

SPECIFICATION FOR

Customer Emergency Generation and Secondary Load Transfer

**CENTERPOINT ENERGY
ELECTRIC DISTRIBUTION ENGINEERING
P.O. BOX 1700 HOUSTON, TEXAS 77251**

REFERENCE DRAWINGS:

REFERENCE SPECIFICATIONS:

National Electrical Code
CNP Specification 007-231-76
PUCT Substantive Rule 25.212
IEEE Standard 519-1992 (or latest revision)



						WRITTEN		R.W. Comfort	
						CHECKED			
						APPROVED	11-16-88	L.G. Pond	
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1.0 SCOPE

- 1.1 Hereafter, CenterPoint Energy will be designated as “CNP” and the Contractor, Customer, or Facility Owner will be designated as “Customer”.
- 1.2 This specification covers the minimum requirements for the operation of customer owned emergency generation, and the operating procedures for secondary load transfer on the customer’s distribution system. The requirements in this specification are in addition to those stated in the National Electrical Code (NEC) and all other applicable governing authorities.

2.0 POLICY ON EMERGENCY GENERATION

- 2.1 Customer owned emergency generation must be connected to the customer’s load through either an open-transition type transfer switch or a key interlocked two breaker/switch arrangement.
- 2.2 The open-transition type transfer switch or interlocked two breaker/switch arrangement must be designed to prevent the electrical and/or physical connection between the CNP distribution system and the customer generator bus. See Figures 1, 2, 3 and 4 on sheets 7, 8, 9 and 10 for the acceptable connections of the emergency generator to the customer’s bus.
- 2.3 Exceptions to the above requirements (i.e. operating an emergency generator in parallel with the CNP system through the use of a closed transition transfer switch) will be granted under the following conditions.
 - 2.3.1 Customers utilizing a closed transition transfer switch with their emergency generator must install protective devices in accordance with Public Utility Commission of Texas (PUCT) Substantive Rule 25.212 and specified in the CNP Specification for Customer Generation on the Distribution System (007-231-76). These protective devices must be installed at the interconnection point between CNP and the customer.
 - 2.3.2 The level of voltage and current distortion produced by the customer’s generator must be in accordance with IEEE Standard 519-1992 (or latest revision).
- 2.4 Customers served from an existing CNP secondary network system will not be allowed to operate their emergency generators in parallel with CNP.
- 2.5 Generator(s) and its exhaust must be located where it will not interfere with CNP personnel or equipment. The location of the generator must be approved by CNP prior to installation.
- 2.6 Customers may not install or use any transfer switch on the high side (CNP side) of the meter or any transfer switch between the meter and the meter socket jaws. Customer owned standby generators must be located on the load side (customer side) of the meter, behind the main breaker (switch).

3.0 POLICY ON SECONDARY LOAD TRANSFER

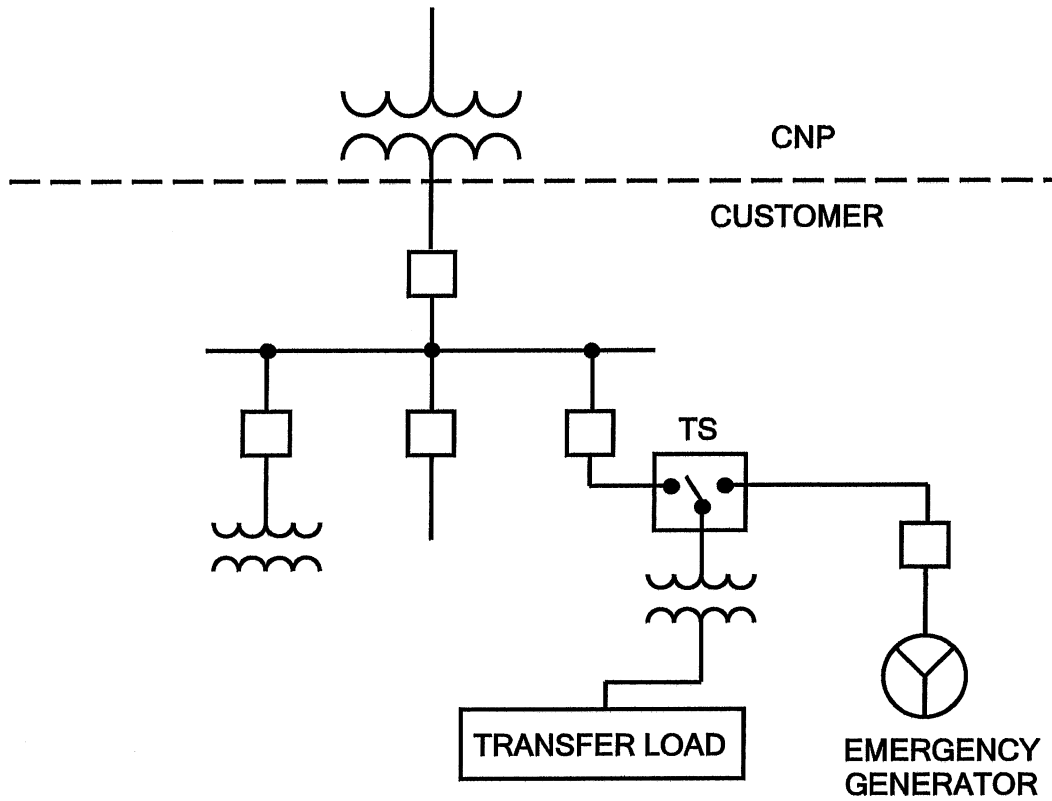
- 3.1 The following policy applies to customers whose split load is served from two feeds on the CNP distribution system. These feeds may or may not originate from electrically separate circuits.
- 3.2 Customers should design their distribution system in such a manner that the distribution buses served from each feed shall always be electrically isolated from each other. See Figure 5 on sheet 11 for illustration.
- 3.3 (A) Customers served from two CNP feeds where CNP provides manual transfer service may be allowed to transfer pre-approved loads (in accordance with Section 3.6 below) from one CNP feed to the other in the event of a circuit outage. (B) Customers served from two or three CNP feeds where CNP provides automatic transfer service may be allowed to transfer pre-approved loads (in accordance with Section 3.6 below) in the event of a secondary outage on the CNP service to the affected customer.
- 3.4 The secondary load transfer for either Sections 3.3(A) or 3.3(B) shall be done manually. Automatic load transfer by the customer will not be permitted without CNP Engineering approval. Prior to the transfer of load, the customer must manually shed pre-approved loads on the receiving feed. The magnitude of load to be shed must be equal to or greater than the amount of load to be transferred, so that the normal load level of the receiving feed is never exceeded. These limits will be provided to the customer as a condition for electric service. This condition applies to Section 3.3(A). Customers served from two or three circuit automatic transfer service are typically provided service from either a normal circuit with a second as the back up or from a split service arrangement. Upon the loss of a circuit CNP equipment is relayed to automatically transfer to the non affected circuit(s). This CNP automatic transfer typically occurs within a few seconds, utilizing open transition rollover. Normalization occurs within an eighty second closed transition rollback. In a CNP split load arrangement a fault between the customer's service and the low side of CNP transformers may occur. Under this condition automatic transfer does not occur, because the fault could either be due to CNP or the customer's equipment. If the fault occurs on the customer's equipment, the customer will not be allowed to transfer loads. If the fault occurred on CNP equipment, CNP may isolate the service and the customer may manually transfer pre-approved loads. The magnitude of loads to be transferred shall not overload CNP transformers. This condition applies to Section 3.3(B).
- 3.5 Where system capacity is available, customers served from a CNP underground network system may be allowed to manually transfer (in accordance with Section 3.6 below) pre-approved loads. Typical network services consist of multiple CNP transformers connected in parallel. In network and spot network services that do not have a CNP tie breaker the customer can transfer loads as long as the rating of the customer's secondary bus or cables are not exceeded. In services containing a CNP tie breaker, the customer may manually transfer loads from one of their services to another provided the rating of the tie breaker is not exceeded and/or a fault does not exist on the secondary side of either CNP equipment or the customer's service(s).

- 3.6 All load transfers shall be done utilizing open-transition transfer switches/breakers. See Figure 6 on sheet 12 for illustration.
- 3.7 If the customer utilizes a three breaker/switch arrangement to transfer critical load between their two buses, the breaker/switch schemes must use both keyed and hard wire auxiliary contacts to operate feeder and tie breakers/switches. Electromechanical, electronic and keyed control of these devices will require that the tie breaker/switch cannot close unless one of the feeder breakers/switches is opened. See Figure 7 on sheet 13.
- 3.8 Secondary Load Transfer Capability will only be offered in conjunction with separate contractual arrangements between CNP and the customer, and where provisions to assure adequate circuit capacity and compliance with this specification have been made.

4.0 APPROVAL

- 4.1 The following items must be submitted to the CNP Manager of Distribution Engineering or designated representative for approval.
- 4.2 Emergency Generation
 - 4.2.1 The customer must submit 2 copies of their detailed electrical system (drawings and schematics) showing their emergency generator, transformers, circuit breakers, transfer switches and key interlocked scheme. CNP Engineering personnel will approve only those portions of the drawing which apply to the operation and connection of the generator to the customer's load. A copy of the transfer switch instruction book and descriptive literature must also be submitted for approval. In lieu of hard copies, compatible electronic file formats are acceptable for submission.
- 4.3 Secondary Load Transfer
 - 4.3.1 The customer must submit a load transfer schedule detailing the exact amount of load to be shed on the receiving feed prior to load transfer and the exact amount of load to be transferred. The format of this load transfer schedule shall be in accordance with Figure 8 on sheet 14.
 - 4.3.2 The customer must submit 2 copies of their detailed electrical system (drawings and schematics) showing all transfer switches. A copy of the transfer switch instruction book and descriptive literature must also be submitted for approval. In lieu of hard copies, compatible electronic file formats are acceptable for submission.

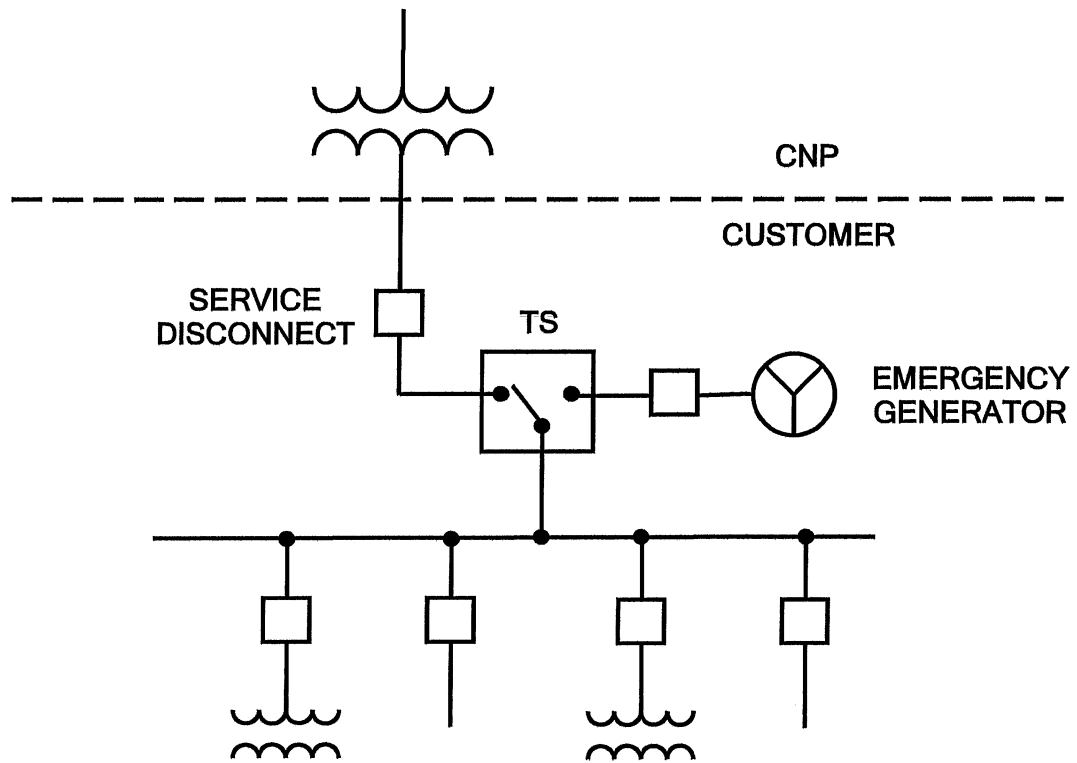
- 4.3.3 Customers utilizing a three breaker/switch arrangement for load transfer must provide a detailed control wiring diagram of the breaker/switch operation. The wiring diagram must show the electromechanical and key interlocks used to prevent the closing of the tie breaker/switch before one of the feeder breakers/switches is opened. See Figure 7 on sheet 13 for illustration.
- 4.3.4 After receipt of the above, CNP Engineering personnel will review the documents for approval. The amount of load the customer proposes to transfer from one CNP feed to another will be approved by CNP personnel. In all cases CNP personnel will verify that existing CNP facilities (Transformer Capacity, Secondary Bus Work, etc.) can accommodate the Load Transfer. If approval is granted, an Operation Agreement will be prepared detailing the operating procedures to be followed by the customer while transferring load between CNP feeds. The Operation Agreement will also specify the maximum load that the customer will be allowed to transfer. Final written approval will not given until the customer has reviewed and signed this Agreement, and one signed copy has been received by CNP personnel.



ACCEPTABLE CONNECTION OF EMERGENCY GENERATOR TO CUSTOMER DISTRIBUTION BUS.

TS - TRANSFER SWITCH

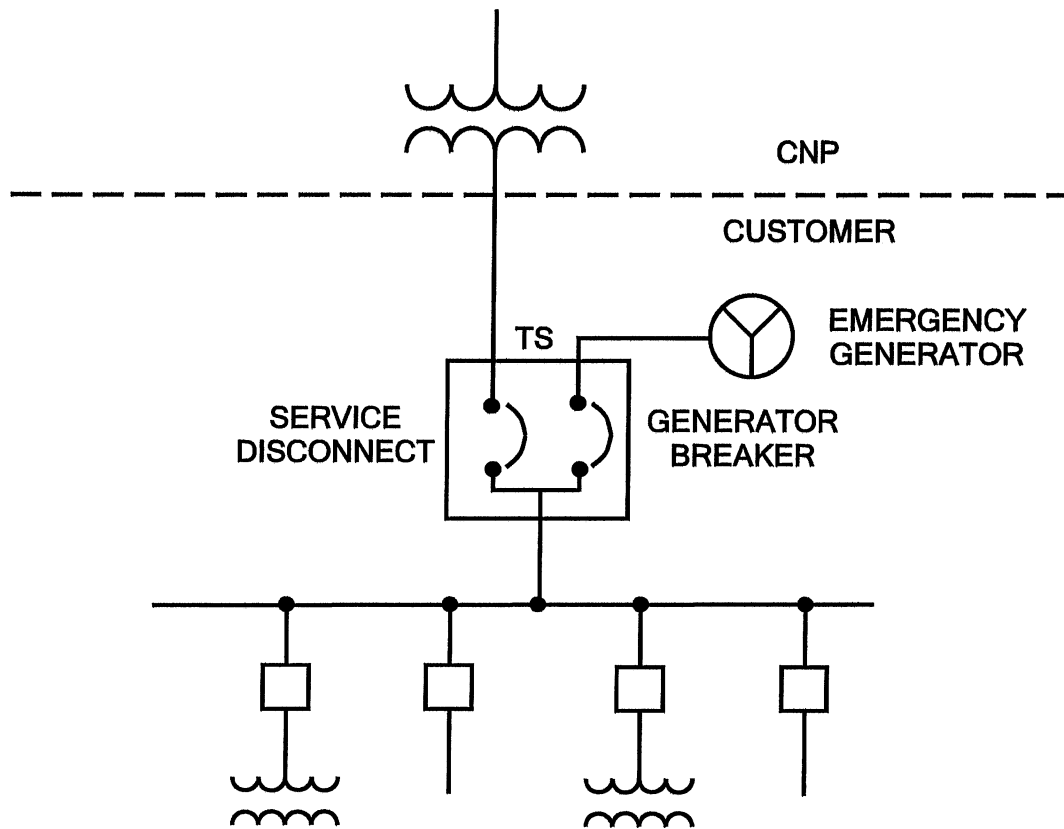
FIGURE 1



ACCEPTABLE CONNECTION OF EMERGENCY GENERATOR TO CUSTOMER DISTRIBUTION BUS.

TS - TRANSFER SWITCH

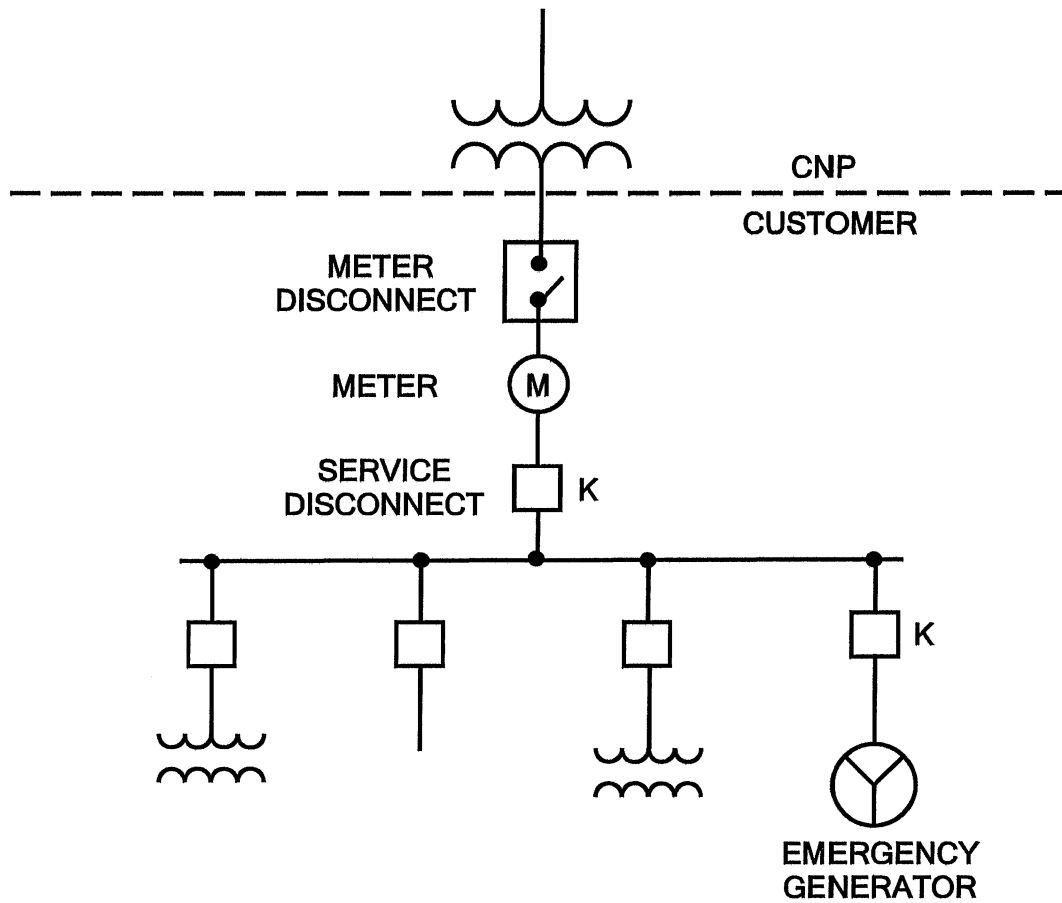
FIGURE 2



ACCEPTABLE CONNECTION OF EMERGENCY GENERATOR TO CUSTOMER DISTRIBUTION BUS UTILIZING TWO BREAKER TRANSFER SWITCH WITH ELECTRICAL AND MECHANICAL INTERLOCKS

TS - TRANSFER SWITCH

FIGURE 3

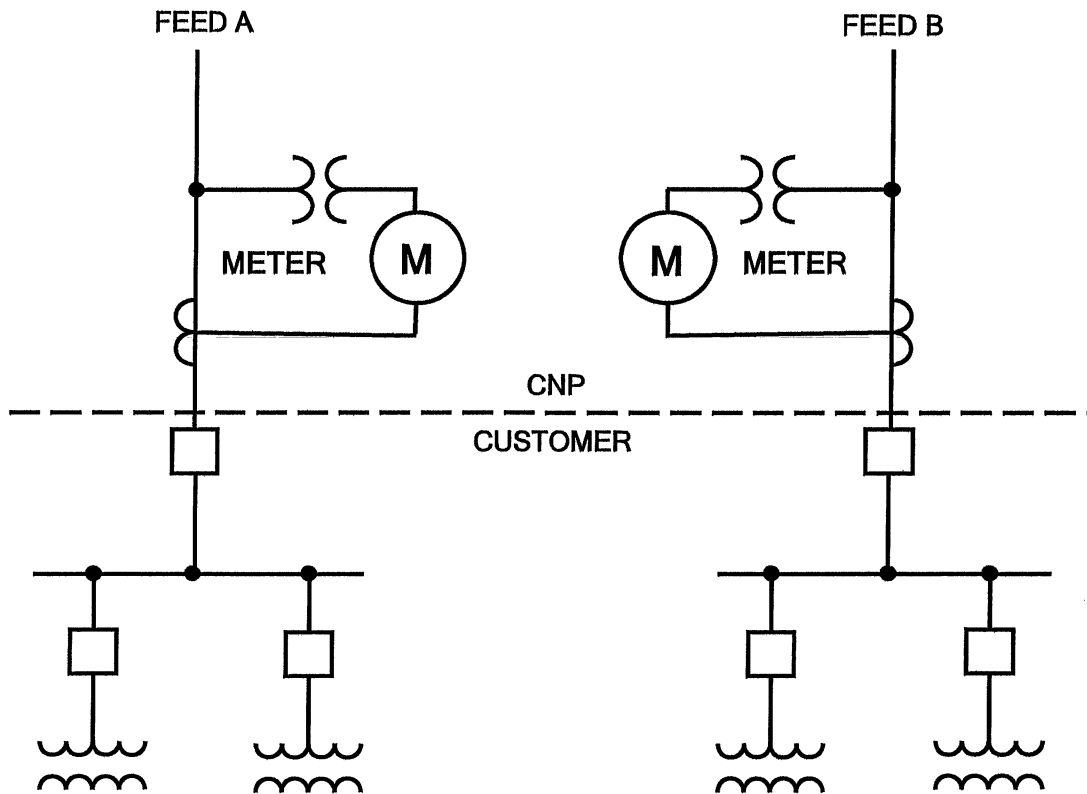


ACCEPTABLE CONNECTION OF EMERGENCY GENERATOR TO CUSTOMER DISTRIBUTION BUS UTILIZING KEY INTERLOCKED SERVICE DISCONNECT/BREAKER AND GENERATOR BREAKER/ ISOLATION SWITCH.

METER DISCONNECT IS ONLY REQUIRED FOR 480 V SELF-CONTAINED METER INSTALLATIONS AND IT CANNOT BE UTILIZED IN THE KEY INTERLOCK SCHEME.

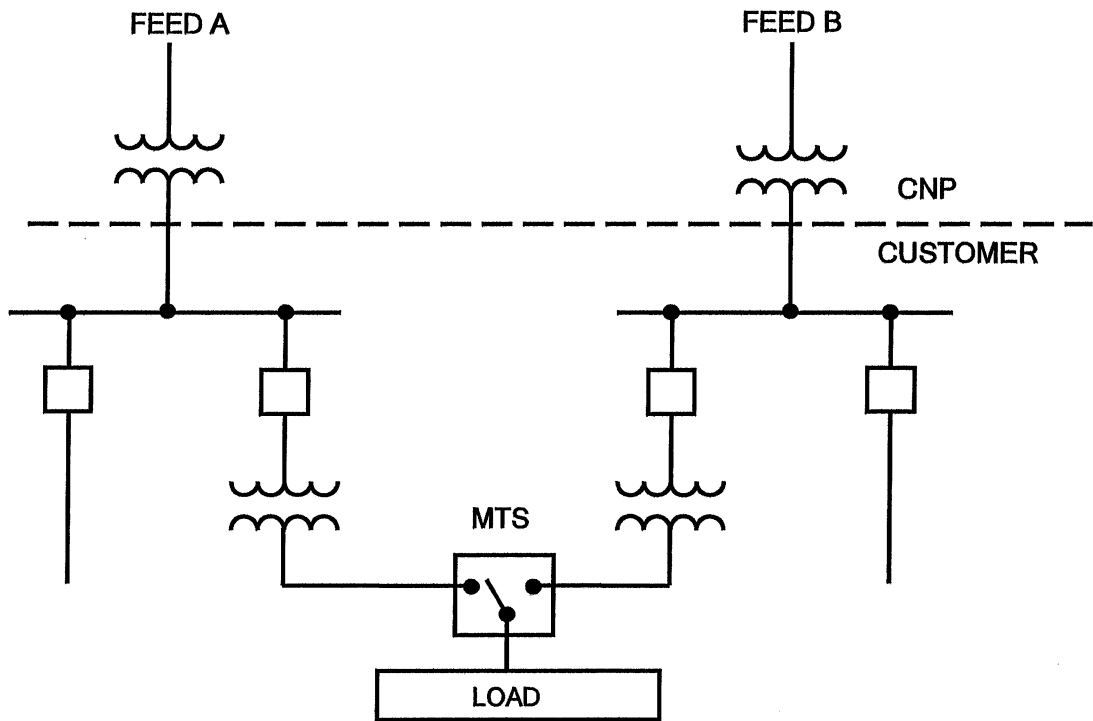
K - KEY INTERLOCKS

FIGURE 4



ACCEPTABLE ARRANGEMENT FOR CUSTOMERS
FED FROM TWO SEPERATE FEEDS.

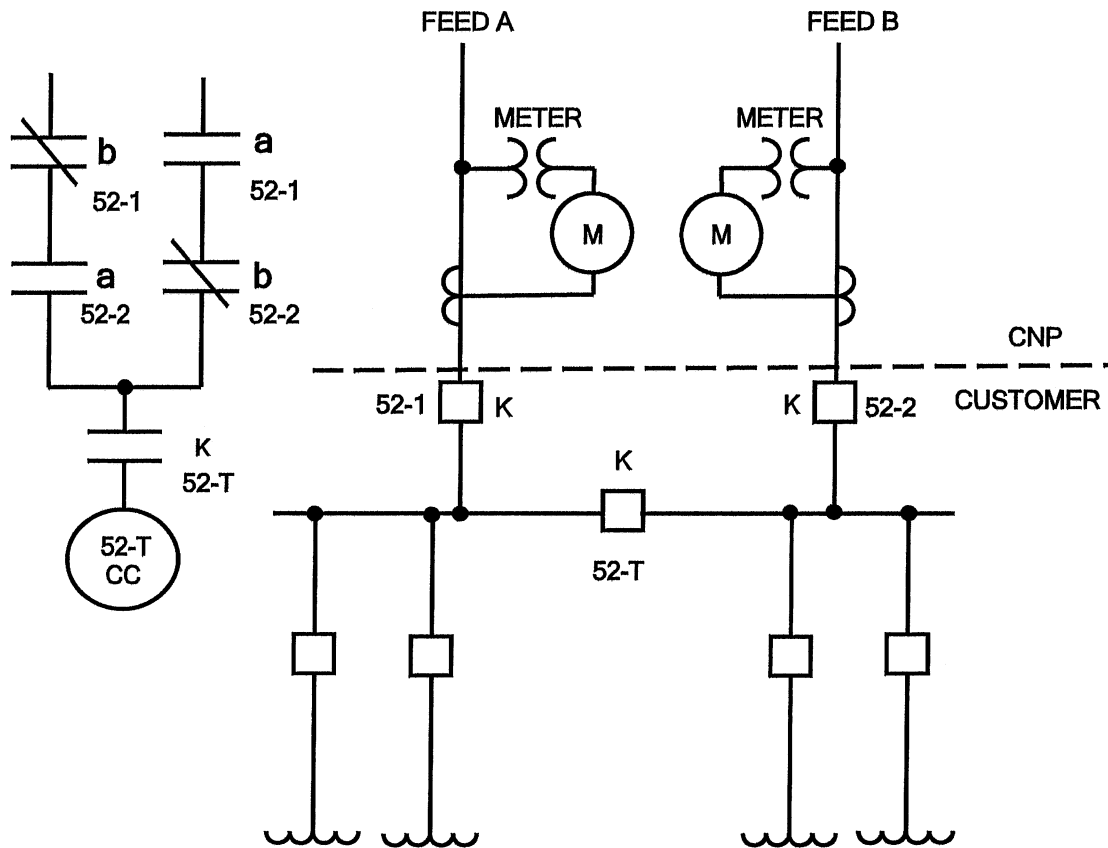
FIGURE 5



ACCEPTABLE SECONDARY LOAD TRANSFER SCHEME.

MTS - MANUAL TRANSFER SWITCH

FIGURE 6



ACCEPTABLE CONTROL SCHEME FOR KEY INTERLOCKED SWITCHES / BREAKERS UTILIZED FOR SECONDARY LOAD TRANSFER.

52-T
CC - TIE BREAKER / SWITCH CLOSE COIL

52-1, 52-2 - CUSTOMER MAIN FEEDER BREAKERS (K - KEY INTERLOCKS)

52-T - CUSTOMER TIE BREAKER / SWITCH (K - KEY INTERLOCKS)

FIGURE 7

EMERGENCY LOAD TRANSFER SCHEDULE

CUSTOMER'S CIRCUIT NO.	CIRCUIT (LOAD) DESCRIPTION	<u>CNP FEED "A"</u> NORM. EMER.		<u>CNP FEED "B"</u> NORM. EMER.	
1)	PUMP	1100	900	1000	1100
2)	AEROBIC DIGESTERS	1250	1500	1320	1200
3)	AIR COMPRESSORS	1620	1500	1400	1300
TOTAL CONNECTED LOAD (KVA)		3970	3900	3720	3600

NOTE: **NORMAL LOAD LEVELS APPLY WHEN BOTH CNP FEEDS ARE ENERGIZED.**

EMERGENCY LOAD LEVELS APPLY WHEN ONE OF THE CNP FEEDS IS DE-ENERGIZED AND THE CRITICAL LOAD IS TRANSFERRED TO THE REMAINING ENERGIZED FEED.

THE ABOVE TABLE IS FOR ILLUSTRATION ONLY.

FIGURE 8