

NIGERIAN SAFETY INVESTIGATION BUREAU



SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA; NIGERIA

INVESTIGATION EVENT MANAGEMENT CHECKLIST – EVENT 41: CRASHWORTHINESS

INVESTIGATION NUMBER	AIRCRAFT TYPE / REGISTRATION MARKS/ OPERATOR
DATE	COMPLETED BY

S/N	Crashworthiness (Events 13 and 27 Refer)	Time	Action started	Action completed
1	Determine the requirement for mechanical or aeronautical engineering assistance;			
2	Assess the volume of liveable space remaining within the occupied section of the aircraft after impact forces had dissipated;			
3	Determine the volume of liveable space which may have been compromised during the accident sequence, since ductile materials can rebound after impact forces leaving no traces of their invasion of liveable space;			
4	Determine the space between seats and aircraft structures, in part and such as instrument panel, control column, seat backs, trays, and galley that may have contributed to the nature and extent of injuries;			
5	Determine if the container was penetrated by objects from outside the aircraft;			
6	Determine the effects of unsecured interior aircraft equipment or cargo acting as missiles, in part and such as serving carts and oxygen bottles;			
7	Determine the effects of passenger luggage on liveable space;			
8	Assess the adequacy of walkways and exits;			
9	Record the original seating position of deceased passengers and positions where bodies came to rest after the accident;			
10	Record the type of seat belt, seat belt anchorage, shoulder harness and anchorage, seat structure and anchorages, and floor installed in the aircraft;			
11	Record the damage to each of the items in task 10 above;			
12	Record the effects of webbing material on the nature and extent of injuries, in part and such as cotton/rayon, and nylon; as well as their flammability, elasticity, and adjustment-buckle slippage;			
13	Record the type and load-limiting adequacy of cargo restraints, such as nets, lines and pallets;			
14	Record the seat geometry for structural strength and energy absorption properties;			
15	Record the seat cushions' energy absorption properties and flammability;			
16	Assess the adequacy of the seat belt, seat belt anchorage, shoulder harness and anchorage, seat structure and anchorages, and floor installed;			
17	Assess the effects of the cockpit and cabin environment on occupant survivability;			

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18	Record the following basic data for the determination of energy absorption:			
A	– Terrain angle;			
B	– Flight path angle;			
C	– Angle of impact;			
D	– Crash force resultant;			
E	– Crash force angle; and			
F	– Aircraft attitude at impact.			
19	Record the width, length, depth and orientation of all gouge marks;			
20	Record the depth of damage to the underside of aircraft, extent of compression of energy-attenuation devices;			
21	Record the horizontal stopping distances, length of airframe compression in the horizontal plane, backward displacement of each wing and empennage surfaces;			
22	Determine the direction, magnitude and duration of G-forces;			
23	Determine the acceleration forces experienced by the aircraft occupants; and			
24	Estimate the impact forces survivability potential.			