Breakdown Statistics for H60VG3-FXC3
400 ns Pulse Width

65-75 MV/m

70 MV/m
Breakdown Statistics for H60VG3-FXC3
400 ns Pulse Width

65 MV/m

60 MV/m
Breakdown Statistics for H60VG3-FXC3
at 70 MV/m, 400 ns Pulse Width

- Missing Energy vs Breakdown Position (cell #)
- Missing Energy vs Time of Breakdown (ns)
- Reflected Power vs Reflected Phase (deg)
- Breakdown Position (cell #) vs Time (hr)
Breakdown Statistics for H60VG3-FXC3
at 60 MV/m, 400 ns Pulse Width

Breakdown Position (cell #) -vs- Time of Breakdown (ns)

Reflected Power -vs- Reflected Phase (deg)

Missing Energy -vs- Breakdown Position (cell #)

Missing Energy -vs- Time of Breakdown (ns)

Breakdown Position (cell #) -vs- Time (hr)
Breakdown Statistics for H60VG3S17-FXC1 at 65 MV/m, 240 ns Pulse Width
After Processing to 69 MV/m
Trip Rate > 50 per Hour
Breakdown Statistics for H60VG3S17-FXC1
240 ns Pulse Width

58-69 MV/m

65 MV/m
Trapped Power Between the Stn2 Klystrons and FXC3

\[ FME = 0.18 \quad DS = 16 \quad DP = 17 \quad DT = -30 \quad EV = 102 \]
H60VG3S17-FXC3 Breakdown Statistics with 400 ns Pulses (250 Hours Total)

<table>
<thead>
<tr>
<th>Gradient and Pulse Shape</th>
<th>Hours Run</th>
<th>Number of Trips</th>
<th>Trip Rate (#/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 MV/m - Design</td>
<td>45</td>
<td>8</td>
<td>0.18</td>
</tr>
<tr>
<td>70 MV/m - Design</td>
<td>22</td>
<td>15</td>
<td>0.70</td>
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<tr>
<td>75 MV/m - Design</td>
<td>12</td>
<td>78</td>
<td>6.6</td>
</tr>
<tr>
<td>65 MV/m - Design</td>
<td>63</td>
<td>8</td>
<td>0.13</td>
</tr>
<tr>
<td>65 MV/m - Square</td>
<td>23</td>
<td>26</td>
<td>1.1</td>
</tr>
<tr>
<td>70 MV/m - Square</td>
<td>14</td>
<td>97</td>
<td>6.7</td>
</tr>
<tr>
<td>60 MV/m - Square</td>
<td>69</td>
<td>9</td>
<td>0.13</td>
</tr>
<tr>
<td>60 MV/m - Design</td>
<td>In Progress</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trips = 15  Time (hr) = 21.5  Rate (#/hr) = 0.70

Gradient (MV/m) vs Time (hr)

Missing Trans Eng vs Time (hr)

Trip Rate (#/hr) vs Time (hr)

10 Hour Period

Period Between Trips (minutes)
Trips = 97  Time (hr) = 14.4  Rate (#/hr) = 6.74

Square Pulse, 70 MV/m
Trips = 8  Time (hr) = 62.9  Rate (#/hr) = 0.13

Design Pulse, 65 MV/m
Trips = 26  Time (hr) = 23.4  Rate (#/hr) = 1.11

Square Pulse, 65 MV/m
Trips = 9  Time (hr) = 68.7  Rate (#/hr) = 0.13

Square Pulse, 60 MV/m

10 Hour Period

Period Between Trips (minutes)
Breakdown Rate (#/hr / 0.6 m) at 60 Hz

- **H60VG3-FXB7 - Design Pulse**
- **H60VG3-FXB7 - Square Pulse**

- Average Rate Limit
Structure High Gradient Performance
(Breakdown Rate -vs- Unloaded Gradient with 400 ns Square Pulses)