

**Enclosure 3**

**Marked Up Technical Specification  
and Bases**

Technical Specification page 3.8-34, Table 3.8.6-1.

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Table 3.8.6-1 (page 1 of 1)  
Battery Cell Parameter Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ 1/4 inch above maximum level indication mark(a)	> Minimum level indication mark, and ≤ 1/4 inch above maximum level indication mark(a)	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	≥ 2.07 V
Specific Gravity(b)(c)	<del>≥ 1.200 (Div. I and II)</del> <del>≥ 1.195 (Div. III)</del>	<del>≥ 1.195 (Div. I and II)</del> <del>≥ 1.190 (Div. III)</del> AND Average of all connected cells <del>≥ 1.205 (Div. I and II)</del> <del>≥ 1.200 (Div. III)</del>	Not more than 0.020 below average of all connected cells AND Average of all connected cells <del>≥ 1.195 (Div. I and II)</del> <del>≥ 1.190 (Div. III)</del>

- (a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during equalizing charges provided it is not overflowing.
- (b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < 2 amps when on float charge.
- (c) A battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 31 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 31 day allowance.

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Pages B 3.8-67 and B 3.8-68.

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Table 3.8.6-1 (continued)

it is not overflowing. These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is 2.13 V per cell. This value is based on the recommendation of IEEE-450 (Ref. 3), which states that prolonged operation of cells below 2.13 V can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is 1.200 ~~for Divisions I and II and 1.195 for Division III~~ (0.015 below the manufacturer's fully charged nominal specific gravity). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77 F (25 C).

The specific gravity readings are corrected for actual electrolyte temperature and level. For each 3 F (1.67 C) above 77 F (25 C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3 F below 77 F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation. Level correction will be in accordance with manufacturer's recommendations.

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is 1.195 ~~for Divisions I and II and 1.190 for Division III~~ (0.020 below the manufacturer's fully charged, nominal specific gravity) with the average of all connected cells 1.205 ~~for Divisions I and II and 1.200 for Division III~~ (0.010 below the manufacturer's fully charged, nominal specific gravity). These values are based on manufacturer's

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Table 3.8.6-1 (continued)

recommendations. The minimum specific gravity value required for each cell ensures that the effects of a highly charged or newly installed cell do not mask overall degradation of the battery.

Category C defines the limit for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limit, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limit specified for electrolyte level (above the top of the plates and not overflowing) ensures that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limit for float voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit of average specific gravity (~~1.195 for Divisions I and II or 1.190 for Division III~~), is based on manufacturer's recommendations (0.020 below the manufacturer's recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery.

The footnotes to Table 3.8.6-1 that apply to specific gravity are applicable to Category A, B, and C specific gravity.

Footnote b in Table 3.8.6-1 requires the above mentioned correction for electrolyte level and temperature, with the exception that level correction is not required when battery charging current is < 2 amps on float charge. This current provides, in general, an indication of overall battery condition.

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