Ethanolamines/Glycol Ethers
Tier 3 Procedure

Section Number:	504	
Issue Number:	1.0	
Original Date:	1-4-96	Author: Larry Locicero
Revision Date:		
Title:	**E Series DEG/MEG Questionnaire**	
References:	E Series Glycols Fault Tree (503)	

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504. E Series DEG/MEG Questionnaire

To determine the root cause of the DEG /MEG problem, answer the following questions.

1.0 Is the reactor temperature greater than 206 C? If so, check

Set points

1. Reactor Steam Press -- 475-485 psig
2. Reactor Outlet Steam Flow -- 1500-2000 lb/hr

Instruments

1. Steam Press Transmitter
2. Steam Regulator
3. Steam and Condensate Flow Meters

2.0 Is there a tube leak?

Analyze all column overheads samples for water.

If a samples is above 0.2 wt% H2O for T-110 or 0.05 wt% for others, there is a tube leak in either the reboiler or condenser.

1. Notify maintenance superintendent.
2. Shutdown system and prepare for maintenance
3. Determine location of leak by:
   - Analyzing column bottoms for Ca
     High Ca means cooling tower water is source and the leak is in the condenser.
   - Helium detector
     Add to shell and detect using ejector system not vacuum pumps

Sample and analyze streams exiting the R-103, T-110 BTUs and T-110 feed coolers for water. Notify maintenance superintendent of problem.

3.0 Is there too much water in the raw materials?

Analyze all raw materials for water, if greater than amount listed below, this is the problem. Notify maintenance superintendent of problem.

Raw material	Sample Location	Maximum H2O	Corrective Action
Alcohol	P-104 A/B	0.01 wt%	
Catalyst	D-106 A/B	2.80 wt%	
*Oxide	Call Glycol II	20 ppm	
Acid	DV-102	0.015 wt%	
Recycle	DV-113 or Recycle stream	Recycle streams<0.05%	

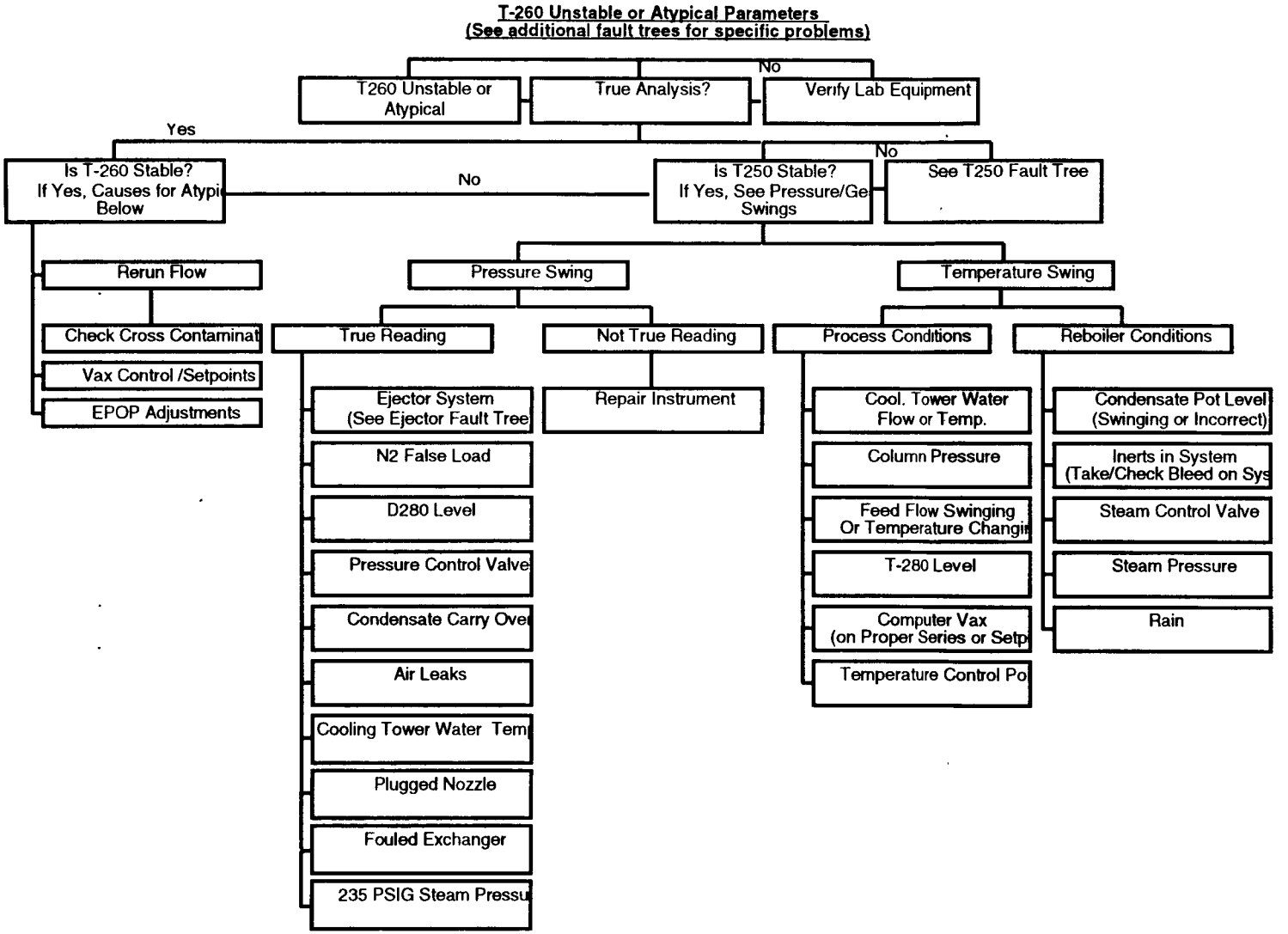
*Note: Glycol II should run an analysis on their tank to insure there is no leak in cooling coil system. The condenser on the EO drum may be a source of water, but unlikely due to higher pressure in tubes. This can be determined via

1. A TOD analysis on the cooling tower water off the condenser or
2. Reduce CTW pressure and sample condenser water effluent for EO

Ethanolamines/Glycol Ethers Tier 3 Procedure
Section Number: 505
Issue Number: 1.0
Original Date: 12-25-95 Author: M. Jordan
Revision Date:
Title: T260 Operation and Trouble Shooting Guides

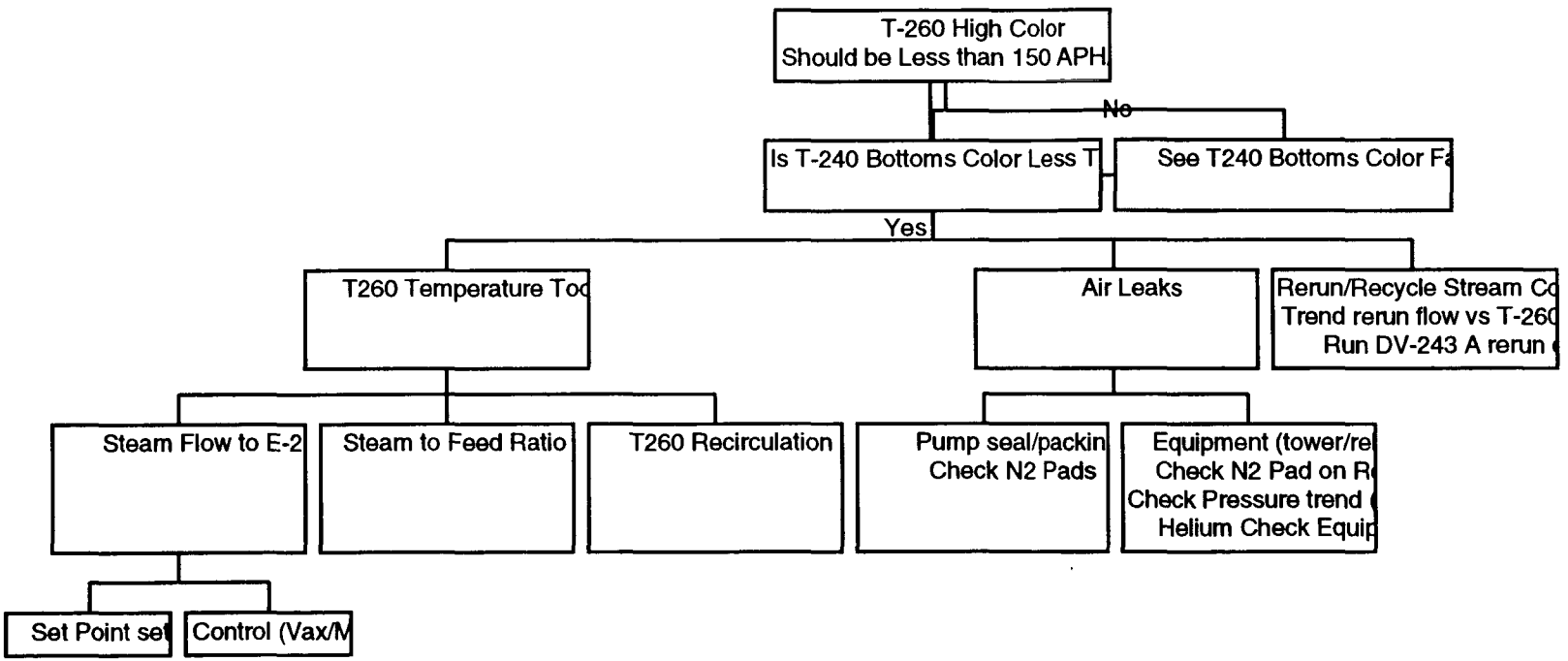
- **T-260 Operation and Trouble Shooting Guides**
- Click on double arrows in bottom right corner to flip through page
- List of Fault Trees
  - 1. Column Instability or Atypical
  - 2. T260 High Bottoms Color
  - 3. High Water in T-260 Overheads

T-260 Operation

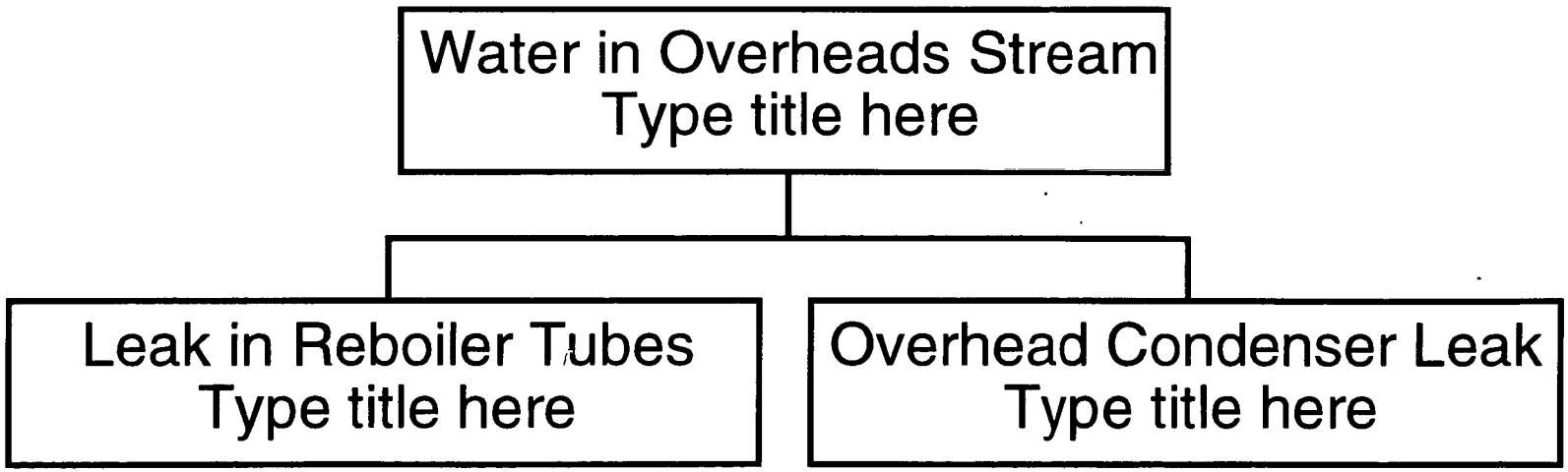


T-260 Operation

T-260 High Color
(Note: Color is always caused by temperature, oxygen (air), or reaction unless you are adding a contaminated recyc



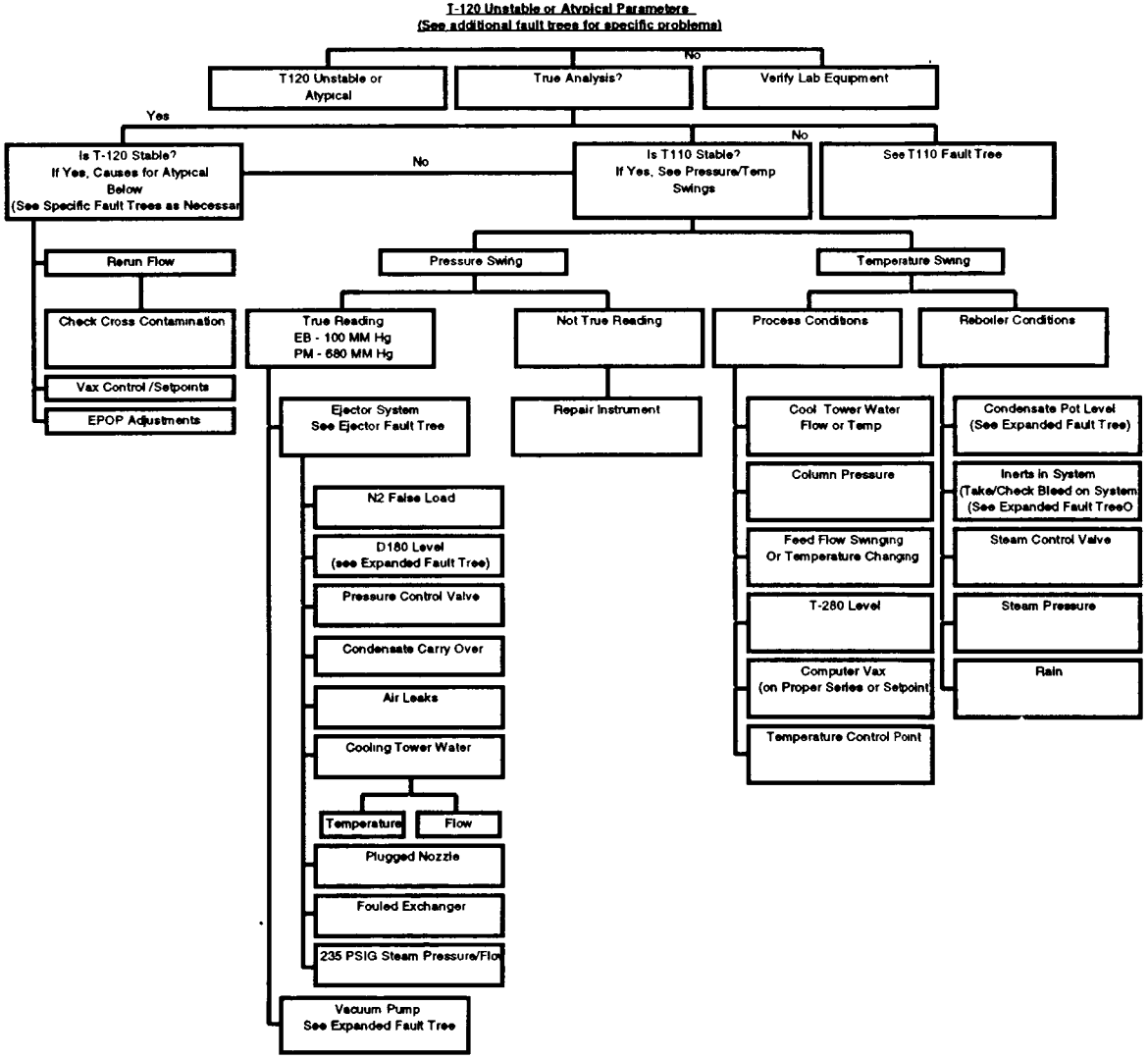
HI WATER IN T-260 OVERHEADS



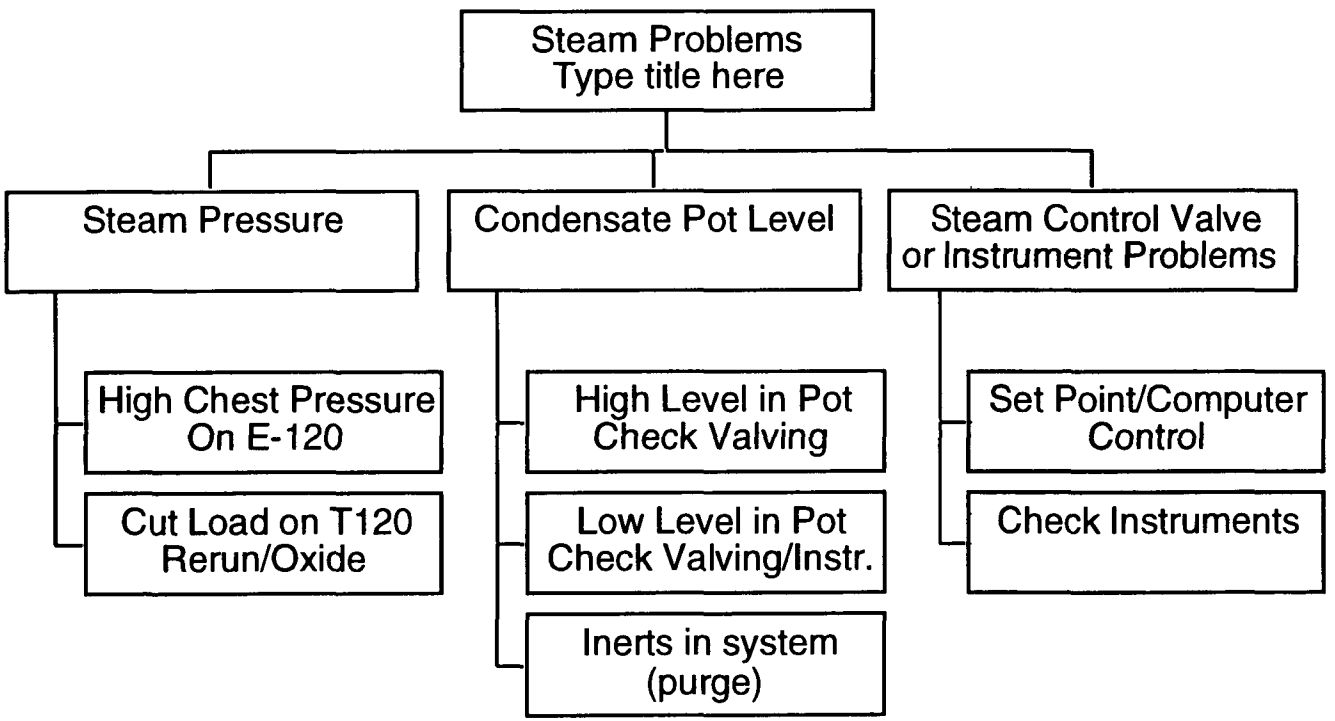
Ethanolamines/Glycol Ethers Tier 3 Procedure
Section Number: 506
Issue Number: 1.0
Original Date: 12-25-95 Author: M. Jordan
Revision Date:
Title: T-120 Operation and Trouble Shooting Guides

- **T-120 Operation and Trouble Shooting Guides**
- Click on double arrows in bottom right corner to flip through page
- List of Fault Trees
  - 1. Column Instability or Atypical
  - 2. Steam Problems
  - 3 High MEG in T-120 Overheads
  - 4. High Water in T 120 Overheads
  - 5. High DB in EB

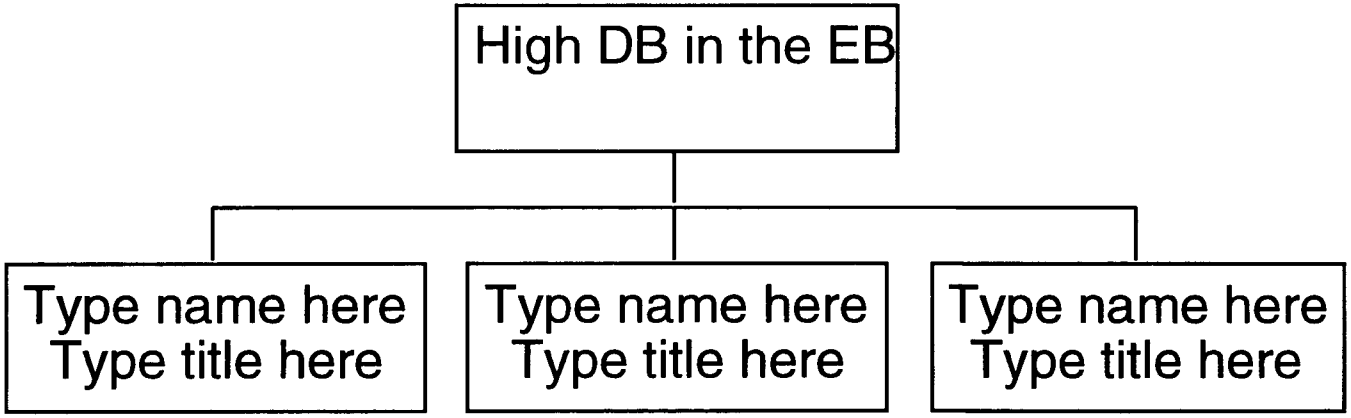
T-120 Operation



Steam Problems on T-120/E-120

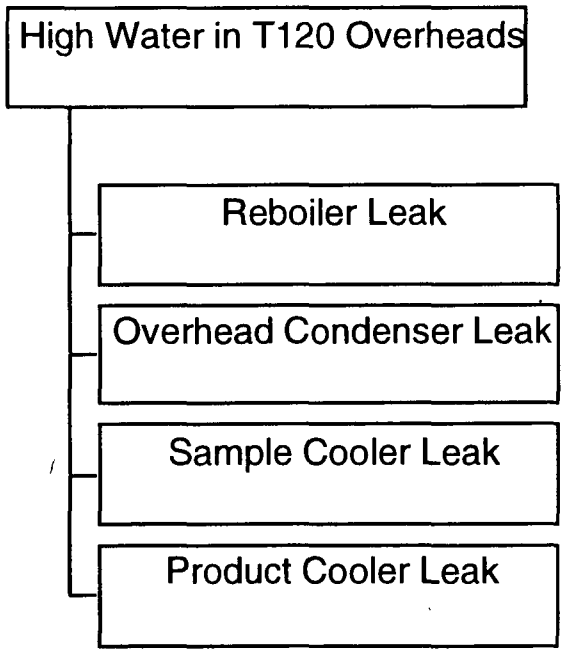


High DB in the EB



Need to define what to check/do

High Water in T-120 Overhead Stream
Typical level for EB series is < %
Typcial level for PM series is < %



T-120 Operation

High MEGs in T-120 Overheads
(see Glycol Fault Tree for Addressing overall Glycol Problem)