



# California ISO

## Transmission Register Component Linking Manual

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California Independent System Operator

# Transmission Register Component Linking Manual

## Table of Contents

<b>1.</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1.	Purpose .....	1
1.2.	Scope .....	1
1.3.	Definitions .....	1
<b>2.</b>	<b>LINKING EXAMPLES</b> .....	<b>3</b>
2.1.	Example 1 – Two Terminal Transmission Line .....	4
2.2.	Example 2 – Three Terminal Transmission Line .....	5
2.3.	Example 3 – Transformer Bay .....	6
<b>3.</b>	<b>LINKING STEPS</b> .....	<b>7</b>
<b>4.</b>	<b>REVISION HISTORY</b> .....	<b>8</b>

## 1. Introduction

The Transmission Register (TR) is a secure Web-enabled database environment for CAISO internal users and specific Participating Transmission Owners (PTO) to access TR data.

The TR discloses for each transmission line and associated facility the:

- Identity of the PTO responsible for operation and maintenance, and its owners.
- Dates which the CAISO assumed or relinquished Operational Control.
- Date of any change in the identity of the PTO responsible for its operation and maintenance, or in the identity of its owner.
- Transmission equipment's applicable ratings and history.

The TR also provides ISO, PTO Administrators, and/or linking designees the ability to link group able components.

**Note:** Refer to the [Transmission Register CAISO & PTO General User Manual](#) for the basic steps to navigate within TR, the [Transmission Register Autoloader User Manual](#) to perform bulk Change Requests, and the [Transmission Register PTO Admin User Manual](#) for PTO Admin to perform maintenance and management of Component information for their individual Organizations.

### 1.1. Purpose

The TR maintains the official listing of transmission lines, associated facilities, and Entitlements that are subject to the CAISO's Operational Control, as required by the Transmission Control Agreement, Section 4.2.

This manual describes the method for linking components to accurately represent transmission facilities under CAISO Operational Control.

### 1.2. Scope

A Component Link is a relationship between two Components of which one is considered a Parent Component and the other a Child Component. The user of this manual must be a TR Admin authorized representative set with Linking permissions.

### 1.3. Definitions

The following table gives the definitions of the different components used in linking, and differentiates between parent and child, and group able components:

Transmission Register Component Linking  
Manual

<b>Object</b>	<b>Definition</b>	<b>Parent or Child designation</b>
<b>BUS</b>	Bus	Both
<b>BSCB</b>	Bus Sectionalizing Circuit Breaker	Both
<b>CABLE</b>	Cable	Both
<b>CAP</b>	Shunt Capacitor	Both
<b>CB</b>	Circuit Breaker	Both
<b>COND</b>	Overhead Conductor	Both
<b>CSW</b>	Circuit Switch	Both
<b>CT</b>	Current Transformer	Both
<b>DISC</b>	Disconnect Switch	Both
<b>FUSE</b>	Fuse	Both
<b>LEG</b>	Typically consists of a CB, DISCs, and COND at a CB position inside a Station.	Both & can represent group of components
<b>MOD</b>	Motor Operated Disconnect Switch	Both
<b>RCT</b>	Shunt Reactor	Both
<b>REG</b>	Regulator	Both
<b>RLY</b>	Relay	Both
<b>SCAP</b>	Series Capacitor	Both
<b>SCND</b>	Synchronous Condenser	Both
<b>SRCT</b>	Series Reactor	Both
<b>SVC</b>	Static VAR Compensator	Both
<b>TERM</b>	Represents one terminus of a transmission line typically consisting of a LEG(s) and line drop CONDs.	Both & can represent group of components
<b>TL</b>	Transmission Line	Parent, & can represent group of components
<b>TLS</b>	Transmission Line Section	Both
<b>TR</b>	Transmission Register	Both
<b>TRCT</b>	Tertiary Reactor	Both
<b>WTRP</b>	Wave Trap	Both
<b>XFMR</b>	Transformer	Both
<b>XFMR BANK</b>	Transformer Bank	Both, & can represent group of components
<b>XFMR BAY</b>	Transformer Bay	Parent, & can represent group of components

## 2. Linking Examples

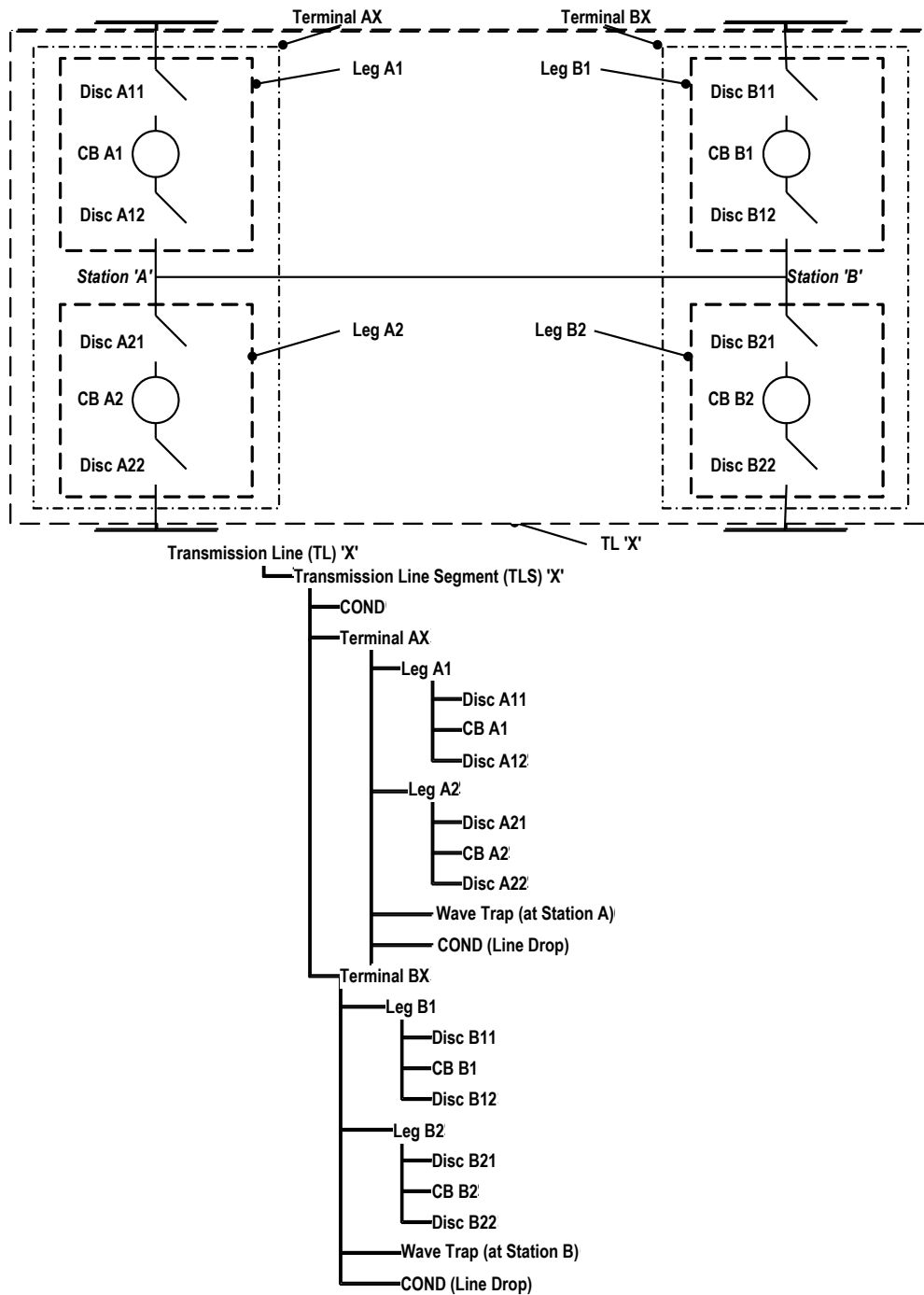
A variety of components can be entered into the TR. Some components are individual pieces of equipment, such as circuit breakers or disconnect switches. Other components such as legs, transmission lines, and transformer banks are considered a grouping of individual pieces of equipment or sub-groups of equipment. For instance, legs generally consist of a group of station equipment (circuit breakers, disconnect switches, jumpers, etc.) that reside between a line drop and a station bus, or another line drop. Another example is a transmission line, which consists of line segments, conductor types, legs, and additional pieces or sub-groups of equipment that in a group make up a transmission line.

The types of components that are individual pieces of equipment that can either be a parent or child, or can represent a group of components, are defined in section **Error! Reference source not found..** The types of components, ordinarily used to represent a group or sub-group of individual equipment components, or sub-groups of components, are reiterated as follows:

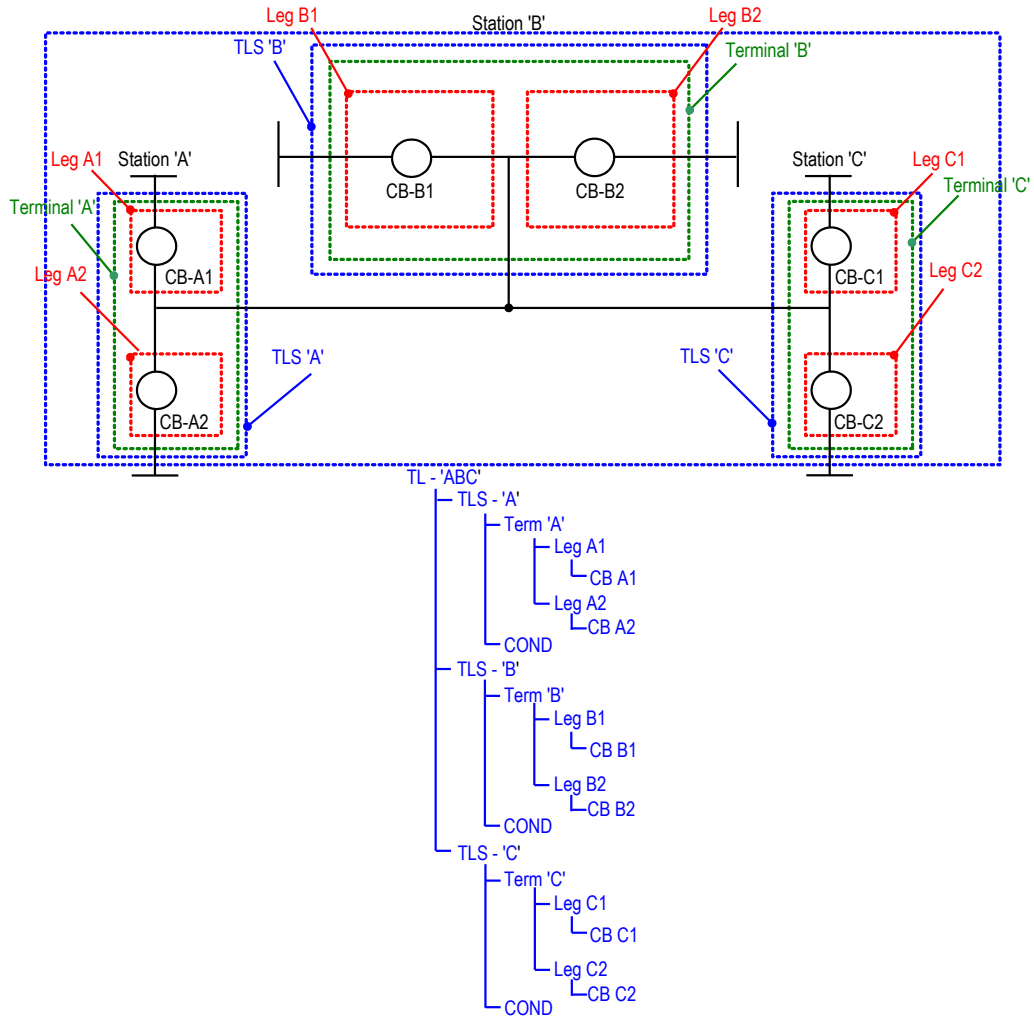
<b><u>Group able Component Type</u></b>	<b><u>Description</u></b>
LEG	Leg
TERM	Terminal
TL	Transmission Line
TLS	Transmission Line Segment
XFMR BANK	Transformer Bank
XFMR BAY	Transformer Bay

The diagrams in the ensuing subsections represent the method to group components to analyze grid configurations using current TR terminology:

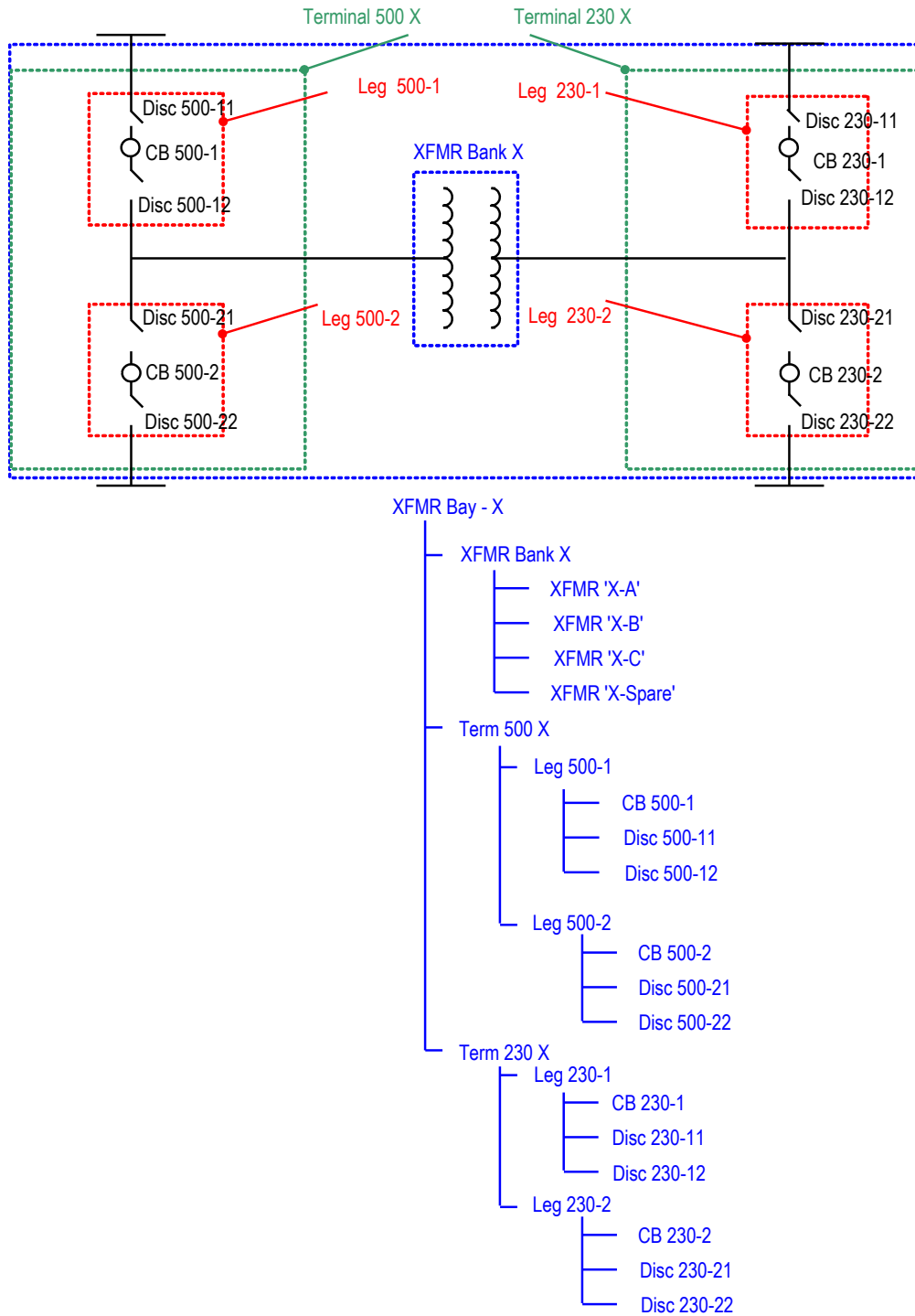
## 2.1. Example 1 – Two Terminal Transmission Line



## 2.2. Example 2 – Three Terminal Transmission Line



### 2.3. Example 3 – Transformer Bay





### 3. Linking Steps

The linking function is viewable on the TR Main Page for those individuals with linking permission. Once the linking criterion is understood, performing the steps is fairly simple.

Take the following actions to link components:

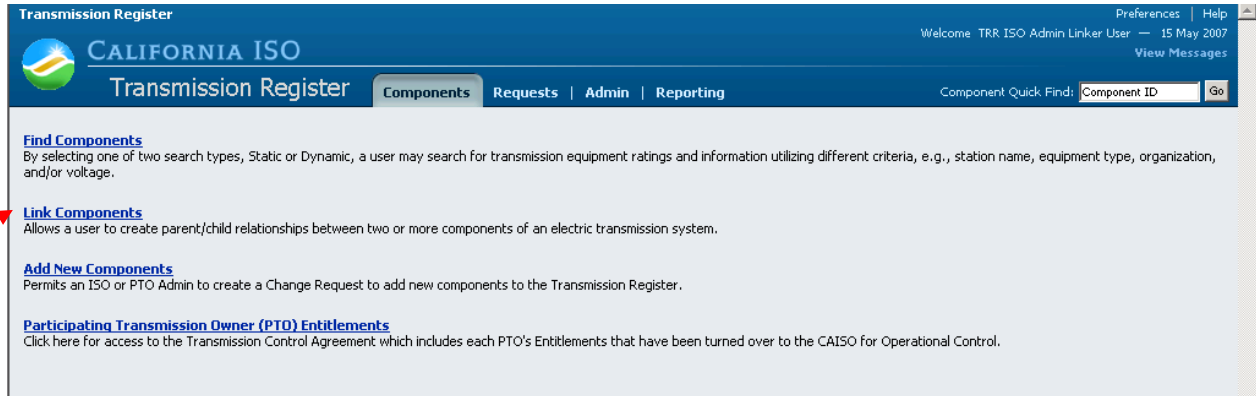


Figure 1. Components Home Page

- Click on the Components tab shown in Figure 1.
- Click on the Link Components hyperlink and the screen in Figure 2 loads.

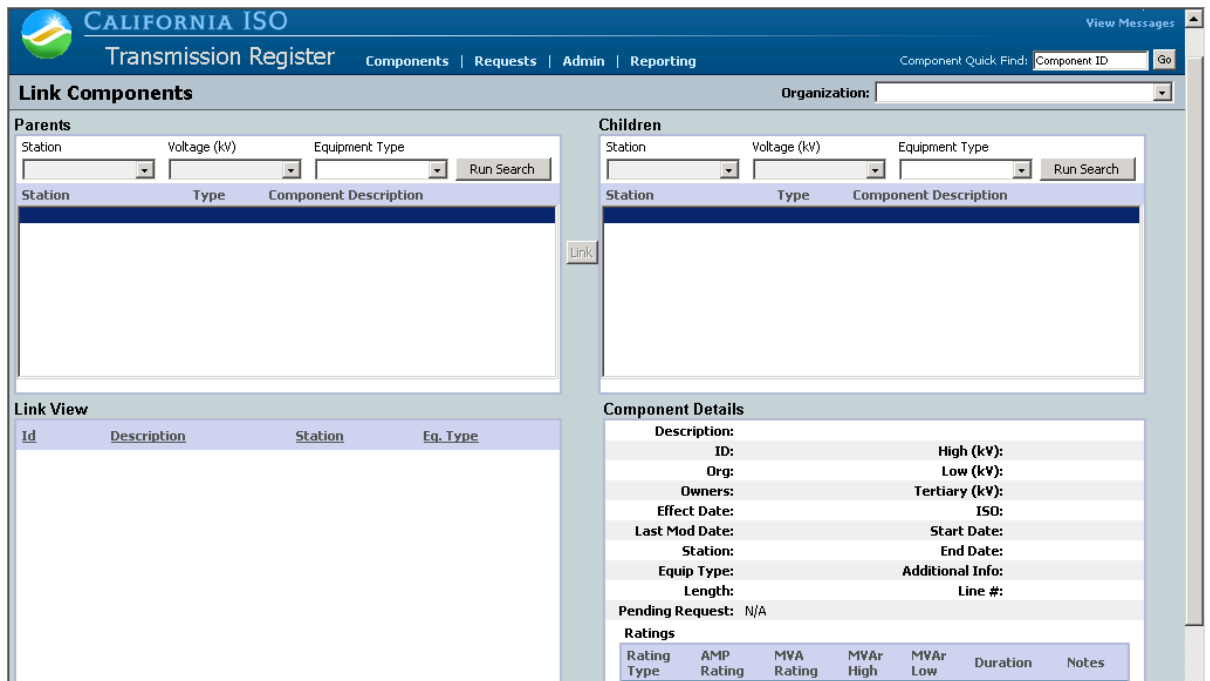
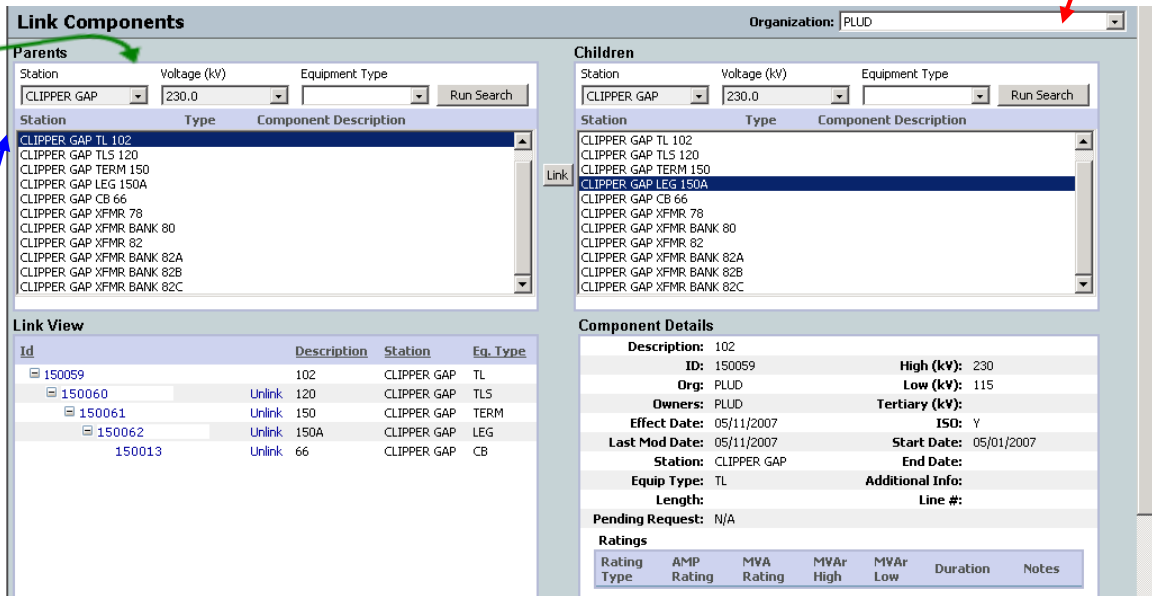


Figure 2. Link Components Screen

- **Select** the organization from the dropdown menu.
- **Select** the station from the dropdown menu on the Parents side.
- **Select** the Voltage (kV) from the dropdown menu and, if needed, **select** the Equipment Type.
- **Press** the Run Search button and the window below Parents populates.
- **Select** the organization from the dropdown menu on the Children side.
- **Select** the station from the dropdown menu.
- **Select** the Voltage (kV) from the dropdown menu and, if needed, **select** the Equipment Type.
- **Press** the Run Search button and a window below Children populates.



**Figure 3. Link Components Screen Loaded**

- **Highlight** the desired component from the Parents side.
- **Highlight** the desired component from the Children side and the Link button activates.
- **Press** the Link button and the screen refreshes with the Link View populating.

To unlink parent and children components:

- **Press** the [Unlink](#) hyperlink.

## 4. Revision History

Version	Activity	By	Date
1.0	Draft	Steve Rutty	7/1/02
2.0	TR rebuild initiated manual rewrite.	Marilyn Lien	5/17/07
3.0	Corrected Components in Examples 1 & 3, Updated ISO Logo	Duke Luu	5/12/2014
4.0	Updated ISO Logo and format	Chris Hillman	8/13/2021