

THE PROBLEM OF IMPROVING OPERATIONAL AVAILABILITY, A

- A Rationale for Resource Allocation in Managing Availability: Seek a Rank List of the Causes of Lost Availability, A, in the Order of Marginal Cost of Availability Improvement (the availability improved due to a unit expenditure):

$$\text{Marginal Cost} = \frac{\Delta A}{\Delta \$} = \left(\frac{\Delta A}{\Delta r_i} \right) \cdot \left(\frac{\Delta r_i}{\Delta \$_i} \right), \text{ where}$$

Availability sensitivity to i^{th} component reliability improvement, sometimes known \uparrow i^{th} component reliability improvement due to a unit expenditure, usually unknown

r_i = expected reliability of i^{th} source of lost availability, and
 $\$_i$ = money spent to improve expected reliability of i^{th} source of lost availability

- Spend Resources in Descending Order of $\frac{\partial A}{\partial \$_i}$ (note, often needed data are not available, and surrogates are supplied via staff meetings and other subjective processes)

PLANT INVESTMENT DECISIONS

Decision Bases - Failures

Plant specific data } Can be combined via Bayesian
Generic data } methods
Feared consequences

Decision Bases - Benefits

Avoiding costly failures
Improved electrical output
Reduced human errors and mechanical failures
Increased worker comfort, morale

Decision Process — can be restructured probabilistically,
and can reflect decision-maker beliefs.

Group discussion

Factors: costs, benefits, data, uncertainties

