artificial feel unit systems. Also includes the control position indicating system.
	-20	Anti-torque rotor control (yaw control)	That portion of the controls which control the direction of the helicopter (yaw control). Includes items such as tail rotor control pedals, relevant linkage and cable controls, bell cranks constituting the yaw control channel and the control position indicating system.
	-30	Servo-control system	That portion of the system which from a power source ensures distribution to the rotor servo-control system. Includes items such as pressure relief valves, electro valves, check valves, accumulators and equipment needed for the operation of the servo-control system, the servo-controls, the systems used for monitoring and indicating the operation of the servo-control system.

2.1.51 System 70 - Standard practices, Engine

Table 51 System 70 - Standard practices, Engine

System	Subsystem	Title	Definition
70		**Standard practices, Engine**	This system contains those standard mechanical, electrical, electronic etc, engineering practices applicable to more than one engine task which are not covered in Systems 71 thru 84. It excludes those practices which are recognized as standard trade practices, also those practices/processes which are only applicable to manufacture. Practices for a particular application are included in the appropriate engine system as part of the procedure.
	-00	General	Standard practices applicable to all engine and associated systems.
	-10	Marking and masking	This section contains marking and masking processes and any required test of process and/or product.
	-20	Cleaning and coating removal	This section contains chemical and mechanical cleaning procedures, removal of coating by chemical or mechanical processes.

System	Subsystem	Title	Definition
	-30	Inspection	This section contains inspection processes such as hardness measurement, fluorescent penetrant, eddy current, etc. Includes any required test of process and/or product.
	-40	Repair principles	This section contains various processes applicable to repair engine parts (eg, riveting, machining, heat treatment). Includes any required test of process and/or product.
	-50	Surface preparation	This section contains processes to prepare a surface of a part before coating application (eg, abrasive blast etching) or to modify the surface hardness (eg, glass bead peening) Includes any required test of process and/or product.
	-60	Coating application	This section contains processes to apply a coating on engine parts such as nickel plating, oxide film, lubricants, paints. Includes any required test of process and/or product.
	-70	Assembly	This section contains processes which are applied during engine assembly such as locking method. Includes any required test of process and/or product.
	-80	Disassembly	This section contains processes which are applied during engine disassembly such as requirements for installing blanks and special inspections.

2.1.52 System 71 - Power plant

Table 52 System 71 - Power plant

System	Subsystem	Title	Definition
71		**Power plant**	The overall power package including engine, air intake, mount, cowling, scoops, cowl flaps.
	-00	General	This section includes general information, limits and procedures. This section also covers subjects such as engine changes, run-up, externally-mounted spare power plants, etc. This section also covers subjects such as power plant build-up, teardown, etc.
	-10	Cowling	Those removable coverings which extend over and around the power plant assembly. Includes the functioning and maintenance aspects of items such as accessory section cowls, cowl flaps, cowling supports and attach and locking mechanisms, etc. Does not include the structure integral with the airframe which is covered by the applicable system structure.
	-20	Mounts	The framework, either of build-up construction or forgings which support the engine and attach it to the nacelle or pylon. Includes items such as engine mounts, vibration dampeners, support links, mounting bolts, etc.

System	Subsystem	Title	Definition
	-30	Fire seals	Those fire resistant partitions and seals mounted on or about the power package for the purpose of isolating areas subject to fire. Does not include those fire walls which are included in System 54.
	-40	Attach fittings	Those fittings and brackets which are used for the support of equipment in and about the power package.
	-50	Electrical harness	Those electrical cables, conduits, plugs, sockets etc, which serve several power plant systems, but which are banded together to facilitate removal and installation of the power plant. Does not include the wiring which is specifically covered under another system.
	-60	Air intakes	That portion of the power plant system which directs and can or cannot vary the mass air flow to the engine. Includes items such as nose ring cowls, scoops, compressor fan cowls, buried engine ducts, vortex generators, actuators, control handles, cables, wiring, plumbing, linkages, doors, warning systems, position indicators, etc. This does not include integral structure with the airframe, which are included in the applicable system structure.
	-70	Engine drains	Those components and manifold assemblies which are used to drain off excess fluids from the power plant and its accessories. Includes drain lines, manifolds, tanks, flame arrestors, vents and their supporting brackets, etc. Also includes components that are an integral part of, or fitted to the power plant cowling.
	-80	Engine ancillary systems	Those components and manifold assemblies which are used to deliver compressor wash fluids to the engine. Includes plumbing, valves, controls, air supply lines for closing compressor bleeds etc.

2.1.53 System 72 - Engine

Table 53 System 72 - Engine

System	Subsystem	Title	Definition
72		**Engine**	Those units and components which are used to induce and convert fuel-air mixture into power. Includes, for the basic turbine engine: - air inlet, compressor, diffuser, combustion chambers, turbine and exhaust; and for the reciprocating engine: - blower and clutch, clutch control valve, cylinders, cylinder baffles, intake pipes, crankshaft assembly, etc. Used to transmit power to the propeller shaft, if any, and accessory drives. Includes reduction gearing, gear trains, extension shaft and torque meter.

	Within the profile of the basic engine, used to supplement the functioning of other defined systems external to the engine. Includes items such as accessory drive, mechanical portion of the spark advance mechanism, oil transfer tubes from the propeller governor pad to the propeller shaft, BMEP section, etc.
	Used to control and direct the flow of lubrication through the engine from the inlet fitting to the outlet fitting. Includes engine pumps (pressure and scavenger), pressure relief valves, screens, oil lines (internal and external), etc.

2.1.54 System 72 - Engine turbine/turboprop Ducted fan/inducted fan

Table 54 System 72 - Engine turbine/turboprop Ducted fan/inducted fan

System	Subsystem	Title	Definition
72		**Engine turbine/turboprop Ducted fan/inducted fan**	
	-00	General	This section is intended to cover general information, limits and procedures. In the engine manual it includes such subjects as tear down, cleaning, inspection, assembly, testing, etc.
	-10	Reduction gear, shaft section (turboprop and/or front mounted gear driven propulsor)	The section of the engine which contains the propeller shafts and reduction gears. Includes items such as drives for hose mounted accessories, etc. If applicable, the section of the engine which uses mechanical force, through a gear-driven system, to drive front mounted propulsors which provide the majority of the energy generated. Includes items such as propulsor blades, actuation systems, reduction gears, drive-shafts, etc.
	-20	Air inlet section	The section of the engine through which the air enters the compressor. Includes items such as guide vanes, shrouds, cases, etc.
	-30	Compressor section	The section of the engine in which the air is compressed. Includes items such as cases, vanes, shrouds, rotors, diffusers, etc. Also includes the maintenance of stator blades but not the operation of variable stator blades which is covered under System 75-30. Does not include compressor bleed system.
	-40	Combustion section	The section of the engine in which the air and fuel are combined and burned. Includes items such as burner cans, cases, etc.
	-50	Turbine section	The section of the engine containing the turbines. Includes items such as turbine nozzles, turbine rotors, cases, etc.

System	Subsystem	Title	Definition
	-60	Accessory drives	The mechanical power take-offs to drive accessories. Includes items such as engine mounted gear boxes, gears, seals, pumps, etc. Does not include remotely installed gear boxes which are covered in System 83.
	-70	By-pass section	The section of the engine which by-passes a portion of the normal engine airflow (either ram or compressed air) for the prime purpose of adding to engine thrust or reducing specific fuel consumption.
	-80	Propulsor section (rear mounted)	The section of the engine which contains a propulsors and provides the majority of the energy generated. The propulsor can be turbine driven or gear driven. Includes such items as propulsor turbines, propulsor blades, blade actuation, and frames (rotating and/or stationary).
	-90	Multi-system hardware	The section of the engine made up of more than one of the above given subsystems (eg, gas generator, core engine).

2.1.55 System 72 - Engine reciprocating

Table 55 System 72 - Engine reciprocating

System	Subsystem	Title	Definition
72		**Engine reciprocating**	
	-00	General	This section is intended to cover general information, limits and procedures. In the engine manual this section includes such subjects as tear down cleaning, inspection, assembly, testing, etc.
	-10	Front section	The section of the engine which contains the propeller shafts and reduction gears. Includes items such as drives for nose mounted accessories, etc.
	-20	Power section	The section of the engine which contains the crankshaft, master and link rod assemblies, cams, cam drive gears, tappet guides, rollers, carriers, etc.
	-30	Cylinder section	The section of the engine which contains the cylinders, valves, pistons, push rods, intake pipes, baffles, etc. Also includes rocker arm assembly, valve springs, etc.
	-40	Supercharger section	The section of the engine which contains cases, shroud plates, PRT coupling and gearing, impeller and drives, accessory drives, bushings, etc.
	-50	Lubrication	Those units and components which are used to distribute oil throughout the engine. Includes front and rear pressure and scavenger pumps, sumps, strainers, valves, etc. Also includes those oil lines not included in System 79. Does not include those items which form integral passages within the engine.

2.1.56 System 73 - Engine fuel and control

Table 56 System 73 - Engine fuel and control

System	Subsystem	Title	Definition
73		**Engine fuel and control**	For turbine engines, those units and components and associated mechanical systems or electrical circuits which furnish or control fuel to the engine beyond the main fuel quick disconnect and thrust augmenter, fuel flow rate sensing, transmitting and/or indicating units whether the units are before or beyond the quick disconnect. It includes coordinator or equivalent, engine driven fuel pump and filter assembly, main and thrust augmenter fuel controls, electronic temperature datum control, temperature datum valve, fuel manifold, fuel nozzles, fuel enrichment system, speed sensitive switch, relay box assembly, solenoid drip valve, burner drain valve, etc. For reciprocating engines, those units and components which deliver metered fuel and air to the engine. The fuel portion includes the carburetor/master control from the inlet side to the discharge nozzle, injection pumps, carburetor, injection nozzles and fuel primer. The air portion includes units from the scoop inlet to the vapor vent return and the impeller chamber.
	-00	General	
	-10	Distribution	That portion of the system from the main quick disconnect to the engine, which distributes fuel to the engine burner section and the thrust augmenter. Includes items such as plumbing, pumps, temperature regulators, valves, filters, manifold, nozzles, etc. Does not include the main or thrust augmenter fuel control.
	-20	Controlling	The main fuel control which meters fuel to the engine and to the thrust augmenter. Includes items such as hydro mechanical or electronic fuel control, levers, actuators, cables, pulleys, linkages, sensors, valves, etc, which are components of the fuel control units.
	-30	Indicating	That portion of the system which is used to indicate the flow rate, temperature and pressure of the fuel. Includes items such as transmitters, indicators, wiring, etc. Does not include indication, if indication is accomplished as part of an integrated engine instrument system (System 77-40).

2.1.57 System 74 - Ignition

Table 57 System 74 - Ignition

System	Subsystem	Title	Definition
74		**Ignition**	Those units and components which generate, control, furnish, or distribute an electrical current to ignite the fuel air mixture in the cylinders of reciprocating engines or in the combustion chambers or thrust augmenters of turbine engines. Includes induction vibrators, magnetos, switches, lead filters, distributors, harnesses, plugs, ignition relays, exciters and the electrical portion of spark advance.
	-00	General	
	-10	Electrical power supply	That portion of the system which generates electrical current for the purpose of igniting the fuel mixture in the combustion chambers and thrust augmenters. Includes items such as magnetos, distributors, booster coils, exciters, transformers, storage capacitors and compositors, etc.
	-20	Distribution	That portion of the system which conducts high or low voltage electricity from the electrical power supply to the spark plugs, or igniters. Includes wiring between magneto and distributor in those systems where they are separate units. Includes items such as ignition harness, high tension leads, coils as used in low tension systems, spark plugs, igniters, etc.
	-30	Switching	That portion of the system which provides a means of rendering the electrical power supply inoperative. Includes items such as ignition switches, wiring, connectors, etc.

2.1.58 System 75 - Air

Table 58 System 75 - Air

System	Subsystem	Title	Definition
75		**Air**	For turbine engines, those external units and components and integral basic engine parts which go together to conduct air to various portions of the engine and the extension shaft and torque-meter assembly, if any. Includes compressor bleed systems used to control flow of air through the engine, cooling air systems and heated air systems for engine anti-icing. Does not include aircraft anti-icing, engine starting systems, nor exhaust supplementary air systems.
	-00	General	
	-10	Engine anti-icing	That portion of the system which is used to eliminate and prevent the formation of ice by bleed air in all parts of the engine, excluding power plant cowling which is covered under System 30. Includes items such as valves, plumbing, wiring, regulators, etc. Electrical anti-icing is covered in System 30.

System	Subsystem	Title	Definition
	-20	Cooling	That portion of the system which is used to ventilate the engine and accessories. Includes items such as valves, plumbing, wiring, jet pumps, vortex spoilers, etc.
	-30	Compressor control	That portion of the system which is used to control the flow of air through the engine. Includes items such as governors, valves, actuators, linkages, etc. Also includes the operation of variable stator blades, but not the maintenance which is covered under System 72-30.
	-40	Indicating	That portion of the system which is used to indicate temperature, pressure, control positions etc, of the air systems. Includes items such as transmitters, indicators, wiring, etc.
	-50	Air intake foreign object removal	That portion of the system which is used to remove foreign objects from the engine air intake.

2.1.59 System 76 - Engine controls

Table 59 System 76 - Engine controls

System	Subsystem	Title	Definition
76		**Engine controls**	Those controls which govern operation of the engine. Includes units and components which are interconnected for emergency shutdown. For turbo-prop engines, includes linkages and controls to the coordinator or equivalent and from the coordinator or equivalent to the propeller governor, fuel control unit or other units being controlled. For reciprocating engines, includes controls for blowers. Does not include units or components which are specifically included in other systems.
	-00	General	
	-10	Power control	That portion of the system which furnishes a means of controlling the main fuel control or coordinator. Includes controls to the propeller regulator on turbo-prop engines. Includes items such as linkages, cables, levers, pulleys, switches, wiring, etc. Does not include the units themselves.
	-20	Emergency shutdown	That portion of the system which furnishes a means of controlling the flow of fluids to and from the engine during emergency procedures. Includes items such as levers, cables, pulleys, linkages, switches, wiring, etc. Does not include the units themselves.

2.1.60 System 77 - Engine indicating

Table 60 System 77 - Engine indicating

System	Subsystem	Title	Definition
77		**Engine indicating**	Those units, components and associated systems which indicate engine operation. Includes indicators, transmitters, analyzers, etc. For turbo-prop engines includes phase detectors. Does not include systems or items which are specifically included in other systems except when indication is accomplished as part of an integrated engine instrument system (System 77-40).
	-00	General	
	-10	Power	That portion of the system which directly or indirectly indicates power or thrust. Includes items such as BMEP, pressure ratio, RPM, etc.
	-20	Temperature	That portion of the system which indicates temperatures in the engine. Includes items such as cylinder head, exhaust (turbine inlet), etc.
	-30	Analyzers	That portion of the system which is used to analyze engine performance or condition by means of instruments or devices such as oscilloscopes, etc. Includes items such as generators, wiring, amplifiers, oscilloscopes, etc.
	-40	Integrated engine instrument systems	That portion of the system which as an integrated concept receives several/all engine operating parameters and then transmits this to a central processor for crew presentation. Includes items such as display units, transmitters, receivers, computers, etc.

2.1.61 System 78 - Exhaust

Table 61 System 78 - Exhaust

System	Subsystem	Title	Definition
78		**Exhaust**	Those units and components which direct the engine exhaust gases overboard. For turbine engines, includes units external to the basic engine such as thrust reverser and noise suppressor. For reciprocating engines, includes augmenters, stacks, clamps, etc. Excludes exhaust driven turbines.
	-00	General	
	-10	Collector/nozzle	That portion of the system which collects the exhaust gases from the cylinders or turbines. Includes item such as collector rings, exhaust ducts, variable nozzles, actuators, plumbing, linkages, wiring, position indicators, warning systems, etc. Does not include power recovery turbines, turbo-superchargers etc, nor noise suppressors or thrust reversers where they are not an integral part of the nozzle system.

System	Subsystem	Title	Definition
	-20	Noise suppressor	That portion of the system which reduces the noise generated by the exhaust gases. Includes items such as pipes, baffles, shields, actuators, plumbing linkages, wiring, position indicators, warning systems, etc. Use Section -10 where integral part of nozzle system.
	-30	Thrust reverser	That portion of the system which is used to change the direction of the exhaust gases for reverse thrust. Includes items such as clamshells, linkages, levers, actuators, plumbing, wiring, indicators, warning systems, etc. Use Section -10 where integral part of nozzle system.
	-40	Supplementary air	That portion of the system which varies and controls supplementary air flow of the exhaust system. Includes items such as tertiary air doors, actuators, linkages, springs, plumbing, wiring, position indicators, warning systems, etc.
	-50	Augmenter	That portion of the system which provides additional thrust for takeoff and in-flight at the command of the pilot. Includes items such as liners, rings, actuators, linkages, wiring, indicators, warning systems, etc. Does not include augmentation external to the power plant which is covered in System 84 Propulsion augmentation.
	-60	Dissipation/deflection	That portion of the system which dilutes and/or redirects engine exhaust away from the aircraft for the purpose of reducing infrared (IR) signature and decreasing exhaust temperatures.

2.1.62 System 79 - Oil

Table 62 System 79 - Oil

System	Subsystem	Title	Definition
79		**Oil**	Those units and components external to the engine concerned with storing and delivering lubricating oil to and from the engine. Covers all units and components from the lubricating oil engine outlet to the inlet, including the inlet and outlet fittings, tank, radiator, by-pass valve etc, and auxiliary oil systems.
	-00	General	
	-10	Storage	That portion of the system used for storage of oil. Includes items such as tanks, filling systems, internal hoppers, baffles, tank sump and drain, etc. Does not include tanks which are an integral portion of the engine.

System	Subsystem	Title	Definition
	-20	Distribution	That portion of the system which is used to conduct oil from and to the engine. Includes items such as plumbing, valves, temperature regulator, control systems, etc.
	-30	Indicating	That portion of the system which is used to indicate the quantity, temperature and pressure of the oil. Includes items such as transmitters, indicators, wiring, warning systems, etc. Does not include indication if indication is accomplished as part of an integrated engine instrument system (System 77-40).

2.1.63 System 80 - Starting

Table 63 System 80 - Starting

System	Subsystem	Title	Definition
80		**Starting**	Those units, components and associated systems used for starting the engine. Includes electrical, inertia air or other starter systems. Does not include ignition systems which are covered in System 74.
	-00	General	
	-10	Cranking	That portion of the system which is used to perform the cranking portion of the starting operation. Includes items such as plumbing, valves, wiring, starters, switches, relays, etc.

2.1.64 System 81 - Turbines

Table 64 System 81 - Turbines

System	Subsystem	Title	Definition
81		**Turbines**	For reciprocating engines only. Includes power recovery turbine assembly and turbo-supercharger unit when external to the engine.
	-00	General	
	-10	Power recovery	The turbines which extract energy from the exhaust gases and are coupled to the crankshaft.
	-20	Turbo-supercharger	The turbines which extract energy from the exhaust gases and drive an air compressor.

2.1.65 System 82 - Water injection

Table 65 System 82 - Water injection

System	Subsystem	Title	Definition
82		**Water injection**	Those units and components which furnish, meter and inject water or water mixtures into the induction system, includes tanks, pumps, regulators, etc.
	-00	General	
	-10	Storage	That portion of the system which is used for the storage of water or water mixtures. Includes tank sealing, attachment of bladder type cells, ventilating system, cell and tank interconnections, filling systems, etc.
	-20	Distribution	That portion of the system which is used to conduct water or water mixtures from the tanks or cells to the engine. Includes items such as plumbing, cross feed system, pumps, valves, controls, etc.
	-30	Dumping and purging	That portion of the system which is used to dump injection water and to purge the system. Includes items such as plumbing, valves, controls, etc.
	-40	Indicating	That portion of the system which is used to indicate the quantity, temperature and pressure of the water or water mixtures. Includes items such as transmitters, indicators, wiring, etc.

2.1.66 System 83 - Accessory gearboxes

Table 66 System 83 - Accessory gearboxes

System	Subsystem	Title	Definition
83		**Accessory gearboxes**	Those units and components which are remotely installed and connected to the engine by a drive shaft and which drive multiple types of accessories. Does not include those accessory drives which are bolted to and are immediately adjacent to the engine. The latter item is covered under System 72.
	-00	General	
	-10	Drive shaft section	That portion of the system which is used to conduct power from the engine to the gearbox. Includes items such as drive shaft, adapters, seals, etc.
	-20	Gearbox section	The case which contains the gear trains and shafts. Includes items such as gears, shafts, seals, oil pumps, coolers, etc.

2.1.67 System 84 - Propulsion augmentation

Table 67 System 84 - Propulsion augmentation

System	Subsystem	Title	Definition
84		**Propulsion augmentation**	Those units and components that, independent of the primary propulsion system, furnish additional thrust of short duration. Includes solid or liquid propellants, controls, indicators, etc.
	-00	General	
	-10	Jet assist takeoff	Those units or components dedicated to jet assist takeoff systems.

2.1.68 System 85 - Fuel cell system

Table 68 System 85 - Fuel cell system

System	Subsystem	Title	Definition
85		**Fuel cell system**	Those units and components using an electrochemical conversion process to produce electricity from a fuel (on the anode side) and an oxidant (on the cathode side). This includes reactants and reaction products supply/exhaust devices, fuel cell stacks, electric power output devices, cooling and/or heating devices and a centralized control and monitoring subsystem.
	-00	General	This section is intended to cover general information, limits and procedures applicable for the complete system not only subsystems. It also includes the system control and indication. It does not include subsystem controls which are covered by each individual subsystem.
	-10	Fuel cell stack	That portion of the fuel cell system achieving electrochemical conversion of fuel and oxidant into electrical energy, thermal energy and exhaust gas. This includes fuel cell housing, fitting, wiring and all devices allowing the connection to other fuel cell subsystems.
	-20	Fuel storage and supply	Those units and components storing and/or delivering fuel to the fuel cell stacks.
	-30	Oxidant storage and supply	Those units and components storing and/or delivering oxygen/air to the fuel cell stacks.
	-40	Thermal management	That portion of the system which is used to cool or heat the fuel cell stacks, the power electronics and accessories. It includes items such as cooler, blower, heating devices, valves, etc.
	-50	Power conditioning	Those units and components used to provide the electrical power in the condition needed by the aircraft network and the fuel cell system itself. It includes converter, contactor, filter, etc.

	-60	Exhaust conditioning	Those units and components necessary to process the exhaust for further use. It includes condenser, dryer, valves, etc.
	-70	Interface	Those units and components used to connect the system to the rest of the aircraft: structure, the environment and other systems. This includes mounts, electrical harness, air intake/ exhaust and drain, etc.

2.1.69 System 86 - Lift system

Table 69 System 86 - Lift system

System	Subsystem	Title	Definition
86		**Lift system**	Those units and components, which together with the primary propulsion system furnish vector able vertical thrust allowing the aircraft to achieve short take-off and vertical landing (STOVL). Also includes those units and components which provide the means for stabilizing the aircraft when in the STOVL mode.
	-00	General	
	-10	Fan	That portion of the system that provides lift for the aircraft when operating in a STOVL flight condition. This includes gearboxes, clutches and accessories.
	-20	Drive shaft	That portion of the system that provides a means of transmitting power from the engine to the STOVL lift system.
	-30	Variable area nozzle	That portion of the system that controls and ducts STOVL fan outlet air to provide aircraft STOVL lift.
	-40	Roll control	That portion of the system that ducts and controls main engine generated air for the control of aircraft roll attitude when in a STOVL flight configuration.

2.1.70 System 90 - Recovery

Table 70 System 90 - Recovery

System	Subsystem	Title	Definition
90		**Recovery**	Those systems, units and components used to recover air vehicles and equipment.
	-00	General	
	-10	Parachute recovery system	That part of the system that uses a parachute and its deployment devices to recover an air vehicle and equipment from flight. Includes items such as main- and drogue parachute container, ejection assembly, initiation assembly, deployment assembly and release assembly.

-20	Impact attenuation system	That part of the system which provides a shock for the air vehicle to absorb shock/attenuation. Includes items such as crushable impact attenuators, air bags, retrorocket landing attenuation systems, initiation assembly, deployment assembly and attenuator container.
-30	Sequencing system	That part of the system that provides the sequencing for the recovery. Includes items such as computer, interfaces, transmitter, electrical signal etc.
-40	Location system	That part of the system which provides information on the location of the aircraft after landing. Includes items such as computer, transmitter, antenna, etc.

2.1.71 System 91 - Air vehicle wiring

Table 71 System 91 - Air vehicle wiring

System	Subsystem	Title	Definition
91		**Air vehicle wiring**	Miscellaneous charts, diagrams and/or lists applicable to more than one system, or to system interfaces, such as wiring charts, spare wire charts, junction boxes charts, disconnect plug charts, conduit and wire routing charts, rigid tube charts, flexible hose charts, system integration diagrams, reusable hose component lists, control cable lists, multi-system consumables lists etc.

2.1.72 System 92 - Radar

Table 72 System 92 - Radar

System	Subsystem	Title	Definition
92		**Radar**	Those units and components which comprise multifunction radar systems used on fighters (generally nose-mounted), on maritime patrol air vehicles, on AWACS-type air vehicles, etc.
	-00	General	
	-10	Frequency generation	That portion of the system which gives the original signals used as references (micro-waves, clock signals, etc).
	-20	Transmission	That portion of the system acting for waves output.
	-30	Reception	That portion of the system which collects electro-magnetic signals, transposes the frequencies of collected signals or generates video-frequencies signals.
	-40	Processing	Computing resources used for signals processing, data processing, radar system management or I/O exchanges of information with other air vehicle systems processing functions.
	-50	Beam control	That portion of the system which points the beam in any direction of space. This device can be based on mechanical or electronic steering.

System	Subsystem	Title	Definition
	-60	Power supply and safety	That portion of the system in charge of the setting of electrical power and all the safety functions concerning the starting phase and the current functioning states (eg, cut-off).
	-70	Conditioning	That portion of the system in charge of cooling and pressurization for the different modules.
	-80	Built-in tests	That portion of the system devoted to failures detection and states reporting. The content of these sections have to be determined in connection with the System 45-92-XX.

2.1.73 System 93 - Surveillance

Table 73 System 93 - Surveillance

System	Subsystem	Title	Definition
93		**Surveillance**	Those units and components which furnish a means of sensing the surrounding environment, and then process, display and record the resulting information.
	-00	General	
	-10	Data processing	That portion of the system that provides computation, switching and storage of signals acquired.
	-20	Data display	That portion of the system that provides the data display of information acquired by sensors.
	-30	Recording	That portion of the system that provides recording of information acquired by sensors.
	-40	Identification	That portion of the system that provides identification of information acquired by sensors.
	-50	Infrared sensors	That portion of the system that uses heat sensing devices such as infra-red scanners, infra-red image and detection to acquire information.
	-60	Laser sensors	That portion of the system that uses laser devices to acquire information for distance measuring, identification, etc.
	-70	Surveillance radar	That portion of the system that uses radar for surveillance or mapping purposes. This includes devices such as antennas, receivers, transmitters, indicators, etc. **Note** System 93-70 is to be used for surveillance oriented radars (eg, weather radar on transport aircraft). For large multifunction radars use System 92.
	-80	Magnetic sensors	That portion of the system that senses magnetic anomalies. This includes devices such as magnetometers, amplifiers, computers, indicators, etc.

	-90	Sonar sensors	That portion of the system that senses objects underwater. This includes devices such as modulators, computers, transducers, indicators, etc.

2.1.74 System 94 - Weapons system

Table 74 System 94 - Weapons system

System	Subsystem	Title	Definition
94		**Weapons system**	Those units and components which furnish a means of acquiring a target and releasing stores.
	-00	General	
	-10	Weapon release	The weapon release system consists of all equipment required to release, fire and/or jettison stores. Includes computers, displays, controls, stores management, etc.
	-20	Available for projects	
	-30	Weapon suspension	The weapon suspension system provides interconnecting equipment to transport and release/fire weapons. Includes multipurpose pylons if used for any weapon mounting role, specialist pylons, ejection racks, launchers, etc.
	-40	Available for projects	
	-50	Gunnery	The gunnery system consists of all guns and equipment necessary to fire guns.
	-60	Available for projects	
	-70	Weapon control	Those units and components which furnish a means of designating and acquiring a target. Includes radar, computers, displays etc, necessary to provide weapon release decision (aiming cues).

2.1.75 System 95 - Crew escape and safety

Table 75 System 95 - Crew escape and safety

System	Subsystem	Title	Definition
95		**Crew escape and safety**	Those units and components which furnish a means of ejecting or jettisoning seats, hatches, canopies, capsules etc, from the airframe also includes safety and survival equipment.
	-00	General	
	-10	Ejection seats	That portion of the system which is used to eject flight crew or passenger seats individually from the airframe.

	-20	Escape hatches/canopy	That portion of the escape system involving hatches and canopies including miniature detonating cord. Does not include the canopy and its actuating mechanisms which are covered in System 56.
	-30	Capsule ejection	That portion of the escape system that provides a protective environment to the flight crew after separation from the airframe.
	-40	Available for projects	
	-50	Global survival kits	That portion of the system that insures flight crew survivability and/or after unplanned separation landing.
	-60	Impact protection and floatation	That portion of the system providing protection to personnel/equipment after impact.
	-70	Capsule flight	That portion of the system used to control attitude and direction of the capsule or container after ejecting or jettisoning from the airframe.

2.1.76 System 96 - Missiles, drones and telemetry

Table 76 System 96 - Missiles, drones and telemetry

System	Subsystem	Title	Definition
96		**Missiles, drones and telemetry**	Those units and components which furnish a means of launching and controlling drones.
	-00	General	
	-10	Surface to surface missiles	That portion of the system which is used for launching and controlling surface to surface missiles.
	-20	Surface to air missiles	That portion of the system which is used for launching and controlling surface to air missiles.
	-30	Drones	That portion of the system which is used for launching and controlling drones.
	-40	Telemetry	That portion of the system which is used for telemetry, for applications other than missile, drone or decoy usage.

2.1.77 System 97 - Image recording

Table 77 System 97 - Image recording

System	Subsystem	Title	Definition
97		**Image recording**	Those units and components which furnish a means of recording events on film, video, disc or tape, etc. Does not cover recording systems which are part of any other system or Subsystem.
	-00	General	
	-10	Strike camera	That portion of the system which is used for recording the results of an air strike.
	-20	Bomb bay system camera	That portion of the system which is used for recording instruments and the dropping of bombs.
	-30	Fire control camera system	That portion of the system which is used for recording rocket or gunfire.
	-40	Instrumentation camera system	That portion of the system which is used for recording meters, dials, CRT display, etc.
	-50	Range camera system	That portion of the system which is used for range camera. Includes installation such as forward and oblique camera systems.
	-60	Reconnaissance camera system	That portion of the system which is used for reconnaissance.
	-70	Image recorder	That portion of the system which is used for storing the images on disc, tape (such as VCR), etc.

2.1.78 System 98 - Meteorological and atmospheric research

Table 78 System 98 - Meteorological and atmospheric research

System	Subsystem	Title	Definition
98		**Meteorological and atmospheric research**	Those units and components which furnish a means of providing and recording measurement of natural or man-made atmospheric, gravitation and magnetic phenomena.
	-00	General	
	-10	Weather	That portion of the system which is used to measure and record moisture, temperature, cloudiness, wind, etc.
	-20	Clear air turbulence	That portion of the system which is used to detect, measure and record clear air turbulence.
	-30	Pollutants	That portion of the system which is used to detect, measure and record contaminated particles.

	-40	Magnetic/gravitational	That portion of the system which is used to detect measure and record the earth's magnetic and gravitational force.

2.1.79 System 99 - Electronic warfare

Table 79 System 99 - Electronic warfare

System	Subsystem	Title	Definition
99		**Electronic warfare**	Those units and components which furnish a means of detecting, analyzing, jamming, or nullifying the effectiveness of defensive detection devices and communication links (tactical or not).
	-00	General	
	-10	Active, electro-magnetic	That portion of the system operating in the electro-magnetic range of 1 Hz to 100 GHz. This subsystem can have the capability of receiving, analyzing, transmitting, etc.
	-20	Available for projects	
	-30	Passive, electro-magnetic	That portion of the system operating in the electro-magnetic field that has no active or radiating elements (eg, chaff).
	-40	Available for projects	
	-50	Elint (Electronic intelligence)	That portion of the system tasked with the gathering of electronic information and can include receivers, processors/analyzers and recorders.
	-60	Available for projects	
	-70	Infrared (IR)	That portion of the system operating in the IR range/field and can have the capability of receiving, analyzing and transmitting.
	-80	Laser	That portion of the system operating in the laser range/field and can have the capability of receiving, analyzing and transmitting.