# DIAGRAN NOTES

## RELATING TO DIAGRAM GBW 16880 (ISSUE 7A)

## NZ UAX 13 INCOMING JUNCTION

## FROM PARENT OR NON-DEPENDENT EXCHANGE

## WITH OR WITHOUT DIAL TONE SUPPRESSION

An explanation of the above circuitry is covered under the following headings:

1. GENERAL.
2. FACILITIES.
3. OUTLINE.
4. CIRCUIT DETAIL.
5. TRUNK OFFERING.
6. DESIGN DETAILS.

1. GENERAL.

The diagram GBW 16880 shows the circuit of an incoming junction set to a UAX 13 exchange with access to levels 8 and 9 of the line finder.

2. FACILITIES.

Provision is made for -

2.1 Access to linefinder control groups 1 or 2 from junction.

2.2 Access to levels 8 and 9 of the line finder banks.

2.3 Return of Overflow busy tone.

2.4 Dial tone suppression or non-suppression as required. Refer NZPO Note A.

2.5 Trunk Offer signal when required.

2.6 Ringer machine start.

2.7 Guarding and busying the cct.

2.8 Pre-dialling path for incoming junctions.

3. OUTLINE.

The equipment is provided on a 2 ccts, per unit basis.

Seizure by an incoming junction starts the line finder control groups 1 and 2 to make the line finder search and find the calling circuit.

The +ve and -ve through leads are split to prevent the dial tone being passed back to the calling junction.

On completion of dialling first digit, CD relay operates and extends the +ve and -ve wires through.

A pre-dailling path is provided via the control set until such time as the line finder switches to the junction. The speaking pair is thus switched through and the cct. set up for conversation.

4. CIRCUIT DETAIL.

4.1 Seizure by the incoming junction operatoes relay LA.

Relay LA operating,

LA1 applies a guard eth to the 'P' lead and completes operate path for relay BA (Eth, LA1, D1, 'P' lead and D1, P2, 800BA, Batt.).

LA2 prepares to extend 400 ohm loop forward.

Relay BA operating,

BA1 prepares operate path for relay CD.

BA2 prepares operate path for relay JA.

BA3 extends HA relay test cct. via TA1 lead to line finder control group No. 1.

BA4 extends HB relay test cct. via TB1 lead to line finder control Group No. 2.

4.2 Premature Dialling.

If premature dialling takes place, that is if relay LA releases before either HA or HB relays operate, relay JA operates (Eth, LA1, HA4, HB4, BA2, 500JA, Batt.).

Relay JA operating,

JA1 applies overflow busy to the tone winding of relay LA which by induction extends the tone via the 200/200 ohm windings back to the calling subscriber.

JA2 disconnects the test cct. from relay HA to control set No. 1.

JA3 disconnects the test cct. from relay HB to control set No. 2.

JA4 applies eith to Ringing Machine start cct.

JA5 provides alternative hold path for JA relay via BA2.

4.3 Seizure and Switching to Line Finder Control Group.

It is important that incoming junctions should be associated with a UAX group selector in the minimum of time in order to avoid any possible mutilation of the first pulse train.

The seizure time at the UAX is minimised first by locating the junctions on the first two levels of the line finder banks (Levels 8 and 9) and by providing a pre-dialling path through the control relay sets until such time as the line finder seizes and switches to the calling junction.

In par. 4.1, a stage was reached where LA and BA had operated.

Relay BA operated, extends the test cct. via T1-TA1 and T2-TA2 and it is assumed in this case that HA relay operates (Eth, TA1, JA2, P4, BA3, 1500HA, 25HA, K5, HB8, T1, Batt.).

Relay HA operating,

HA1 maintains hold path for BA relay and completes operate path for relay P.

HA2 ) extends -1 and +1 leads to the pre-dialling via the line
HA6 ) finder control relay set to the UAX group selector.

HA3 connects P1 bank lead to HA1-line finder vertical bank.

HA4 disconnects premature dialling path cct. to JA relay.

HA5 connects full eth to one side of the 25 ohm winding of HA relay to prevent any other cct. switching into this busy cct.

HA7 provides line finder start via ST1 and HA2 terminals.

HA8 disconnects test cct. from 25 ohm winding of HB relay, once HA has switched into a control set.

The pre-dialling path with HA operated is (LA2-R3-HA6-TERM -1 -TERM +1 -HA2-LA2).

Relay P operating,

P1 refer NZPO Note A -

(a) On relay sets strapped for suppression of dial tone, P1, further prepares the operate path for relay CD.

(b) On relay sets strapped for non-suppression of dial tone, P1, completes the operate path for relay CD.

P2 changes the hold path for relay BA and relay P.

P3 prevents relay HA from being held via 1500 ohm winding to TA1.

P4 ineffective in this case (used when relay HB switches).

The line finder searches for the marked calling condition and having found it switches to relay K.

Relay K operating,

K1 provides hold path for CD relay.

K2 ) provide hold path
K6 ) for K relay.

K3 )
K4 ) spare.

K5 disconnects hold path via 25 ohm winding of relay HA. Relay HA releases control set is freed for further use.

K7 ineffective in this case (used when HB switches).

K8 extends 3K positive batt. on the M load to the line finder.

Relay CD operates -

(a) When relay LA releases, to first dial pulse, on relay sets strapped for suppression of dial tone.

(b) When relay P operated, on relay sets strapped for non-suppression of dial tone.

Relay CD operating,

CD1 provides an alternative hold path for P relay against the time when HA or HB release.

CD2 ) extend the -ve and +ve leads through directly to the line
CD4 ) finder banks (Levs, 8 or 9) and disconnect the LA relay from these leads.

CD3 maintains busy eth on P lead.

Relay LA releasing,

LA1 provides hold path for relay CD (Eth, LA1, P1, K1, 800CD, Batt.) and disconnects relay BA which releases.

LA2 repeats first pulse to receiving equipment, on relay sets strapped for dial tone suppression.

Thus the cct. is now switched through on a clean pair with relays CD, P and K only operated.

The release sequence of the cct. is, relay K releases when the earth potential on the P1 or P2, dependent on the level to which switching has taken place, is disconnected.

When relay K releases K1 disconnects the hold path for CD relay which releases.

When relay CD releases, CD1 disconnects the hold path for P relay which releases.

The cct. is now in a state to receive further traffic.

5. TRUNK OFFERING.

When this cct. is used on an incoming junction requiring "trunk offering" terminals 36 and 46 are strapped together thereby providing an additional 60 ohm positive batt. feed to the "M" lead. This provides that when the cct switches through to the UAX fianl selector the 60 ohm positive batt. signal operates the trunk offering relay (TO) in the said fihal selector.

The positive batt. signal is used to ensure that a line oth fault will not imitate this signal.

6. DESIGN DETAILS.

6.1 R3 is provided as a current limiter in the pre-dialling path to the A relay in the associated UAX group selector.

6.2 R2 is provided to signal on the M lead - route barring or unbarring.

6.3 First or Second choice of first or second line finder control sets controlled by pre-set strappings.

6.4 Diodes D1 and D2 prevent back feeds from CD3 holding relays BA or P when LA relay releases.

6.5 Diode D4 prevents back feed from CD3 operating relay JA.

6.6 Diode D3 provides hold path for BA relay but prevents back feed from LA1 operating relay P.

6.7 Diode D5 provides operate path for relay P but prevents back feed from CD1 holding relay BA.

6.8 Relay K springset 8 is of "Y" construction. This unit is the last unit to make when the relay operates, to ensure that the Positive Batt. signal is not applied to the "M" lead until K2 and K6 contact units are operated.

END OF DIAGRAM NOTES