



EDG Activities

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Component Performance and

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**NOT NRC POLICY OR
POSITION**



Regulatory Guide 1.137, “Fuel Oil Systems for Emergency Power Supplies”

- Reg. Guide being revised by Office of New Reactors
- Adding gas turbine generators
- Adding information on ULSD
- Adding information on biodiesel
- Updating referenced standards



Preliminary OpE Insights for 2011

- Increase in EDG issues related to inadequate bolt torquing



Voltage and Frequency

- The Standard Technical Specifications contain Surveillance Requirements that verify diesel generator voltage and frequency. Specifically, SR 3.8.1.7 has the following:
 - Frequency is allowed to vary $\pm 2\%$
 - 58.8 Hz – 61.2 Hz
 - Voltage is allowed to vary up to $\pm 10\%$ (rounded to the nearest 10 volts)
 - 3740 V – 4580 V (for a 4160 V system)

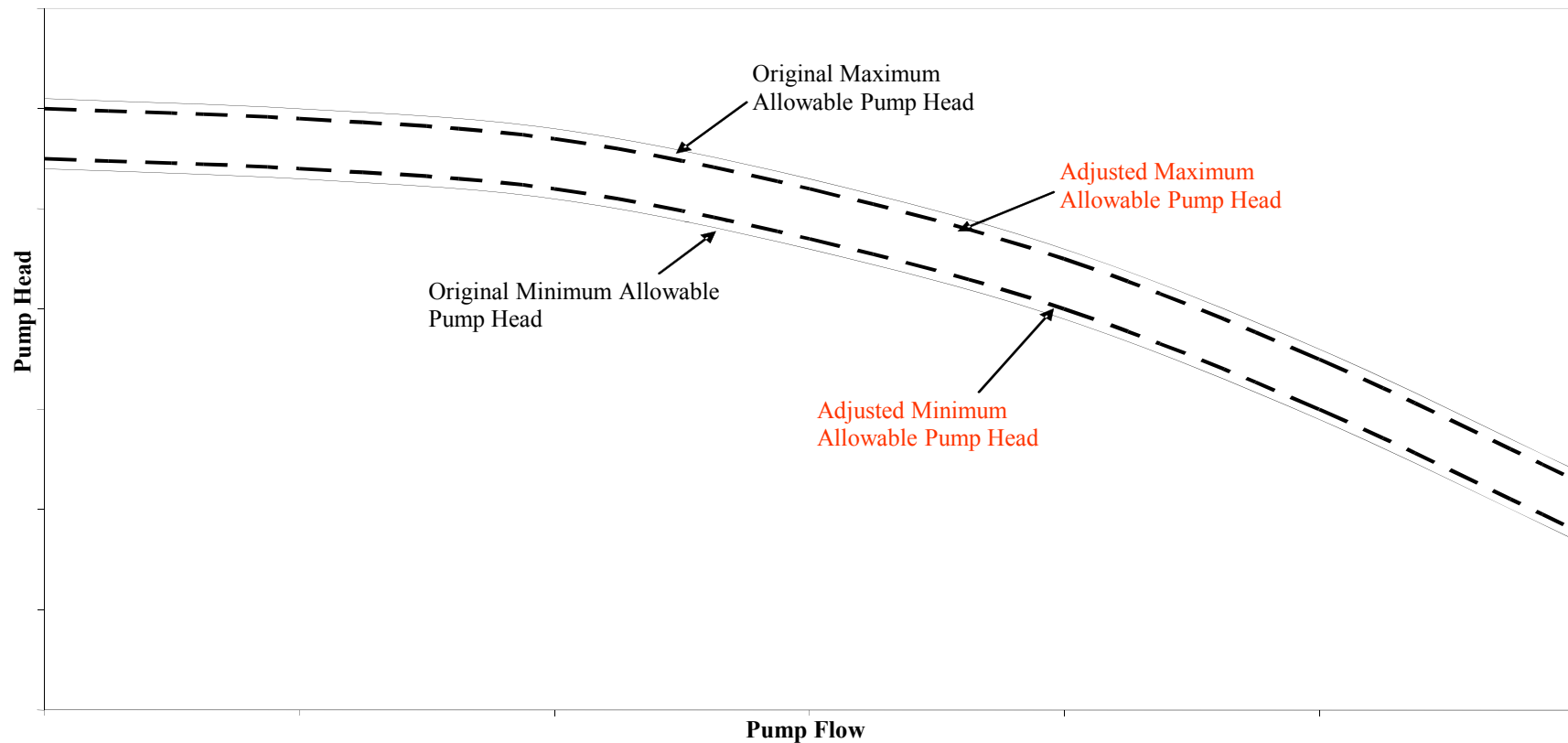


PWROG Proposal

- Account for the capability of the control systems, i.e., governor and voltage regulator to control around those nominal values.
- Treat the tolerance as an uncertainty, similar to an instrument setpoint, and perform an uncertainty calculation which considers the specified tolerance, measurement and test instrument uncertainties, and setting tolerances.

PWROG Proposal

Changes to IST Requirements to Address DG Voltage/Frequency Variations





Issues

- Establish basis for minimum and maximum acceptable voltage
- Ensure valve stroke time and torque are acceptable
- Ensure pumps can start, run and have adequate capability (Safety Analyses)
- Loads that are not disconnected continue to operate after voltage drop during large motor start



Technical Specification Task Force TSTF 501

- Relocate stored fuel oil and lube oil volume values to licensee control
- Minor changes in volume requirements (e.g. ULSD) without NRC approval



SBO Background

- The NRC SBO rule (10 CFR 50.63) requires that each nuclear power plant must be able to cool the reactor core and maintain containment integrity for a specified duration of SBO
- RG 1.155, “Station Blackout,” describes an acceptable means to comply with 10 CFR 50.63
- The method described in RG 1.155 results in a minimum acceptable SBO duration capability ranging from 2 to 16 hours
- The result for all operating plants was a coping duration of 4 hours max. (Refer NUMARC 87-00)
- EDG Reliability was a factor to attain 4 hour coping duration



Fukushima Actions

- **Recommendation 4**
- The Task Force recommends that the NRC strengthen SBO mitigation capability at all operating and new reactors for design-basis and beyond-design-basis external events



Task Force Recommendations

- Initiate rulemaking to revise 10 CFR 50.63 to require each operating and new reactor licensee to:
 - (1) establish a minimum coping time of 8 hours for a loss of all ac power- may entail small AC source
 - (2) establish the equipment, procedures, and training necessary to implement an “extended loss of all AC” coping time of 72 hours for core and spent fuel pool cooling and for reactor coolant system and primary containment integrity as needed
 - (3) preplan and pre-stage offsite resources to support uninterrupted core and spent fuel pool cooling



License Amendment Requests For Allowed Outage Time

- LCO 3.8.1 requires:
 - b. Two diesel generators capable of supplying the onsite Class 1E power distribution subsystem(s)
 - ACTION: Restore DG to OPERABLE status within 72 hours
- Staff extending the LCO to maximum 14 days with compensatory actions and AAC power source
- Need PRA and deterministic submittal



EDG Testing Survey

Temporary Instruction 2515/176, “Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing”
(ML080420064)

- Staff Evaluating:
 - 1) Consistency in testing requirements
 - 2) Test Load to envelope postulated accident load
 - 3) R.G. 1.9 allows 90% of continuous rating



Questions