

2006-T3 FMW
8 MW Ethanol Plant
System Impact Study
Addendum

October 2006



Study conducted by Zea Baca

Introduction

This addendum is to the 2006- T3 8 MW Ethanol Plant System Impact Study (SIS) report delivered to the customer in October of 2006. The addendum includes alternative interconnections to the 115 kV system near Fort Morgan West Substation.

The third version (V3) is a tap on the City of Fort Morgan 115 kV transmission line between Fort Morgan West and Fort Morgan South Tap. The fourth (V4) is a tap on 2006-T3's 115 kV line between the Bijou Tap and Bijou Substation.

I. Procedure

A. Base Case

In order to accurately represent the system at the proposed interconnection time of the Ethanol Plant's in service date, the base case was developed as previously outlined in the SIS report. The case was modified to include the 2006-T3's proposed 8MW Ethanol Plant interconnecting accordingly. System effects were reanalyzed with TOT 3 increased to 1585.

B. Criteria

1. System Intact

Voltages will remain within the required 0.95 to 1.05 per unit range. Transmission lines and transformers may not exceed 100 % of their nominal rating.

2. Single Contingency

Voltages will remain between 0.90 and 1.10 per unit. Transmission lines and transformers may not exceed either 100% of their nominal rating or an established emergency rating.

II. Findings

A. Base Case Power flow results

The figures below display the electrical connection of the load at system intact. Both addition versions are shown with their effect on the system in the area. All the contingencies applied previously were also applied to this case as well as monitored lines and buses.

B. Case D Power flow results

1. Conclusion: After completing the power flow portion of this study, it can be observed that the Ethanol Plant load of 8 MW does not affect WAPA's system. This holds true for any of the interconnection options mentioned in either the SIS report or the addendum.

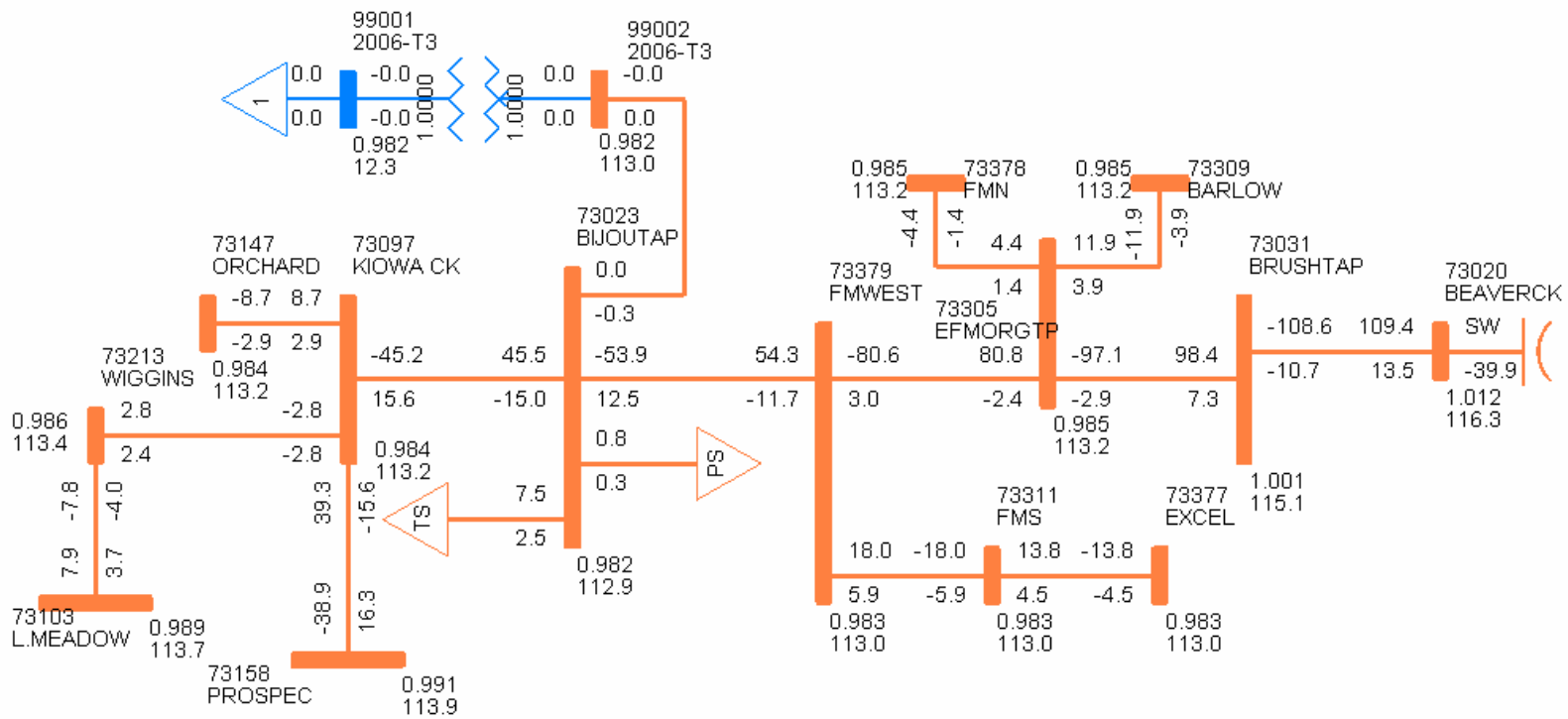


Figure 1: V3 System Intact without Load

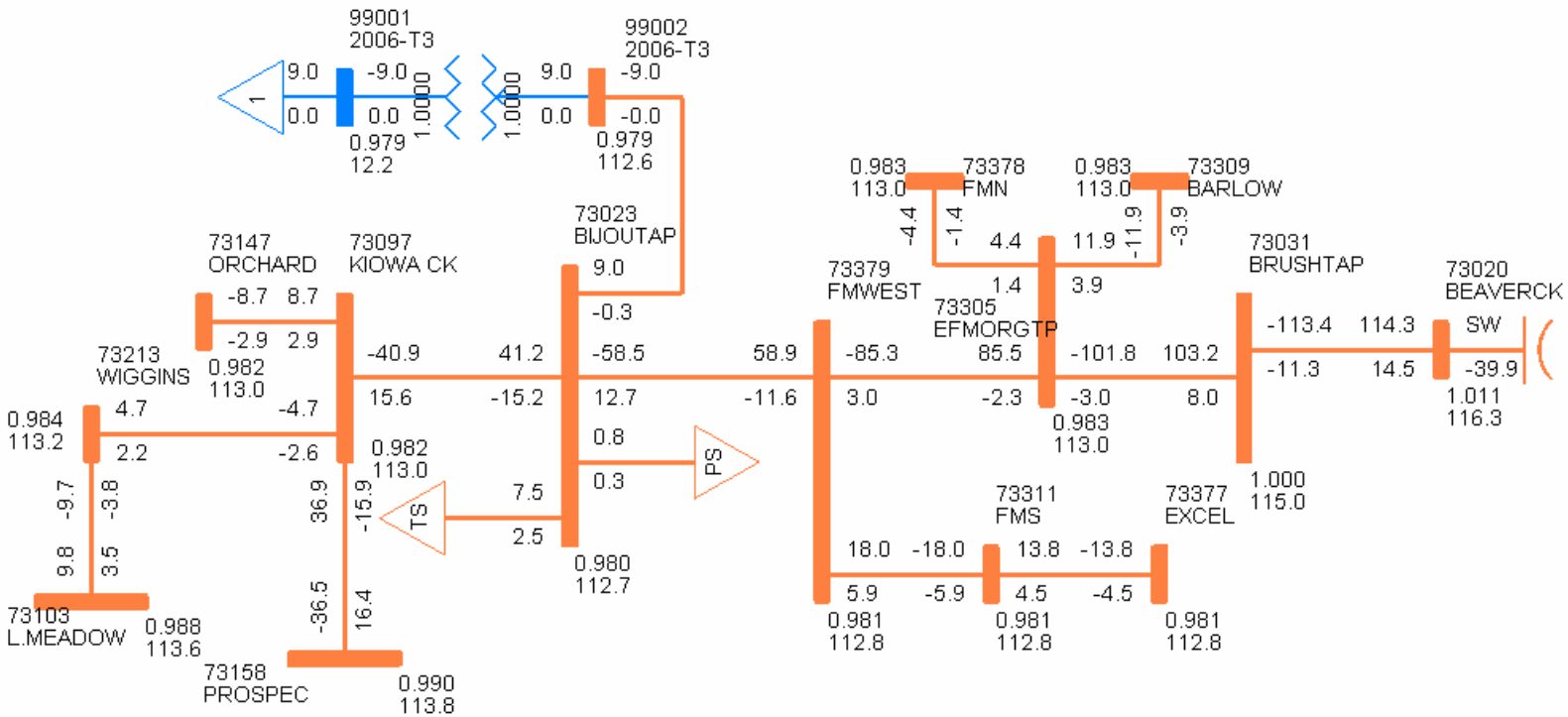


Figure 2: V3 System Intact with Load

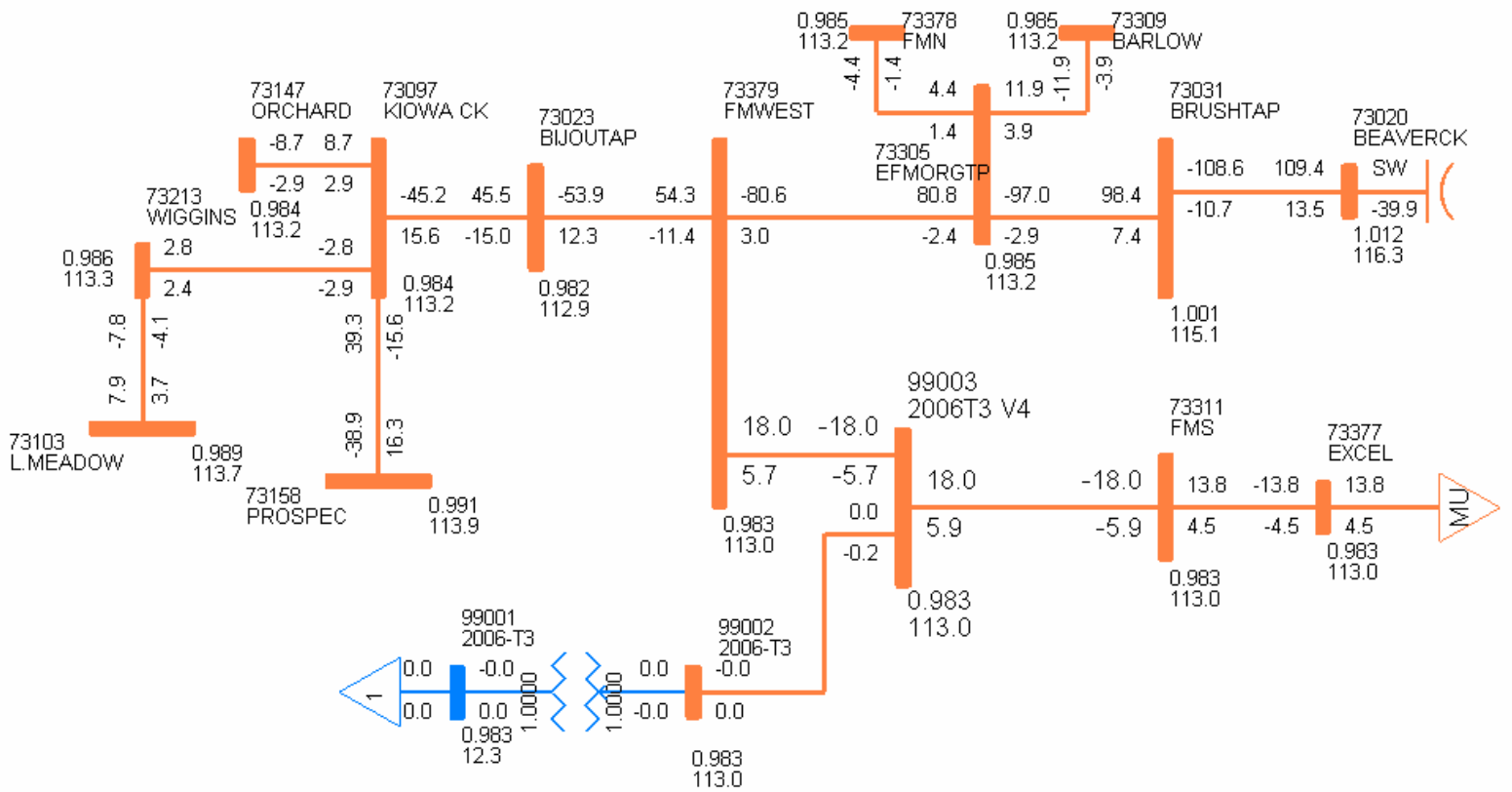


Figure 3: V4 System Intact without Load

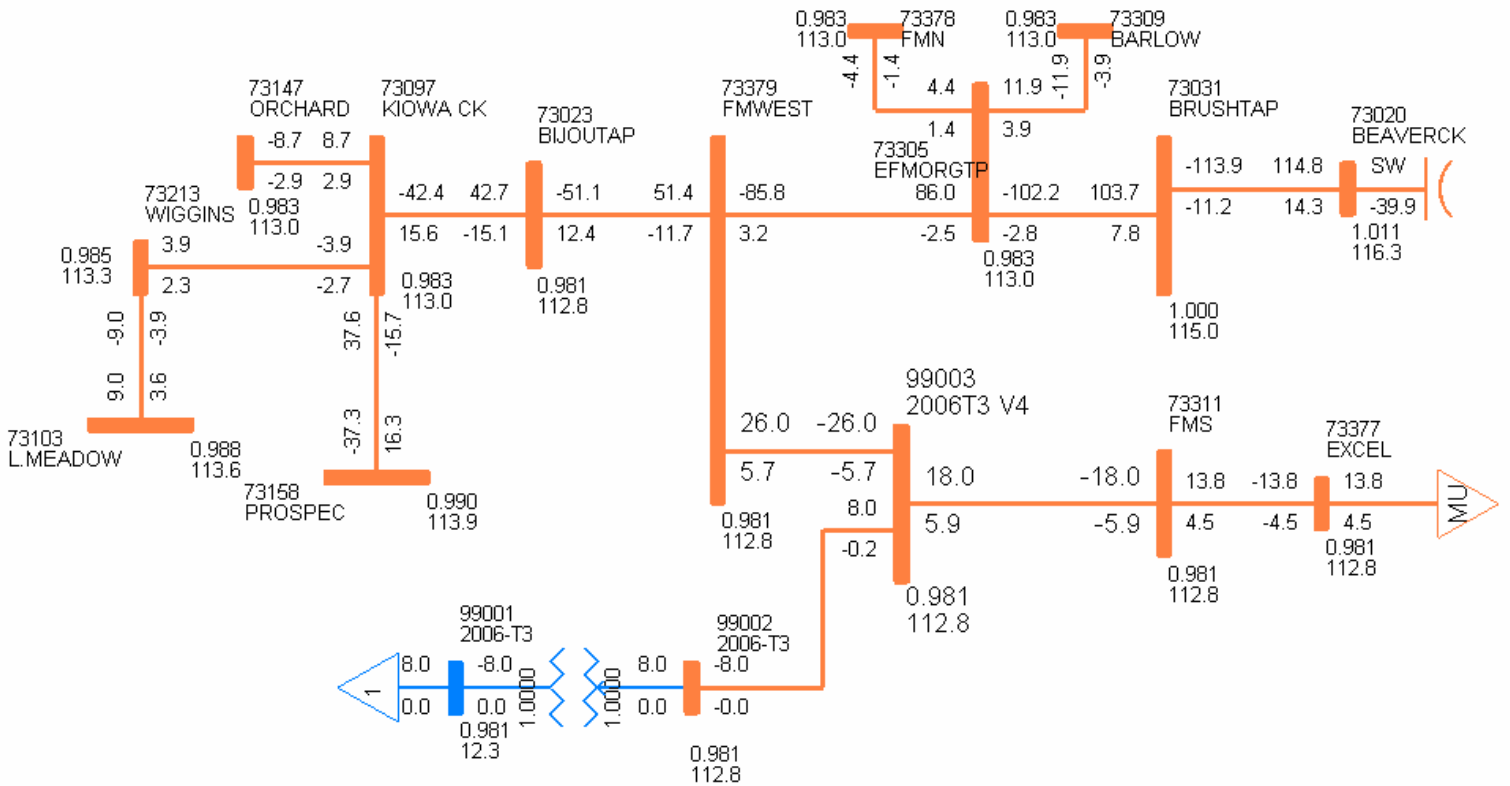


Figure 4: V4 System Intact with Load