Appendix 2: Computation of weighting factor for L37.5 stage based on similarity with L110 stage; $c_j=1$, $k_{1j}=0.8$, $k_{2j}=1.2$

Sl. No.	SRIFs	Similarity Class	wi_j	ws_j	Rationale for the Weighting index of L110
Engine Design features					
1	Engine combustion cycles	I	1	0.8	Both engines work with same combustion cycle
2	Engine Start/Shut-off transient hazards	I	1	0.8	The shut off transients are similar, with either command cut off or U- depletion
3	Propellant specific hazards; and Engine derating / uprating;	I	1	0.8	Same propellant used. All engines operate at same thrust level.
4	Vehicle and Engine Interface & Interface hazards	II	0.8	0.572	Differences related to twin engine configuration
5	Design Method/ Philosophy	II	0.8	0.572	Overall engine configuration is same. Stage engineered with twin engine configuration, two independent propellant tanks and double ply throat insert. Design methodology same.
6	Environment (Temp, Load, Pressure, Vibration, shock, acoustic etc.)	III	0.4	0.051	Vibration & Acoustic levels are expected to be higher for L110. Thermal environment will also be higher as heat radiated by one engine will be seen by other engine in L110.
7	Modelling/ Analysis Method	I	1	0.8	Analysis procedure followed are same.
8	Design Margins	I	1	0.8	Minimum margin of safety for structures, pressure ratings, flexible hoses, plumbing are and other engine subsystems are same.
9	Total No. components and subsystems	II	0.8	0.572	Number of feed lines, gas bottles and interface joints are marginally higher.
10	Burn duration	III	0.4	0.051	Engine burn duration is substantially higher at 200 seconds as compared to 150 seconds of L37.5 and 160 seconds of L40
11	Overall Dimensional similarity of critical components	III	0.4	0.051	Changes due to stage systems being different and twin engine configuration
Materials and Manufacturing					
12	Materials used	I	1	0.8	Identical
13	Material Property Evaluation Method/Approach	I	1	0.8	Identical
14	Manufacturing Method used	II	0.8	0.572	Minor difference
Quality Aspects					
15	Extent of QA coverage	I	1	0.8	Identical
16	Extent of QC coverage	I	1	0.8	Identical

17	No. of qualification tests conducted	III	0.4	0.051	Lesser
18	Matching of qualification test results with analytical prediction	I	1	0.8	Identical
19	NC management approach	I	1	0.8	Identical
20	No. of major NCs	I	1	0.8	Similar
Sum of values of criticality parameters $(\sum c_j)$		Sum of Weighting Score $(\sum ws_j)$		Weighting factor $wf = (\sum ws_j) / (\sum c_j)$	
20		12.095		0.605	

Note: $c_j=1$, $k_{1j}=0.8$, and $k_{2j}=1.2$ for all SRIFs

ws_j computed for each SRIF using equation (5)