FERMILAB POWER DISTRIBUTION SYSTEM

Vic Kuchler  -  FESS
Overview

- Description of Overall System
- Identification of Component Parts
- Current Status of Component Parts
- Outlook for the Future
Description of the Overall System

- Commonwealth Edison Distribution
- 345 kV Supplies from Com Ed to Substations
- MSS and KRSS
- 13.8 kV Distribution Feeders
- Switches and 13.8 kV to 480 V Transformers
- 480 V Distribution to Main Interior Panels and Motor Control Centers
- Additional 480 V to House Power Transformers and Local Interior Building Distribution
Com Ed to Substations

- Com Ed to MSS
  - 2.4 Miles of Original Incoming 345 kV Conductor
  - 22 Sets of Wooden Pole Structures
  - 12 of 44 Individual Poles Will Be in the “Replace Within 1 Year” Category at the End of FY’06

- Com Ed to KRSS
  - 2.3 Miles of Incoming 345 kV Conductor
  - 15 Steel Poles
  - All Components in Good Condition (Only in Place for 7 Years)
Primary Power Distribution

- **80 Miles of Underground 13.8 kV Conductor**
- **MSS has 23 Feeders (60 Miles)**
  - 40 Miles Replaced in the Last 10 Years
  - 8 Miles to be Replaced in FY’05
  - 12 Miles of 20-30 Year Old Cable Remains in Use
- **KRSS has 31 Feeders (20 Miles)**
  - 20 Miles in Place and Only 7 Years Old
- **241 13.8 kV Step-Down Transformers**
- **Switches, Other Hardware and Short Cable Runs Between Switches and Transformers Have Not Always been Included in the Cable Replacement Projects and are Still Original Cable**
Future Plans

- **FY’05** - Continue Feeder Replacement Program
- **FY’06** - Replace MSS Pole Line and Conductors
- **FY’07** - Continue Feeder Replacement Program and Include MSS Upgrades
- **Outyears** - Lowest Priority Feeders and Short Cable Runs
In Summary

• We have 1 New Substation and 1 Old Substation
• 85% of Feeders Will be <10 Years Old at the End of FY’05 and Isolation and Switching Capability Have Been Improved
• Short 13.8 kV Cable Runs are Still a Vulnerability
• MSS Pole Line Replacement Cannot be Postponed Any Longer
• Transformers and Switches Still Pose a Vulnerability, But Not Primarily From Age of Equipment
• Are We in Better Shape Than a Few Years Ago?  
  YES