# Trip rate impact from 2015 Helium processing

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- Data is available only for C20 models because Accelerator Division management has repeatedly failed to provide funding for prototyping, much less fully implementing, an x-ray monitoring system proposed after a 1995 meeting I held with the detector group.

- Helium processing technique used in 2015 was not that developed in the 90's by C. Reece and used then to excellent response. Principle differences: no 25K cycle to remove helium and hydrogen before processing and much time wasted in pre/post SRF measurement. 18 modules were done in 14 days with old process.

- Field emission onset was found to be uncorrelated with operational performance in 1994.
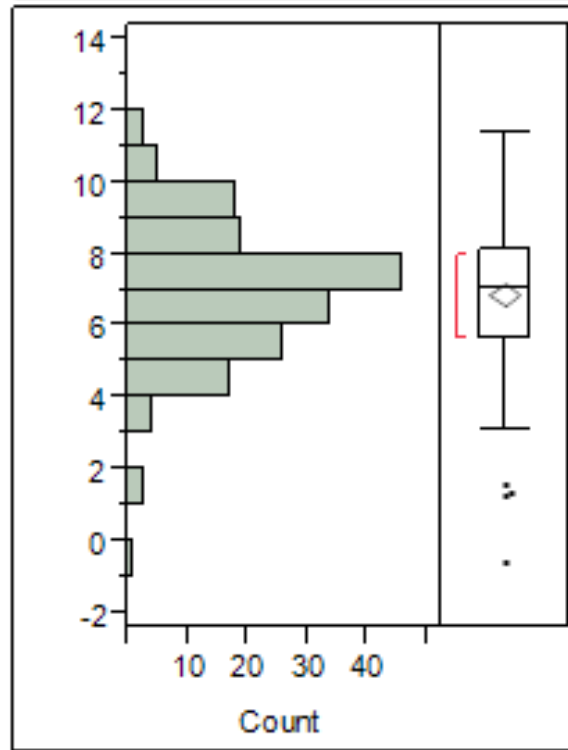
Comparison of GSETs yielding two day fault intervals (5 trips/hour) for models before long down (right), before helium processing (left) and now (center). Number of models differs substantially.
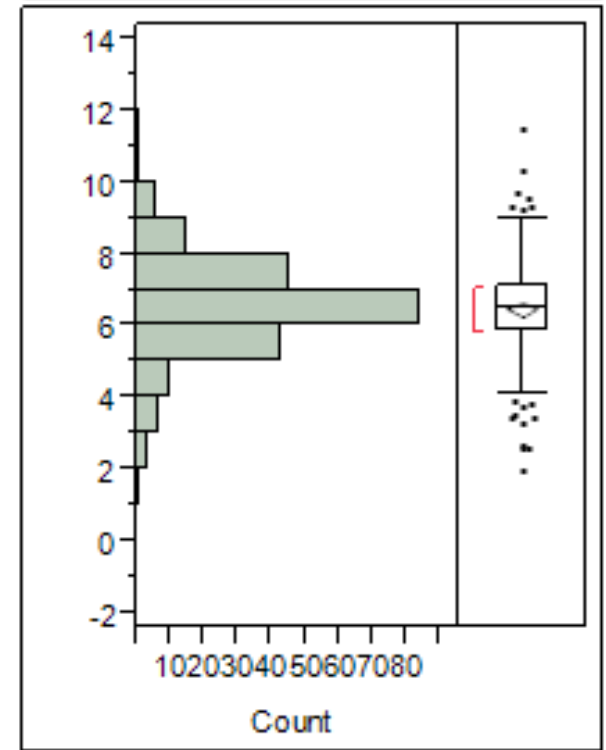

Distributions
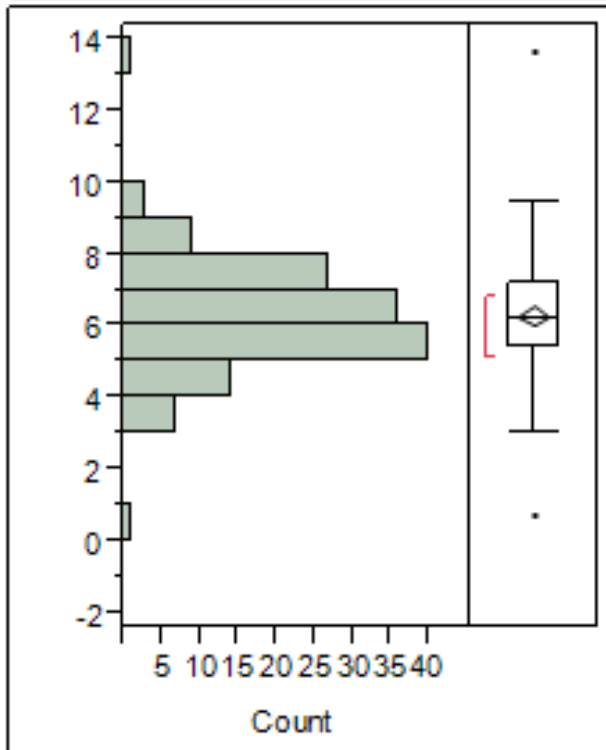
29mar2015_gset48h	17nov2015_gset_48h	31may2012_gset48h

Moments (29mar2015_gset48h)

Mean	6.2852174
Std Dev	1.5339345
Std Err Mean	0.1305772
Upper 95% Mean	6.5434248
Lower 95% Mean	6.02701
N	138

Moments (17nov2015_gset_48h)

Mean	6.8691469
Std Dev	2.1226291
Std Err Mean	0.1595466
Upper 95% Mean	7.1840175
Lower 95% Mean	6.5542762
N	177

Moments (31may2012_gset48h)

Mean	6.4805093
Std Dev	1.3489011
Std Err Mean	0.0917811
Upper 95% Mean	6.6614152
Lower 95% Mean	6.2996033
N	216

GSET Differences between models now vs earlier
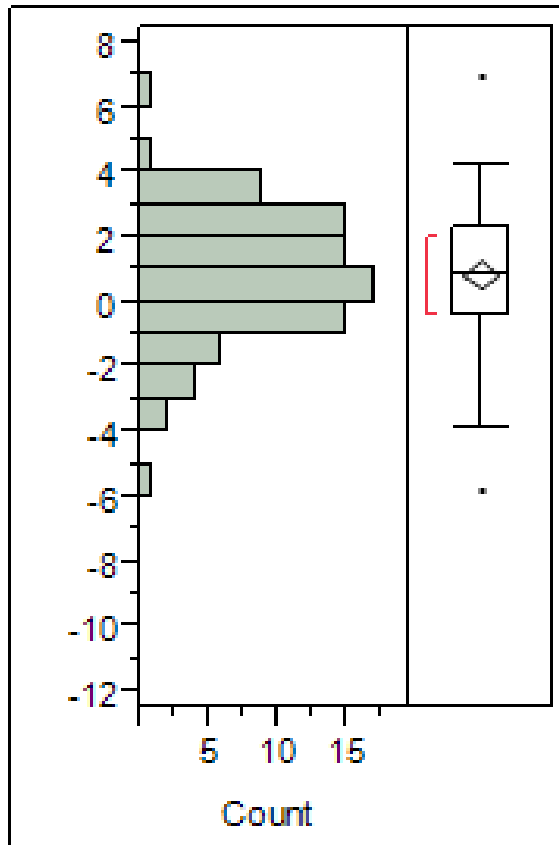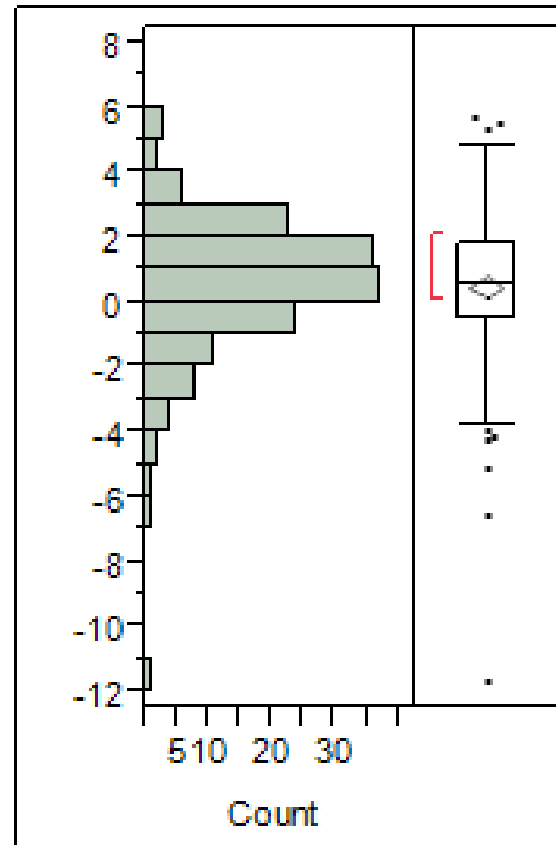
Open issues and questions

- Which helium processing procedure should be used, Reece or Drury? If the Reece procedure were used, 40 calendar days and 1.5 person-years would be required for full machine with one CHL.
- Should helium processing be applied on a spot basis or systematically, say 18 modules/year?
- When should a scintillator/PMT or ion chamber based x-ray detection system be implemented for C50 and C100 modules?