

" S P A R K S "

THE NORTH SHORE AMATEUR RADIO CLUB INC.

MARCH 1981 EDITION

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| | | | |
|---------------------------|------------------|--------|----------|
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| | John Pluister | VE3FGL | 655-4269 |
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| Tech. Editor | | | |
| Contributing Editors:- | Bernie Sandbrook | VE3ATI | |
| | Eric Atkins | VE3HMG | |

Club Repeater: VE3OSH 147.72 In
 147.12 Out

Club Station: VE3NSR

NETS:- 2 Meter Net meets every Thursday at 19:30, with Roy VE3AAF at control.

10 Meter Net meets Sundays at 10:00 on 28.200 Mhz. with george VE3GOU at control.

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N E X T M E E T I N G

Tuesday, March 10th, 1981 in the cafeteria of O'Neill C.I.

TIME - 20:00

VE3HMG Eric will be giving a demonstration of the "Tone-Alert".

TONE ALERT PROJECT

In the January issue of "Sparks" I read "What about a club group project?". So, after pondering for a while the idea came and I think its a useful project.

If you don't like to listen to the chatter on the repeater but would like to monitor in case of an emergency or wouldn't mind putting in a phone call for a ham in need, warm up your soldering iron.

The "tone Alert" decodes tones sent by a touch tone pad and opens the speaker when activated. Here are some of the built-in goodies:

1. Dual tone decoding, one for emergencies and one for low priority that can be turned off at night.
2. 50K trim-pots on decoders that can be tuned to any frequency on T.T. pad if a national standard is set.
3. Leds on the P.C. board to assist in bringing decoders on frequency.
4. Leds for emergency and low priority that latch on until reset, which indicates if one has been activated in your absence.
5. Circuit for opening speaker when PTT button on the microphone has been pushed so you won't double with someone already on the repeater. (thanks to Mike VE3FIV for this suggestion).

The "Tone Alert" plugs into the external speaker jack, and the external speaker plugs into the T/A. The 12V could be taken from the auxillary socket on the rig.

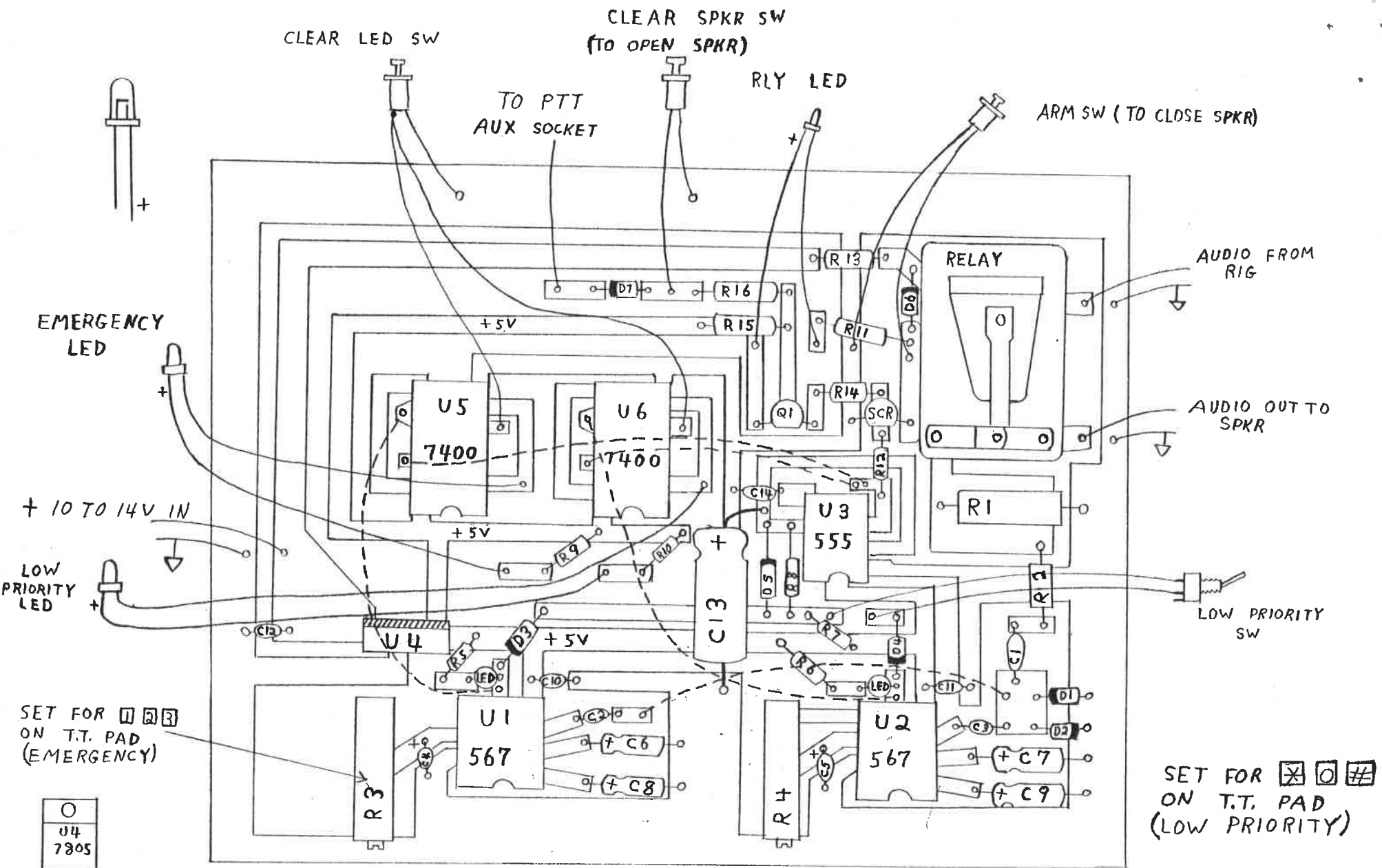
Considering all the features, the parts list isn't too bad. Some careful shopping and about 15 bucks later you should have the parts for the board.

There is a layout for the PC board in this bulletin. Notice the large lines. It shouldn't be hard to make your own board. All you will need is a piece of PC board, tracing paper, marking pen, a small amount of etchant and a drill. If time permits, there will be a few boards available (for a price), but, I would rather you make your own and see how simple it is.

There will be a domo at the next meeting so bring your questions, along with your pad and pencil and i will try to explain the circuit for any and all that are interested.

See you there,

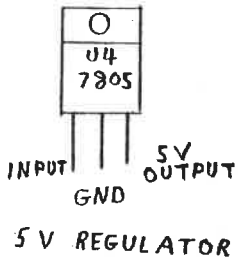
Eric VE3HMG.

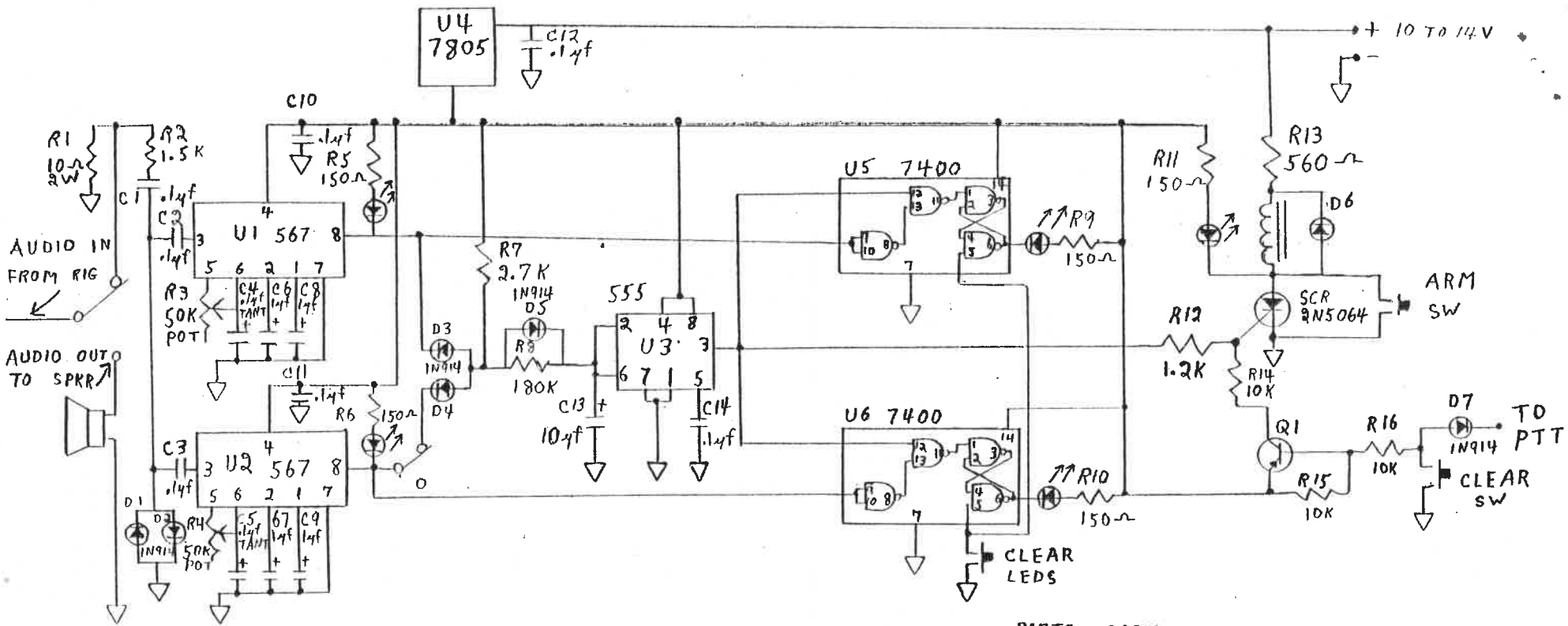


PARTS PLACEMENT GUIDE FOR TONE ALERT SYSTEM
AS VIEWED FROM COMPONENT SIDE

BROKEN LINES ----- JUMPERS, 5 IN ALL

FEB FRIDAY 13/81 GOOD LUCK
YE3HMG





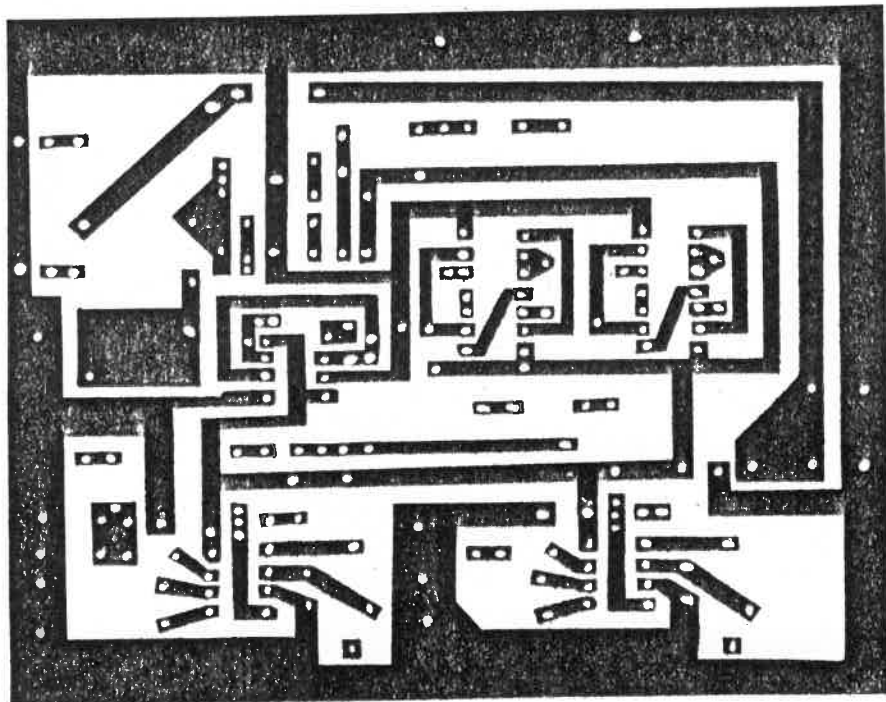
PARTS LIST

- R1 - 10Ω 2W
- R2 - 1.5K ¼W
- R3,4 - 15 TURN
- POTS, BOURNS
- 3006P-1-503
- R5,6,9,10,11 - 150Ω ¼W
- R7 - 2.7K ¼W
- R8 - 180K ¼W
- R12 - 1.2K ¼W
- R13 560Ω ¼W
- R14,15,16 - 10K ¼W

- C1,2,3,10,11,12,14 -
- .1μf 50V DISC CERAMIC
- C4,5 - .1μf 35V TANTALUM
- C6,7,8,9 - 1μf 63V ELECTROLYTIC
- C13 - 10μf 50V ELECTROLYTIC

- D1,2,3,4,5,6,7 - IN914 OR IN4148 DIODE
- 5 LEDS - TIL220 OR ANY STANDARD TYPE
- 1 SCR 2N5064
- U1, U2 - LM567CN-8 TONE DECODER
- U3 - LM555-8 TIMER
- U4 - 7805 TO-220 PACKAGE V.REG
- U5,6 - SN7400N NAND GATE
- Q1 PNP TRANSISTOR 2N3905
- 3 - 8 PIN IC SOCKETS
- 2 - 14 " " "
- 1 - RELAY RADIO SHACK 275-004
- 3 - NORMALLY OPEN SWITCHES
- RADIO SHACK 275-1547
- 1 - SPST TOGGLE SWITCH

BOX FOR P.C. BOARD, SPKR
PLUGS, AUDIO CABLE, ETC.

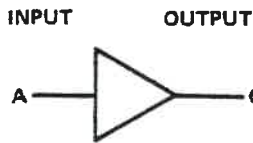


COPPER SIDE OF PC BOARD

FEB 16/81 VE3HMG

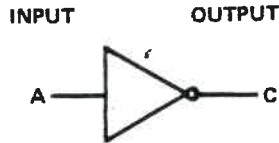
BASIC LOGIC SYMBOLS AND TRUTH TABLES

BUFFER

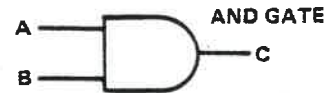


| A | C |
|---|---|
| 0 | 0 |
| 1 | 1 |

INVERTER



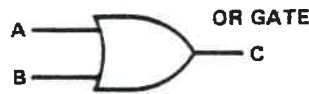
| A | C |
|---|---|
| 0 | 1 |
| 1 | 0 |



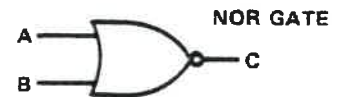
| A | B | C |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 1 | 1 |



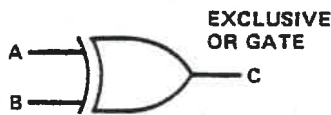
| A | B | C |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 1 | 0 |



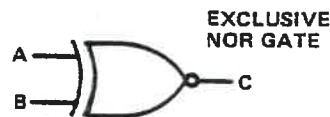
| A | B | C |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 1 | 1 |



| A | B | C |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 1 | 0 |



| A | B | C |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 1 | 0 |

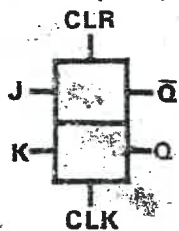


| A | B | C |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 1 | 1 |

LAWS OF BOOLEAN ALGEBRA

- $A + 0 = A$
- $A + 1 = 1$
- $A \cdot 0 = 0$
- $A + A = A$
- $A \cdot B + A \cdot C = A(B + C)$
- $A + B \cdot C = (A + B)(A + C)$
- $\overline{A \cdot B \cdot C} = \overline{A} + \overline{B} + \overline{C}$
- $\overline{\overline{A \cdot B \cdot C}} = A + B + C$
- $A \cdot A = A$
- $A + \overline{A} = 1$
- $A \cdot \overline{A} = 0$
- $A \cdot 1 = A$

J.K. Flip Flop



| INPUTS | | | | OUTPUTS | |
|--------|---------------------------|---|---|---------|------------------|
| CLR | CLK | J | K | Q | \overline{Q} |
| 0 | X | X | X | 0 | 1 |
| 1 | $\overline{\text{PULSE}}$ | 0 | 0 | Q_0 | $\overline{Q_0}$ |
| 1 | PULSE | 1 | 0 | 1 | 0 |
| 1 | PULSE | 0 | 1 | 0 | 1 |
| 1 | PULSE | 1 | 1 | TOGGLE | |

PULSE

—HIGH LEVEL PULSE, DATA IS TRANSFERRED ON FALLING EDGE OF PULSE.

Q_0

—THE LEVEL OF Q BEFORE INDICATED INPUT CONDITIONS WHERE ESTABLISHED.

TOGGLE

—EACH OUTPUT CHANGES TO ITS COMPLEMENT ON EACH ACTIVE TRANSIENT (PULSE OF CLOCK).