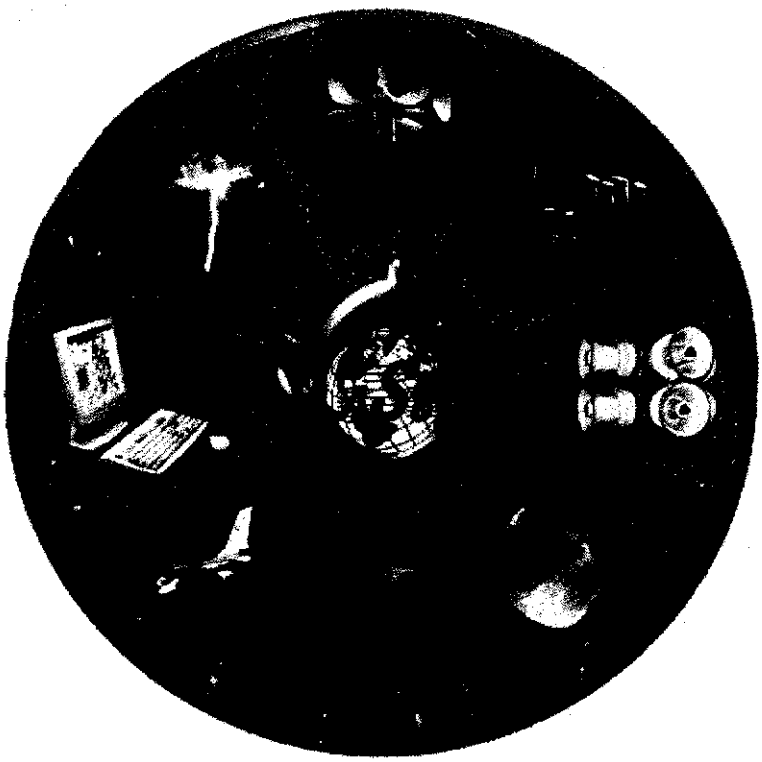
CITY OF JONESBORO, AR

WARNING THE WORLD

www.americansignal.com

AMERICAN SIGNAL CORPORATION

International Headquarters
4801 W. Woolworth Ave.
Milwaukee WI. 53218 U.S.A.
(800) 243-2911
1-414-358-8000



SAVING LIVES SINCE 1942

RFP 2008:30 Tornado Siren System **ORIGINAL**
DUE: 2:00PM CDT August 27, 2008

1

Intro Letter
Maintenance
References

2

Pricing & Delivery Schedule
Forms
Certificate of Liability
Pricing

3

Maps

4

Warranty
Terms & Conditions
EEO Policy
Rock Clause

5

Product Manuals
Product Line Sheets
SPL Manual

CITY OF JONESBORO

RFP 2008:30

TORNADO SIREN SYSTEM

DUE 2:00PM CDT AUGUST 27, 2008

AMERICAN
SIGNAL CORPORATION

August 25, 2008

City Of Jonesboro
515 West Washington Ave.
Jonesboro, AR.72401

RE: Outdoor Storm Warning Sirens (BID2008:30)

I would like to thank you for the opportunity to submit this bid for the outdoor warning sirens for the City of Jonesboro. We have had a complete evaluation of each existing siren in the City of Jonesboro. The proposed system includes the changing of the siren control radios frequency. The City of Jonesboro sirens currently operate on low band frequency allocation. The proposed system will be using a UHF frequency allocation which will provide better signal coverage for sirens on the outer end of the system, and for future growth of the system. The UHF system could have a repeater added to the system in the future if the City of Jonesboro continued to grow beyond the reach of the current system. The system that we propose would have a primary and secondary way of activation, which could be activated from any designated radios strategically placed anywhere in the City of Jonesboro.

After evaluation of the current siren locations it was found that there is some siren overlap of coverage between existing siren locations. If the City of Jonesboro was instating sirens for the first time, and had never had any sirens in operation, it would be recommended that some of the sirens be put in a different location. Since the City of Jonesboro currently has sirens, it is highly recommended not to relocate any of the existing locations. Relocating any of the existing sirens locations might provide a little better overall coverage for the siren, but would lower the volume level in the immediate neighborhood were the siren was located. Although the siren volume level would still be of adequate level in these areas, the 4 or 5 blocks of homes that were closest to the original siren location could experience volume drops by as much as 50%. This overlap of sirens would most likely only exchange the total number of sirens in the City of Jonesboro by 1or 2 sirens.

The attached map shows estimated sound coverage for the City of Jonesboro. The added coverage provided by the American Signal T-128 siren is achieved with the 7 % horsepower motor as compared to the Federal 6 horsepower motor. Also contributing to the coverage difference is the American Signal T-128 siren operating at a tower frequency of 500 Hz. As compared to Federal at 750 Hz. The tower frequency provides better penetration and range of sound.

Also it was found during our evaluation that 21 existing poles would be adequate to use for the new siren installations. The poles appear to be modem and would be acceptable for the new installations, providing a substantial dollar savings.

The 17 new poles being installed will be a 60' Class 2 pole. Most competitors use a 50' pole and standard Electric Company pole specifications for their pole installations. That specification being 10% plus 2 feet.

Competitors:
50' pole = 7 feet in ground with 43' above ground

American Signal:
60' pole ~ 12 feet in. ground with 48' above ground

AMERICAN
SIGNAL CORPORATION

The additional depth often pole provides a much more stable platform for the siren, helping to prevent leaning of the siren over time or leaning due to a high wind encounter. Leaning of a siren out of level will have negative effects on the sound output and distribution of the siren, causing some areas within the rotational area of the siren to have less volume, and less coverage.

I would also like to bring to your attention that we are located only 20 minutes from the City of Jonesboro, and are available for service or assistance 24 hours a day.
Please find attached a list of references.

Thank You,

John Adler
Regional Sales Manager
American Signal Corp
4801 West Woolworth Ave
Milwaukee WI. 53218

Public Safety Systems, Inc.
100 Arnold Lane
Paragould, AR. 72450
870-236-0487
Cell 870-236-0486

Description of Maintenance for Outdoor Warning Sirens

Visual Inspection of the following:

- Equipment Cabinets
- Electrical conduits and connectors
- Ground connections
- Pole condition
- Battery cable connections

Technical Testing:

- Check all 9 control fuses
- Check incoming voltage from power company
- Load Test each battery and log
- Check battery charger for each battery
- Check contactors for corrosion or burnt signs
- Check rotate control voltage output
- Check motor head voltage and current during operation
- Check all cabinet tamper switches
- Check radio output power and radio antenna

AMERICAN SIGNAL CORPORATION

References 2008

City of Brinkley
233 W. Cedar St.
Brinkley AR, 72021
Mayor-Don Teftler
501-482-5431

City of Conway
2300 Hogan Lane
Conway AR, 72034
City Coordinator-David Anthony
501-513-3520

City of Malden
201 S. Madison
Malden, MO 63863
Mayor-Rick Murray
573-276-4502

City of Paragould
301 W. Court St.
Paragould, AR 72450
Mayor-Mike Gaskill
870-239-7510

City of Pocahontas
1510 Pace Rd.
Pocahontas AR 72455
Fire Chief-Scott Baltz
870-892-8553

4801 W. Woolworth Avenue, Milwaukee, WI 53218
(800) 243-2911 (414) 358-8000 FAX (414) 358-8008

SECTION 6

PRICING AND DELIVERY SCHEDULE

Proposal of: American Signal Corporation
(Proposer Company Name)

To: The City of Jonesboro

Ref.: Outdoor Warning Siren System

RFP No. 2008:30

Ladies and Gentlemen:

Having carefully examined all the specifications and requirements of this RFP and any attachments thereto, the undersigned proposes to furnish the outdoor warning siren system services required pursuant to the above-referenced Request for Proposal upon the terms quoted below.

6.1 Pricing for Services Offered

6.1.2. Outdoor Warning Siren System

6.1.2.1 Cost / Specifications

a.) Number of Sirens	38	
b.) Price per unit	$5,861.13 X 38 =	$222,722.85
c.) Number of Controllers	38	
d.) Price per Controller	$6,055.20 X 38 =	$230,097.43
e.) Location, Attach map		
f.) % of Coverage Area		
g.) Price per pole 60' with install	$4,922.75 X 16 =	$ 78,764.00
h.) Installation price w/o pole	$3,501.75 x 22 =	$ 77,038.50
Removal of old siren and controller	$1,015.00 X 26 =	$ 26,390.00
Removal of existing poles	$ 812.00 x 4 =	$ 3,248.00

NOTE: INCLUDE MANUFACTURER, PART NUMBER AND COMPLETE SPECIFICATIONS FOR EQUIPMENT IN THIS TABLE WITH RESPONSE.

Siren Warranty 5 year mechanical
2 year electronics
7/3 year batteries $ no charge

6.1.2.2 Training $ no charge

6.1.2.3 Annual Maintenance (after initial expiration) $ 3,500.00 yearly

6.1.2.4 Fixed Control panels for siren system (3) $ 5,633.25

6.1.2.5 Consultation/ Support Services $ no charge
Primary: CompuLert computer, radio, install $11,462.00

6.1.3. Price the following options for the city's consideration:
FREIGHT $ 6,670.00

6.1.4. OPTION A: Mobile control panel option in addition to fixed control panel option $ no charge if notebook computer provided.

6.1.5. OPTION B: Solar panel option 38 sirens x $2,900.00 $ 110,200.00

GRAND TOTAL: $ 662,026.03
GRAND TOTAL with solar - without PM $ 772,226.03

6.2 Delivery Schedule of Events and Time Periods
Equipment delivery 30 - 45 days

Sales tax added at time of purchase
25% due with order

Respectfully submitted,

Proposer: American Signal Corporation

By: _____
(Authorized Signature for Proposer)

Name: Dale A. Moeller

Title: President, CEO

Date: 8/26/08

2.12 Proposer should complete the following information:

If Proposer is a Corporation, then State of Incorporation: Wisconsin

If Proposer is a Corporation then Proposer's Corporate Charter Number: B034985

RFP No.: 2008:30

Submitted and Certified By: American Signal Corporation

(Proposer Institution's Name) American Signal Corporation

(Signature of Duly Authorized Representative)

(Printed Name/Title) Dale A. Moeller, President

(Date Signed) 8/26/08

(Proposer's Street Address) 4801 W. Woolworth Avenue

(City, State, Zip Code) Milwaukee, WI 53218-1417

(Telephone Number) 800-243-2911 or 414-358-8000

(FAX Number) 414-358-8008

SECTION 3

PROPOSER'S GENERAL QUESTIONNAIRE

Proposals must include responses to the questions contained in this Proposer's General Questionnaire. Proposer should reference the item number and repeat the question in its response. In cases where a question does not apply or if unable to respond, Proposer should refer to the item number, repeat the question, and indicate N/A (Not Applicable) or N/R (No Response), as appropriate. Proposer will explain the reason when responding N/A or N/R.

3.1 Proposer Profile

3.1.1 Legal name of Proposer company: American Signal Corporation

Address of principal place of business: 4801 W. Woolworth Ave., Milwaukee, WI 53218-1417

Address of office that would be providing service under the Agreement: American Signal Corporation

Number of years in Business: 15 years (Incorporated June 1993)

State of incorporation: Wisconsin

Number of Employees: 23

Annual Revenues Volume: Seven Million

Name of Parent Corporation, if any N/A

NOTE: If Proposer is a subsidiary, City of Jonesboro prefers to enter into a contract or agreement with the Parent Corporation or to receive assurances of performance from the Parent Corporation.

3.1.2 State whether Proposer will provide a copy of its financial statements for the past two (2) years, **if requested** by City of Jonesboro. yes

3.1.3 Proposer will provide a financial rating of the Proposer entity and any related documentation (such as a Dunn and Bradstreet analysis) that indicates the financial stability of Proposer. yes

3.1.4 Is Proposer currently for sale or involved in any transaction to expand or to become acquired by another business entity? If yes, Proposer will explain the expected impact, both in organizational and directional terms. No

3.1.5 Proposer will provide any details of all past or pending litigation or claims filed against Proposer that would affect its performance under the Agreement with City of Jonesboro (if any). N/A

SECTION 4

ADDENDA CHECKLIST

Proposal of: American Signal Corporation
(Proposer Company Name)

To: The City of Jonesboro of Arkansas

Ref.: Outdoor Warning Siren System Services

RFP No. 2008:30

Ladies and Gentlemen:

The undersigned Proposer hereby acknowledges receipt of the following Addenda to the captioned RFP (initial if applicable). Any addendum will be on the Purchasing web site at www.jonesboro.org no later than 1 (one) week before bid opening.

No. 1 _____ No. 2 _____ No. 3 _____ No. 4 _____ No. 5 _____

Respectfully submitted,

Proposer: American Signal Corporation

By: _____
(Authorized Signature for Proposer)

Name: Dale A. Moeller

Title: President, CEO

Date: 8/26/08

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 8/25/2008

PRODUCER (262)255-5100 FAX: (262)255-4189
R&R Insurance - Menomonee Falls
N80 W14824 Appleton Avenue
P.O. Box 1180
Menomonee Falls WI 53052-1180

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED
American Signal Corporation
ANS Services, LLC
4801 W. Woolworth Ave.
Milwaukee WI 53218

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Landmark American Ins.	
INSURER B: Chubb Group Of Insurance	0006
INSURER C: Frankenmuth Mutual Ins.	13986
INSURER D: Companion Property & Cas.	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY X PRO-JECT LOC	LHA104824	1/15/2008	1/15/2009	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B		AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS X Hired Physical Dam	73508808 $500 Comp Ded & $500 Coll Ded	1/15/2008	1/15/2009	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
A		EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $	LHA038234	1/15/2008	1/15/2009	EACH OCCURRENCE AGGREGATE	$ 3,000,000 $ 3,000,000 $ $ $
C		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	WC1967940	1/15/2008	1/15/2009	X WC STATU-TORY LIMITS OTH-ER	
D		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	WNJ3529160 NJ	2/28/2008	2/28/2009	E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 500,000 $ 500,000 $ 500,000
A		OTHER Property	35789359 WUC	1/15/2008	1/15/2009	Contents	$500,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
City of Jonesboro is an Additional Insured as respects General Liability and Umbrella coverage. "10 days written notice of cancellation is still in effect for non-payment of premium"

CERTIFICATE HOLDER

City of Jonesboro
Purchasing Agent-Steve Kent
PO Box 1845
Jonesboro, AR 72403-1845

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
Thomas L. Kirchen

AMERICAN SIGNAL CORPORATION

4801 W. Woolworth Avenue, Milwaukee, WI 53218
(800) 243-2911 (414) 358-8000 FAX (414) 358-8008
Website: www.americansignal.com

Client: City of Jonesboro
Address: PO Box 1845
515 West Washington Ave
City, St., ZIP Jonesboro AR. 72401
Contact: Steve A Kent
Phone: 870-932-0740
Email:

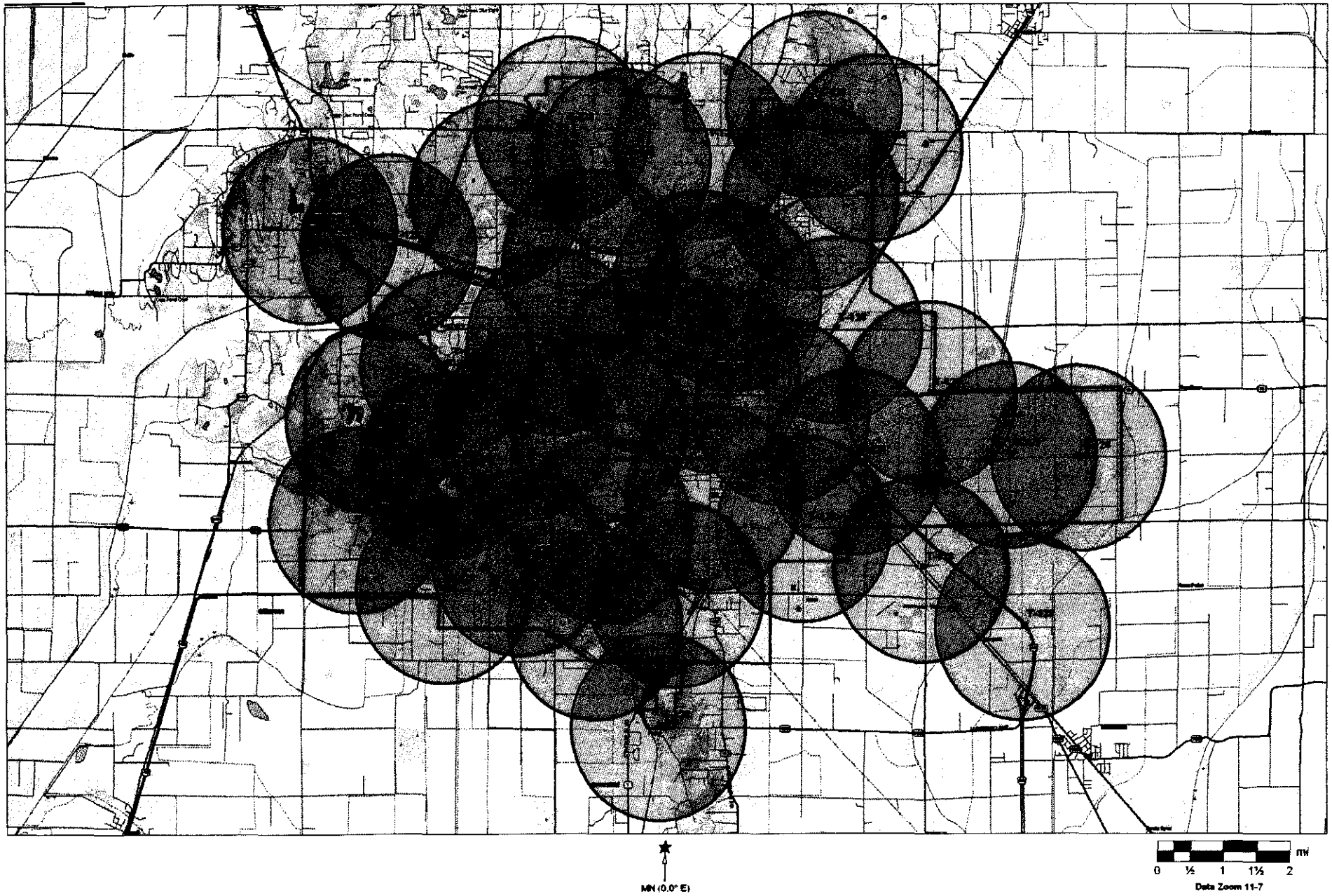
Final Price

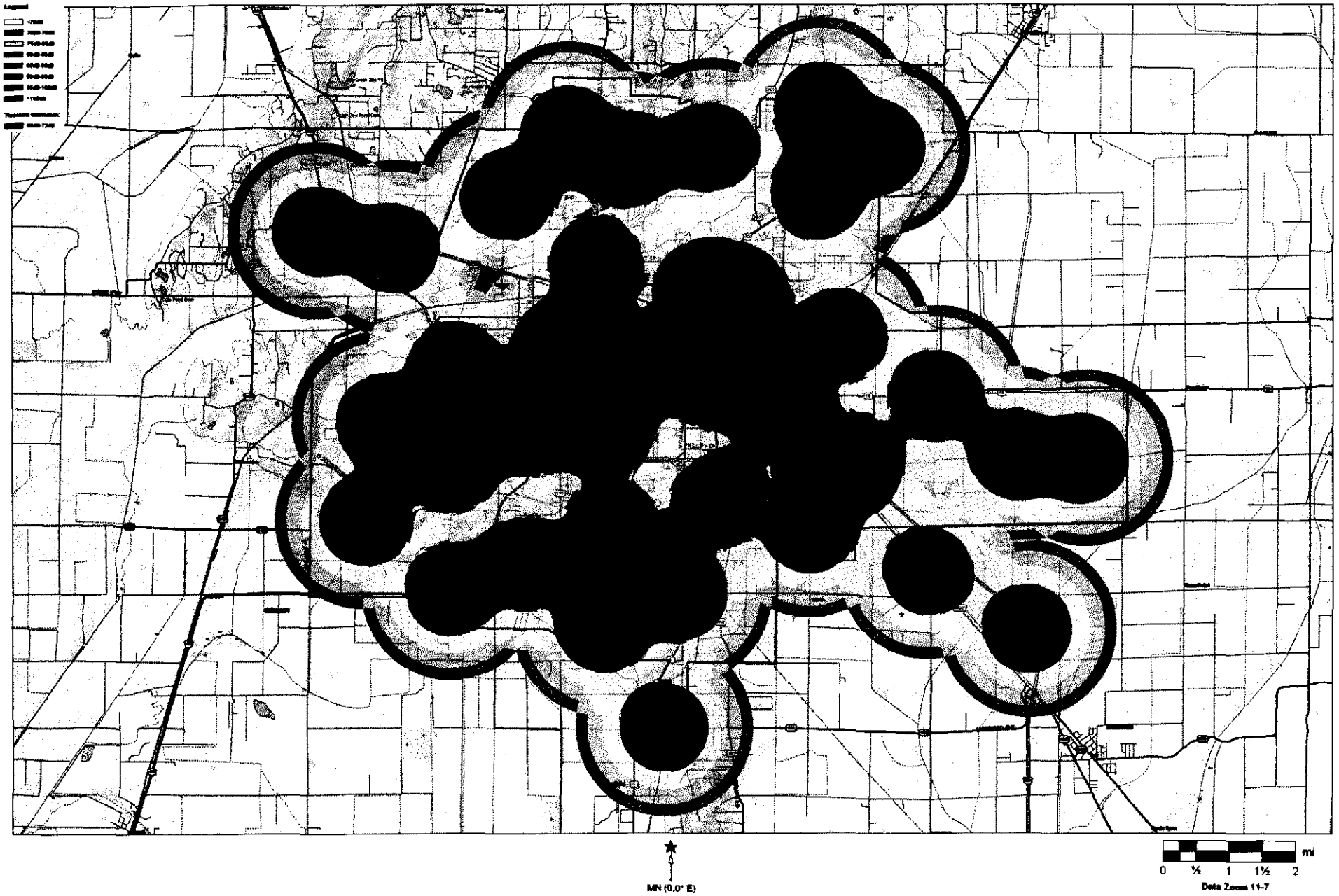
Quote: 080841-JL
Sales # 42
Date: 8/25/2008

Item	Qty.	Model	Description	Unit	Extended Price
			Replacement Siren Equipment		
1	38	T-128	Tempest-128 Rotating Siren 128 dB 48v DC UL Listed w/ pole mount	$ 5,861.13	$ 222,722.85
2	38	TEMPEST™ AC/DC	AC/DC Motor Control 128 - UL Listed 48 Volt transformer/ NEMA 4 Enclosure/ 2 way UHF radio control, current sensor, 2 tone secondary control, Omni Directional Antenna	$ 6,055.20	$ 230,097.43
3	26	Removal Existing Equip	Removal of Existing Control Units, Siren Heads, Electrical Conduits	$ 1,015.00	$ 26,390.00
4	4	Removal of Poles	Removal of Existing Poles that are in need of replacement	$ 812.00	$ 3,248.00
5	16	Install	Installation of Tempest 128 Siren Head, AC/DC Control, New Electrical Service and Conduits, Including 60 ft Class II Wood Pole	$ 4,922.75	$ 78,764.00
6	22	Install	Installation of Tempest 128 Siren Head, AC/DC Control, New Electrical Service and Conduits, using existing poles	$ 3,501.75	$ 77,038.50
7					
8			**Command and Control System**		
9	1	CSC-960-FSK	Central Station Controller-960, FSK Format	$ 3,474.63	$ 3,474.63
10	1	CP-3000 Config DELL	CompuLert™ Management Software Pre loaded to Dell Windows Based w/ 17" Flat Screen, Ink Jet Printer	$ 4,409.49	$ 4,409.49
11	1	Network	Network Driver for Internet Monitoring	$ 761.25	$ 761.25
12	1	Dispatch Radio	Primary Dispatch Radio Control Radio for CSC-960 controller with, Antenna & Coax Battery backup Power Supply/ Install	$ 2,816.63	$ 2,816.63
13	2	Radio	Secondary Activation UHF Radio, Antenna, & Coax, Battery Backup Power Supply/Installed	$ 2,816.63	$ 5,633.25
14					
15	1	**Freight**	**Freight FOB Milwaukee WI**	$ 6,670.00	$ 6,670.00
16					
17			**(Applicable Sales Tax added at time of Order)**		
18					
19					**$ 662,026.03**
			Project Totals - US Funds		**$ 662,026.03**
				25% Due with order =	**$ 165,506.51**

Standard Terms and Conditions:

All Equipment Accounts are 25% due at time of order. (Engineering, Mobilization & Acquisition), 65% due Net 30 days upon shipment of equipment. If project is turn key installation contract and balance due Net 30 days if equipment only purchase. On Turn Key Contracts, 10% retainage Net 10 days upon final start up and test of system. **Freight Charges**: FOB Factory, Milwaukee Wisconsin unless otherwise stated in contract requirements. Freight charges will be prepaid and invoiced. Title and risk of loss passes to buyer at FOB Point. **Quoted Prices:** Valid for 30 days from date of quotation. **Installation services**: If installation services are provided in contract, all change orders will be authorized in writing before work is performed outside of the scope of the contract. If during installation of a system we encounter rock that cannot be removed by standard drill and pier methods, all work will stop and the customer will be notified of the situation before work resumes. Special equipment required to penetrate the rock or other site conditions as well as relocation of the site/pole will continue on a cost plus basis once authorized in writing by the customer. These are standard ASC Terms and Conditions and are not reflective of negotiated or proposed contract language under invitations to bid or final requests for proposals. All international orders require a full wire transfer of funds to our bank in Milwaukee, WI.


MN (0.0° E)
mi
0 ½ 1 1½ 2
Data Zoom 11-7


MN (0.0° E)
0 ½ 1 1½ 2
mi
Data Zoom 11-7

LIMITED WARRANTY

AMERICAN SIGNAL CORPORATION warrants electromechanical siren head equipment, including the housing, motor, frame, and any gear or drive assemblies, to be free from defects in materials and workmanship for a period of five (5) years for parts from the date of shipment, provided such equipment is installed, operated, and maintained in accordance with the instructions, manuals and/or recommendations supplied by American Signal Corporation. AMERICAN SIGNAL CORPORATION warrants all other mechanical, electrical/electronic control equipment (except batteries) to be free from defects in materials and workmanship for a period of two (2) years for parts, two (2) year for in-house labor, from the date of shipment, provided such equipment is installed, operated, and maintained in accordance with the instructions, manuals, and/or recommendations supplied by American Signal Corporation. If within such period any such equipment shall be proved to American Signal Corporation's satisfaction to be defective, such equipment shall be repaired or replaced at American Signal Corporation's option. Notwithstanding the foregoing, American Signal Corporation makes no warranties on equipment manufactured by others and supplied by American Signal Corporation, but will extend to the purchaser any warranties associated with such equipment.

EXCLUSIVE WARRANTY/REMEDY

The foregoing is American Signal Corporation's sole obligation and the buyer's exclusive remedy hereunder and shall be conditioned upon American Signal Corporation's receiving written notice of any alleged defect within 30 days after its discovery and, at American Signal Corporation's option, return of such equipment to American Signal Corporation, f.o.b. its factory in Milwaukee, Wisconsin. **THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED; AND AMERICAN SIGNAL CORPORATION EXPRESSLY DISCLAIMS AND EXCLUDES ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.**

This warranty does not apply to any equipment which in American Signal Corporation's judgment has been subject to misuse, neglect or accident or damage due to local utility power surges, abuse, alteration, improper installation or application, or negligence in use, storage, transportation or handling, or repair by anyone other than American Signal Corporation and it's authorized service centers. This warranty does not cover any costs related to transportation for return of equipment or reshipment of any repaired or replaced equipment, or costs associated with installation, removal, or reinstallation of equipment.

LIMITATION OF LIABILITY

Except as otherwise agreed in writing, American Signal Corporation's liability with respect to the equipment and/or services sold hereunder shall be limited to the warranty provided above, and, with respect to other performance of the sales/service contract, shall be limited to the contract price. **AMERICAN SIGNAL CORPORATION SHALL NOT BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES OF LAW, WITH RESPECT TO EQUIPMENT SOLD OR SERVICES RENDERED BY AMERICAN SIGNAL CORPORATION, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO.** Without limiting the generality of the foregoing, American Signal Corporation specifically disclaims any liability for property or personal injury damages, penalties, special or punitive damages, damages for lost profits or revenues, loss of use of equipment or any associated equipment, cost of capital, cost of substitute equipment, facilities or services, down-time, shut-down or slow-down costs, or for any other types of economic loss, or for claims of buyer's customers or any third party for any such damages. **AMERICAN SIGNAL CORPORATION SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL AND CONTINGENT DAMAGES WHATSOEVER.**

Rev 11/99

AMERICAN SIGNAL CORPORATION

4801 W. Woolworth Avenue, Milwaukee, WI 53218
(800) 243-2911 (414) 358-8000 FAX (414) 358-8008

AMERICAN SIGNAL TERMS & CONDITIONS

1. Terms of Sale. Unless otherwise noted all prices on the accompanying quotation are F.O.B. Milwaukee, WI 53218 USA. Payment terms are, Net 30 days on System Sales and Net 10 Days on Service parts, Service Labor, and Engineering Services prices are valid for 30 days. All prices are subject to change without prior notice. All custom/non-standard products are subject to an advance payment as specified.

2. Freight terms. Unless otherwise specified by you, AMERICAN SIGNAL CORPORATION will select "best way" surface carrier. Freight charges will be "collect" unless noted otherwise. If your order specifies or circumstances require "pre-pay and add," charges will be included on the invoice. Packages which are excess of 150 pounds or which exceed 130" in length and girth combined (with no one side longer than 9') cannot be shipped by United Parcel Post Service.

3. Title of Merchandise. Title to merchandise will pass to you upon delivery by AMERICAN SIGNAL CORPORATION to the carrier. For the purpose of risk or loss, all shipments are F.O.B. factory. You acknowledge that once AMERICAN SIGNAL CORPORATION delivers the merchandise to the carrier, title to the goods and risk of loss will pass to you. If the goods are damaged by the carrier while in transit, you have the sole obligation of seeking any appropriate recourse against the carrier. All merchandise is packed to comply with carrier requirements. All shipments should be required to record any damage or shortage. If further damage is found after delivery, immediate inspection by the delivering carrier should be requested. Notification of concealed damages should be made to the delivering carrier within 15 days after delivery of merchandise. Carrier liability ceases after 15 days. CAUTION: After obtaining a clear receipt for shipment, the delivering carrier is no longer responsible for damages or shortages. Neither AMERICAN SIGNAL CORPORATION nor the carrier will be responsible for concealed damage claims if shipments are left unopened.

4. Shortages. Time is of the essence for Inspection. Shortage claims reported after 15 days beyond shipment date will not be honored.

5. Lost Shipments. AMERICAN SIGNAL CORPORATION will issue a copy of the bill of lading to you on the day of shipment. If shipment is not received within 15 days of the shipment date, notify AMERICAN SIGNAL CORPORATION. Neither AMERICAN SIGNAL CORPORATION nor the carrier will assume any obligation for lost or damaged shipment claims after nine months of the shipping date.

6. Revised Orders. Orders requiring changes to the product or additional options after being manufactured are subject to additional up-charges.

7. Changes and Cancellations. Orders entered into and acknowledged cannot be changed or canceled with AMERICAN SIGNAL CORPORATION prior consent. You are responsible for all costs incurred and restocking/cancellation charges may apply depending on item(s) ordered. Restocking/cancellation charges will be a minimum of 15% of the price of each item.

8. Returns. AMERICAN SIGNAL CORPORATION will not permit return of materials without written consent if materials shipped are as acknowledged. Return shipments, when accepted, Are subject to a restocking charge, the amount of which will be determined after the merchandise is received and inspected. All freight or express charges must be prepaid on return shipments; otherwise they will be refused. Damaged materials and all items specially built to order cannot be returned under any condition. Please contact the AMERICAN SIGNAL CORPORATION service department for Return Materials Authorization number (RMA).

9. Orders sent Via FAX. Orders may be sent to AMERICAN SIGNAL CORPORATION via FAX. If a confirming order is sent to AMERICAN SIGNAL CORPORATION, the order must be marked "Confirming Order –Original Order Sent Via FAX," AMERICAN SIGNAL CORPORATION will not be responsible for any duplication or orders caused by unmarked hard copy confirming orders or orders that have been sent via FAX more than once.

10. Errors. All clerical errors are subject to correction.

11. Delays. In estimating delivery dates, no allowance has been made nor shall we be liable directly or indirectly for delays of carriers or delays from labor difficulties, shortages, strikes or stoppages of any sort, fires, accidents, failure to delay in obtaining materials or manufacturing facilities, acts of government affecting us directly or indirectly, bad weather, or any causes beyond our control or causes designated Acts of God or force majeure by any statue or court of law, and the estimated delivery date shall be extended accordingly. We will not be liable for any damages or penalties whatsoever, whether direct, indirect, special or consequential, resulting from our failure to perform or delay in performing unless otherwise agreed in writing by an authorized officer.

12. Warranty. AMERICAN SIGNAL CORPORATION limited warranty applies. A copy of limited warranty is available upon request. No other warranty is expressed or implied.

BUSINESS POLICY STATEMENTS

Affirmative Action Plan-Equal Employment Opportunity Policy

The Company is an equal opportunity employer following Title VII of the Civil Rights Act of 1964, as amended, which prohibits job discrimination because of race, color, religion, sex or national origin. This program includes Section 503 of the Rehabilitation Act of 1973, section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 under Executive Order 11246.

It is the policy of the Company not to discriminate on the basis of face, religion, national origin, sex, marital status, age, physical condition, or developmental disability or handicap, as long as the employee can do the job, or because all or part of the applicant's income is derived from any public assistance program. This policy is the same for the promotion of employees.

Sexual Harassment Policy

It is the intent of the Company to provide a working environment for the employees that is free from sexual harassment wherein everyone is treated with courtesy, dignity and respect. We will not tolerate or condone actions by any person that constitute sexual harassment of an employee.

Sexual harassment is defined as sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature, when submission to such conduct is made either explicitly or implicitly a term or condition of an individuals employment, when submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individual when such conduct has the purpose of effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment.

The above definition would include conduct such as deliberate, repeated, unsolicited verbal comments, sexual jokes or ridicule, physical gestures of actions, such as touching of another individual and solicitation for sexual favors.

Complaints of sexual harassment should be brought to the immediate attention of the Management Team.

4801 W. Woolworth Avenue, **Tel (800) 243-2911** **(414) 358-8000**

Milwaukee, WI 53218 **FAX (414) 358-8008**

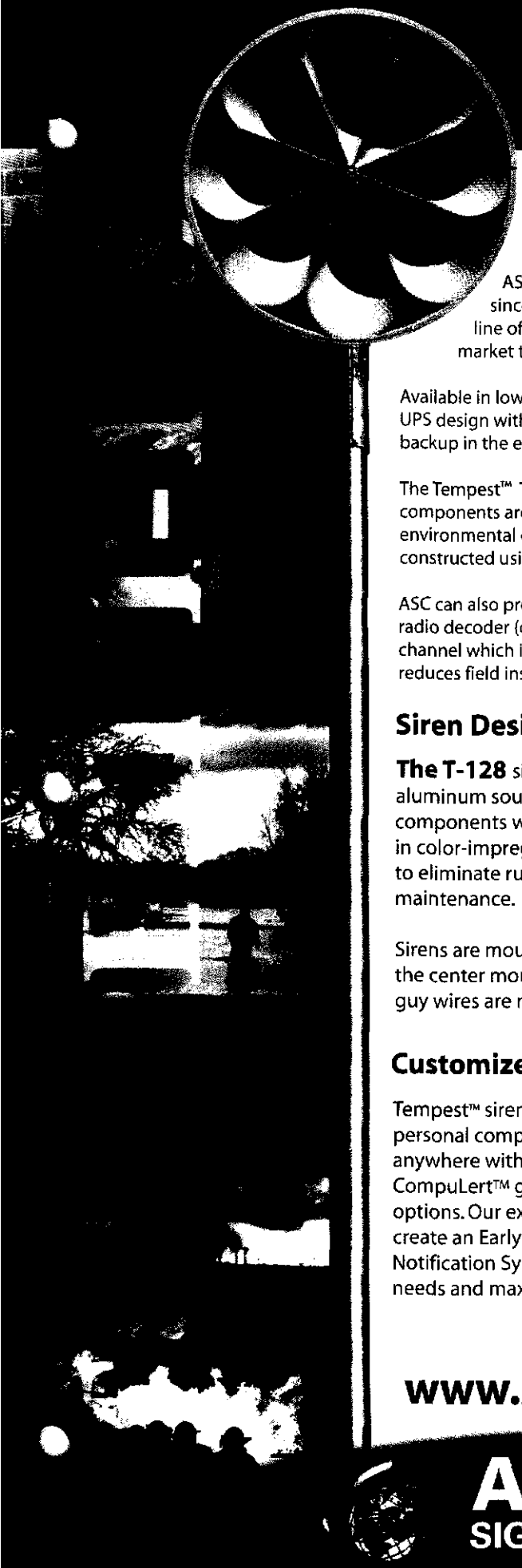
AMERICAN
SIGNAL CORPORATION

ROCK CLAUSE

If during installation of a system when digging a hole in which to set the pole with the siren on it, we encounter rock that cannot be removed by standard drill and pier methods, all work at that site will stop and the customer will be notified of the situation. We will then drill two more holes at the city's direction to see if we can miss the rock. If these are unsuccessful, then we reserve the right, at the customer's direction to continue on a cost plus basis to install the system at that location or move the site.

4801 W. Woolworth Avenue, Tel (800) 243-2911 (414) 358-8000
Milwaukee, WI 53218 FAX (414) 358-8008

T-128



We challenge you to compare our sirens & control systems with any manufacturer's!

ASC's many years of experience in the warning system industry since 1942 has culminated with the advent of the Tempest™ line of the most reliable and coverage effective sirens on the market to date.

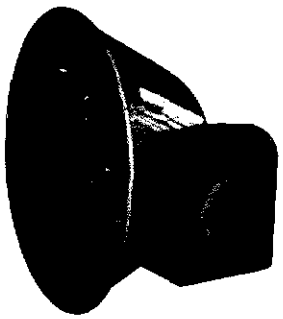
Available in low-cost AC operation, DC battery pack operation, and True UPS design with AC power as the main supply source and DC battery backup in the event of a power failure.

The Tempest™ T-128 is designed to be maintenance free. Many composite components are used to reduce or eliminate the damaging effects of harsh environmental conditions. All ASC high powered siren systems are constructed using stainless steel hardware.

ASC can also provide all control components such as the siren control, radio decoder (optional), and service disconnect to one mounting channel which is pre-wired at the factory. The mounting configuration reduces field installation mistakes as well as installation time and cost.

Siren Design Characteristics

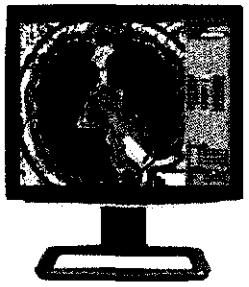
The T-128 siren utilizes aluminum sound- producing components which are covered in color-impregnated fiberglass to eliminate rusting and painting maintenance.



Sirens are mounted directly over the center mounting poles so that guy wires are not required.

Customize our systems to your specifications

Tempest™ sirens can be connected to your personal computer and monitored from anywhere with the addition of one of our CompuLert™ graphic user interface options. Our expert team can custom create an Early Warning or Mass Notification System to suit your specific needs and maximize life saving potential.



Learn more at:

www.AmericanSignal.com

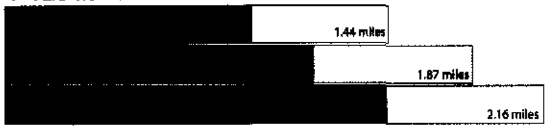
- Rotational directional design, 360° coverage
- No maintenance on siren head EVER!
- System can be configured for AC operation , DC operation, or True UPS backup
- Direct Drive Rotation Design eliminates chains and belts that will fail and require maintenance
- Factory sealed motor bearings eliminates maintenance
- Stainless Steel Hardware with a 5 year parts warranty
- UL Listed
- Screened air intake and output.

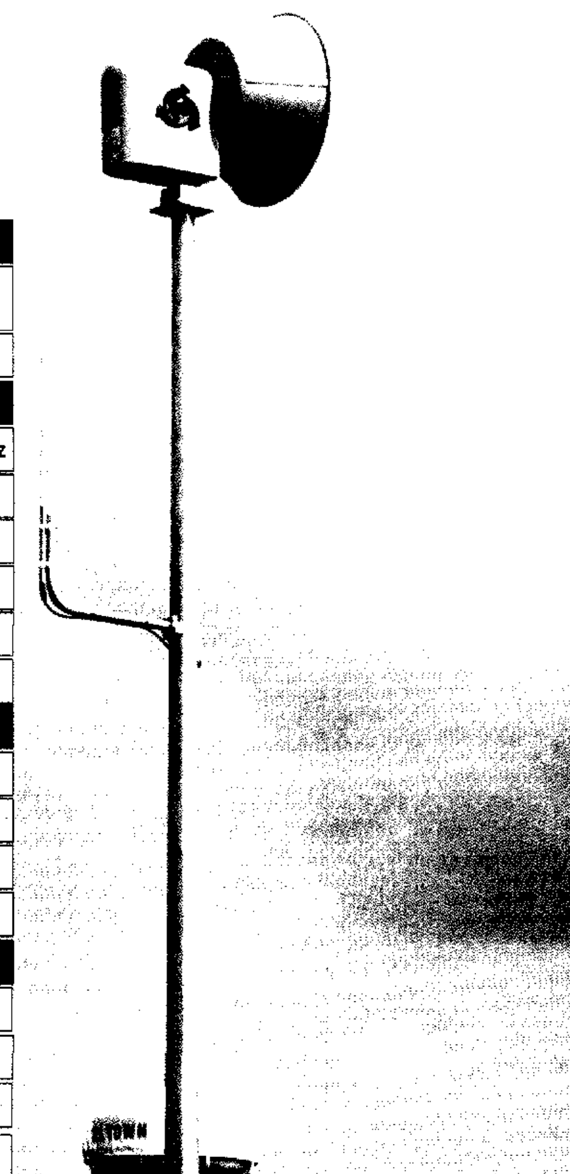
Please E mail us at ContactUs@americansignal.com to learn more!

AMERICAN SIGNAL CORPORATION

TOLL FREE 1 (800) 243-2911 • PHONE 1 (414) 358-8000 • FAX 1 (414) 358-8008 • EMAIL: contactus@americansignal.com

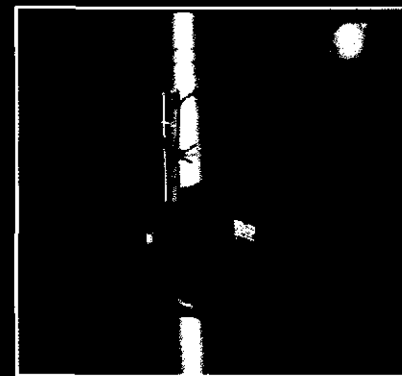
T-128





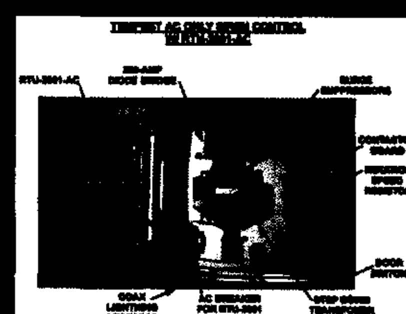
SYSTEM SPECIFICATIONS

Tempest™ T-128	129 dB avg. @100 ft. 130.9 dB peak @100 ft.
Output Frequency	500 Hz
AC Power Voltage	240/120 Vac 40/20 Amp 50/60 Hz
Operational Voltage	48 v DC
AC Control	40 Amp Service AC
Battery Charge Current	4 Amps (max)
Duty Cycle	30 min.
Battery Standby Duration	21 Days
Operation Temperature	-40ºC to 60ºC
Storage Temperature	-65ºC to 125ºC
Humidity	0%-100% (non-condensing)
Wind Speed	150 Mph
LxHxW	59 1/2"x65"x57"
Siren Weight	275 lbs.
DC Control Cabinet	210 lbs.
AC Control Cabinet	180 lbs.



INSTALLATION

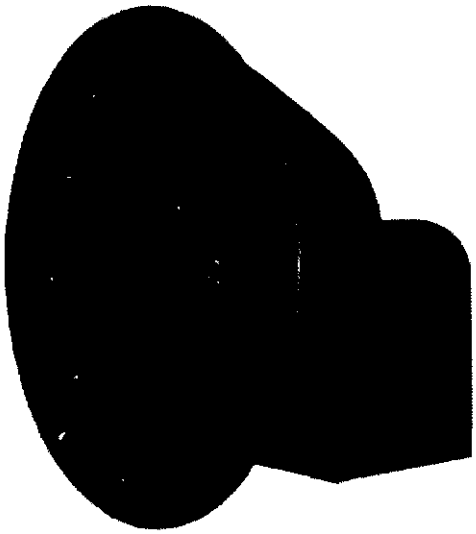
For maximum sound dispersion, [illegible] should be mounted [illegible] above ground. An optional pole mount is available for mounting the poles onto a [illegible] wooden utility pole. The center mount low silhouette siren design eliminates the need for support wires. The [illegible] can also be mounted on proper structures such as roofs, towers, etc. Mounting brackets for these applications and additional installation accessories are available from American Signal.



DOCUMENT # 010-0052
ECO # REVISION G

TEMPEST T-128
ROTATIONAL SIREN

INSTALLATION, OPERATION, MAINTENANCE
AND
PARTS MANUAL



AMERICAN
SIGNAL CORPORATION

4801 W. Woolworth Avenue
Milwaukee, WI 53218
(414) 358-8000

TABLE OF CONTENTS

DESCRIPTION	PAGE
GENERAL INFORMATION	3
Siren Unit	3
Activation	3
Siren Installation	3
SPECIFICATIONS	4-5
ELECTRICAL INFORMATION	5
ORDERING INFORMATION	5
Storage	5
INSTALLATION	6-7
Safety Precautions	6
Site Selection & Types of Mounting	6
Electrical Power Requirements	6
Provisions for Servicing	7
Mechanical Installation	7
Pole Mounts	7
Lifting into Position	7
Install Drawings	8-10
Roof and Tower Mounts	11-12
Battery Hookup Diagram	13
Electrical Controls/Siren Activation	14
Final Wiring and Testing	14
TESTING AND STARTUP	15-16
Testing	15
Operation	16
MAINTENANCE	17
Inspection	17
Disassembly, Repair, Replacement, and Reassemble	17
TROUBLE-SHOOTING CHECK LIST	18-19
DRAWINGS	20-26
AC/DC Control Wiring Diagram	20
AC Control Wiring Diagram	21
EM Controller Interconnect Diagram	22
DC/AC Harnesses Interconnect Diagram	23
Siren Logic (Power) Board Schematic	24
Contactor Board Schematic	25
DC Current Sensor Diagram	26
Tempest - Moscad Interface PCB	27
Tempest T-128 Exploded View	28
TEMPEST INTERNAL ROTATION SENSOR	29-33
PARTS LIST	34-41

GENERAL INFORMATION

Siren Unit:

The Tempest T-128 is a 128 dB rotating directional electromechanical siren with a similar construction and operational design, which has been in production for over 50 years. For additional stability, Tempest T-128 is designed so the weight load is directly over the center of the pole. Communities, nuclear and other utilities, industry and petrochemical manufacturers, and the U.S. military use the Tempest T-128 siren for emergency warning. The 128dB rating is measured at 100 feet from siren based on FEMA Federal Emergency Management Guidelines.

The model T-128 utilizes (2) individual motors to drive the sound producing components (approx. 500Hz) as well as the rotation RPM. Motors have factory sealed bearings to eliminate motor maintenance. All external surfaces are 3/16" fiberglass (minimum) or cast aluminum, eliminating sheet metal or stapled screens, which would rust.

The T-128 siren maybe powered by DC battery (integral). AC/DC (rectified AC with battery back up), or on AC (utility) power only. With AC/DC version, AC provides primary power where as (integral) batteries provide secondary power (during primary outages). Battery version T-128 does also include battery chargers.

The T-128 is designed for minimum current loads for high efficiency and extended component and battery life. American Signal designs all our equipment with high quality and reliability in mind.

Siren Activation:

The Model T-128-DC can be integrated into a larger system utilizing landline activation or radio control with appropriate control equipment. Controls are housed in lockable NEMA rated enclosures. Special cabinets are available on request: fiberglass, aluminum, corrosion-resistant. Rechargeable batteries are housed in separate enclosures, isolated from siren components. Vents keep corrosive fumes from areas of electronic components. From a central point, siren controls can be operated via radio through the use of central encoder connected to a transmitter. The transmitter relays activation codes to the siren location, where a decoder is interfaced with the siren control. The decoder receives and decodes the message to utilize signals. Two-way controls are also available, providing status feedback, as well as command only.

Siren Installation:

The T-128 should be mounted approximately 50 feet above ground per recommended mounting of location, see FEMA CPG1-17. Siren input power is described later in this document. The T-128 siren may be pole or roof mounted, and is shipped complete with (cog) eyebolt for lifting.

SPECIFICATIONS

Output Specifications: (operated by use of external/optional timer)

Siren	Rating at 100 feet	Frequency
T-128-DC	128 dB (c)	500 Hz

Signal Format:
(Per FEMA CPG 1-17 Guidelines)

Alert	Steady 3-5 minutes
Attack	Wail (6 sec. up/6 sec. down)
Fire	Wail (12 sec. up/6 sec. down)

Power Requirements:

DC Control:

Input Voltage	120 VAC, 50-60 Hz
Input Current	15 Amps AC
Battery Charger Voltage (Input)	120 VAC, 50-60 Hz
Battery Charger Current	4 Amps maximum
Continuous Signal Time (After AC Failure)	15 Minutes
Battery Standby Time	21 Days

AC Control:

Input Voltage	240 VAC, 50-60 Hz
Input Current	40 Amps AC

Environmental Parameters:
System parts and components are capable of service within the following ranges:

Operating Temperature	-40 C to +60 C
Storage Temperature	-65 C to +125 C
Humidity	0% to 100%
Wind Speed (min)	100 mph / 161.00 kph

Physical Dimensions and Weights:

DC Control with Four 12-Volt Batteries:

Control: Height x Width x Length	Approx. (in.) 8" x 24" x 48"
Control: Weight (without batteries)	Approx. (lbs.) 160 lbs
Control (crated): Height x Width x Length	Approx. (in.) 25" x 38" x 79"
Control weight (crated without Batteries)	Approx. (lbs.) 220 lbs
Control weight (crated w/ 4-Batteries)	Approx. (lbs.) 410 lbs

AC Control Only (No RTU) – Standard Control Box:

Control: Height x Width x Length	Approx. (in.) 8" x 24" x 24"
Control: Weight	Approx. (lbs.) 190 lbs
Control (crated): Height x Width x Length	Approx. (in.) 26" x 35" x 40"
Control weight (crated)	Approx. (lbs.) 225 lbs

AC Control (w/ RTU-2001-AC Door Mount) – 12" Deep Control Box:

Control: Height x Width x Length	Approx. (in.) 12" x 24" x 24"

Control: Weight	Approx. (lbs.) 210 lbs
Control (crated): Height x Width x Length	Approx. (in.) 26" x 35" x 40"
Control weight (crated)	Approx. (lbs.) 245 lbs

T-128-DC Siren Head:

Siren head: Height x Width x Length	Approx. (in.) 51" x 51" x 53"
Siren head weight	Approx. (lbs.) 330 lbs
Siren head (crated): Height x Width x Length	Approx. (in.) 65" x 57" x 59"
Siren head weight (crated w/ pole mount)	Approx. (lbs.) 575 lbs

NOTE: The decibel rating of the American Signal equipment discussed herein is based on testing done by independent laboratories under ideal conditions. Test results may vary depending on various factors, including weather conditions. (See FEMA CPG 1-17 or ANSI S12.14 1992)

ELECTRICAL INFORMATION

Motor Voltage	48 VDC Nominal
Motor Current (Running)	112 Amps DC

ORDERING INFORMATION
(Note: All items ordered separately)

Part		**Part Number**
Crated Siren Assembly		041-0186
Pole Mount		042-0577
Roof Mount		042-0582
Motor Control Panel	DC Control	083-0561
	AC Only – Standard Box	083-0563
	AC Only – 12" Deep Box	083-0633
	RTU-2001-AC Door Mount	083-0623
Activation Controls		Call ASC Customer Service 1-800-243-2911
Casting Heaters (Optional)		006-0054
Rotation Sensors		083-0587

Additional items required for installation include:
1. A suitable mounting system (pole, platform, etc.) - Based upon good engineering practices.
2. Electrical conduit and wire for interconnecting siren control cabinets and power source. Based upon code and utility requirements.

STORAGE:

The siren unit is weather resistant as shipped and can be stored outdoors in an upright position as if it were on a pole, or covered with a tarp, provided there is not a danger of submergence in water of other damaging fluids. Observe environmental specifications (pg. 4 herein) when storing siren. Call ASC technical support for activation and battery storage guidance's.

INSTALLATION

To ensure satisfactory operation and a safe and successful installation, careful consideration must be given to each of the following factors:

1. Safety precautions
2. Site selection for optimum signal coverage
3. Type of mounting
4. Power supply requirements
5. Provisions for servicing

Safety Precautions:

Qualified and experienced persons should attempt installation of the siren equipment only!
When lifting the siren use a lifting device of adequate capacity. Do not use the siren eyebolt for lifting siren when it is attached to a mounting pole

Always disconnect from power source including batteries before beginning any service or maintenance. All siren components should be pre-wired completely before connecting to the power source. Only qualified personnel should open the electrical control cabinet. Refer to wiring diagram and observe proper wiring procedure. Always advise others/occupants before testing siren unit.

Ear protection must be worn when conducting any type of testing on the system!! Caution: Siren sound pressure is 128dB - 100 feet from siren.

CAUTION!!

EVERYONE IN THE VICINITY OF THE SIREN DURING TESTING SHOULD WEAR EAR PROTECTION DURING OPERATIONAL TESTS. FAILURE TO DO SO CAN CAUSE SEVERE HEARING DAMAGE.

Site Selection and Types of Mounting:

Careful consideration must be given in selecting a site or sites for installation. Locations should be plotted on local area maps to provide the desired coverage. A Systems Specialist should be consulted to determine the specific system requirements. See FEMA CPG 1-17.

In lieu of a suitable existing structure for mounting, a Class II, cedar pole, approximately 50 feet long and sunk 8 feet deep is a generally acceptable mount (Mounting requirements may vary in certain areas, check local and state codes and customer specifications for the correct mounting structure). Refer to the illustrated mounting layouts for details. Figures 1, 2, 3 and 4 illustrate typical siren mounting arrangements see FEMA CPG 1-17 for specific mounting height recommendations.

Electrical Power Requirements:

An adequate 120/240 VAC, 15 amp power source for DC controls and a 40 amp for AC or AC/DC must be available at each siren site.

The electrical installation must be in conformance with the project specifications, NEC, Federal, State and Local codes, and customer requirements - and should be in accordance with accepted industry

practice. **All conduits for control panels must enter the bottom or side of the enclosures and be protected against environmental influences** (rain, snow, etc.). Any conduit entering the top of the enclosure will void the siren warranty.

Provisions for Servicing:

As periodic service or maintenance may require use of high lift equipment, (and other service vehicles) caution must be exercised when planning site locations and site accessibility.

Mechanical Installation:

The siren is provided with a mounting plate in the sheltered areas under the rotation mechanism. A matching plate must be fabricated as part of the siren mount. The plate must have eight equally spaced 9/16-inch holes on an 11-inch diameter circle. The siren is fastened to this plate by means of 1/2-inch stainless steel bolts, nuts, and lock washers. Pole mounting bracket is also available - see ordering information on page 5.

Pole Mounts:

The main requisite is the ability to properly support the weight and wind load of the siren assembly. When ordering, a specific type of mounting must be specified. When using a pole mount, an optional platform may be constructed at the proper work level.

The electric control enclosure is usually mounted lower than the siren, but at least 8 feet above ground level to discourage vandalism. Locate the enclosure for easy accessibility by qualified personnel. If rungs or steps are provided for climbing up to the siren, it is advisable to locate the lowest step at least 10 feet above the ground to minimize the opportunity for vandalism.

Lifting into Position When Siren is mounted to Pole:

1. If the siren is mounted to the pole, before lifting to the vertical position, the primary lift point must be the pole and not the eyebolt on the siren.

Caution: Do not lift the entire siren and pole by the eyebolt on top of the siren motor and do not let any weight rest on the fiberglass parts of the siren.

With the pole and siren in the final position, proceed with the electrical connections.

2. When the siren is separate from the pole or platform: The primary, lift point of the siren head unit (only) is the eyebolt located on top of the siren head. This eyebolt will support the entire siren unit safely only if in a vertical direction.

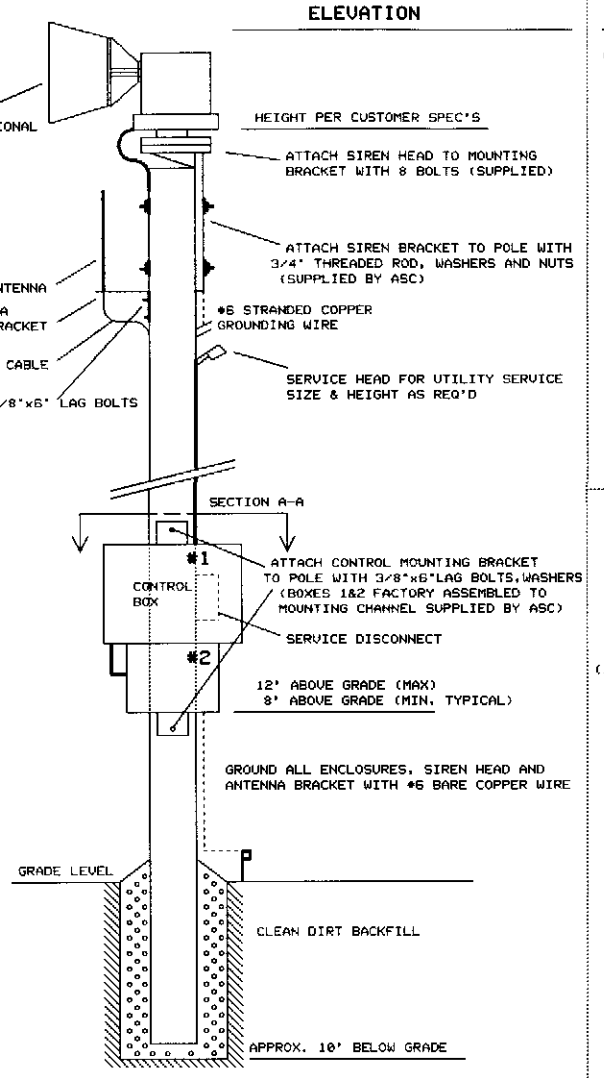
Caution: Do not lift the unit in this way if attached to a pole or platform mount.

When the siren is mounted in the final position, proceed with electrical connections.

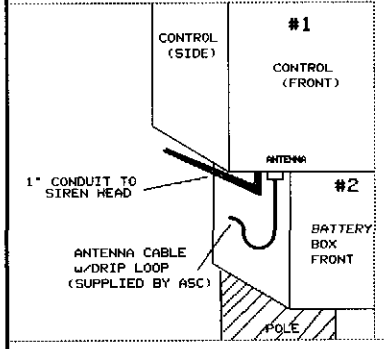
REV	ECO	DATE	DESCRIPTION

ROTATIONAL SHOWN. ALSO APPLICABLE FOR OMNI-DIRECTIONAL

ELEVATION

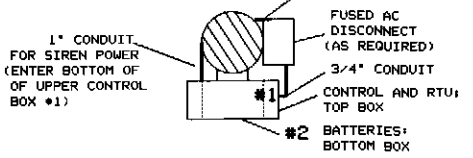


CONDUIT DETAILS



SECTION A-A

TOP-DOWN VIEW OF BOXES ON POLE



BOX 1 - 24W x 24H x 8D (CONTROL & RTU)
BOX 2 - 24W x 24H x 8D (BATTERIES)

NOTE: BOX 1&2 PLUS MOUNTING BRACKET ARE SHIPPED FACTORY ASSEMBLED)
ALL CONDUIT SHOULD ENTER BOTTOM OR LOWER SIDES OF BOXES *** ONLY ***

WIRING BETWEEN BOXES AND TO HEAD SHALL BE IN CONDUIT (ANTENNA CABLE IS EXCEPTION WHERE CODES PERMIT)

NO ALUMINUM OR SOLID CORE WIRE SHALL BE USED

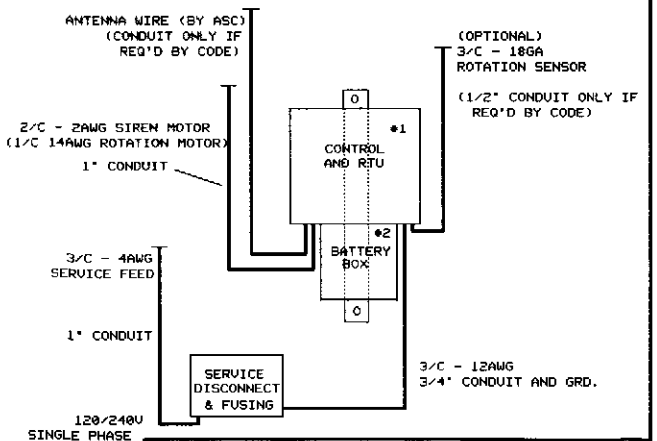
INSTALLATION SHALL BE IN ACCORDANCE WITH NEC, FEDERAL, STATE AND LOCAL CODES

CONTRACTOR SUPPLIED PARTS

(APROXIMATE QTY'S SHOWN FOR GENERAL REPRESENTATION)

POLE CLASS AND LENGTH TO BE DETERMINED PER CONTRACT
METER SOCKET (IF REQUIRED BY UTILITY)
60 AMP SERVICE FEED 120/240VOLT (AS REQUIRED BY UTILITY)
(1) 60 AMP WEATHERPROOF SAFETY DISCONNECT (1) 15A CKT
(1) 1" WEATHERHEAD
(1) 1" HUB FOR LOAD CENTER
(1) 1" LL WITH GASKET AND COVER
(1) 1" LB WITH GASKET AND COVER
(5) 1"X10' CONDUIT
(100') #2 THHN (PRE-CUT TO 50FT. LENGTHS)
(8) 1-1/4" 2 HOLE STRAPS FOR CONDUIT
(2) 1" SEALTIGHT CONNECTORS (STAIGHT)
(1) 1/2" LB WITH COVER AND GASKET
(1) 1/2" CHASE NIPPLE
(6') 1" SEALTIGHT
(4') 1/2" SEALTIGHT
(2) 1/2" SEALTIGHT CONNECTOR (STRAIGHT)
(45') #6 CABLE THHN (PRE-CUT TO 3-15FT SECTIONS)
(1) 5/8"X8' COPPER GROUND ROD
(1) GROUND ROD CLAMP
(2) SPLIT BOLTS (COPPER) FOR #2 CABLE
(1) BUTT SPLICE CONNECTOR FOR 14 GA.
(50') 14 GA. STRANDED WIRE
(70') #6 STRANDED COPPER GROUND WIRE
(16) #10 x 2" SCREWS
(20) GALV. STAPLES FOR GROUND WIRE
(30') 12GA. STRANDED WIRE (PRE-CUT TO 3-10FT. SECTIONS BLK,WHT,GRN)

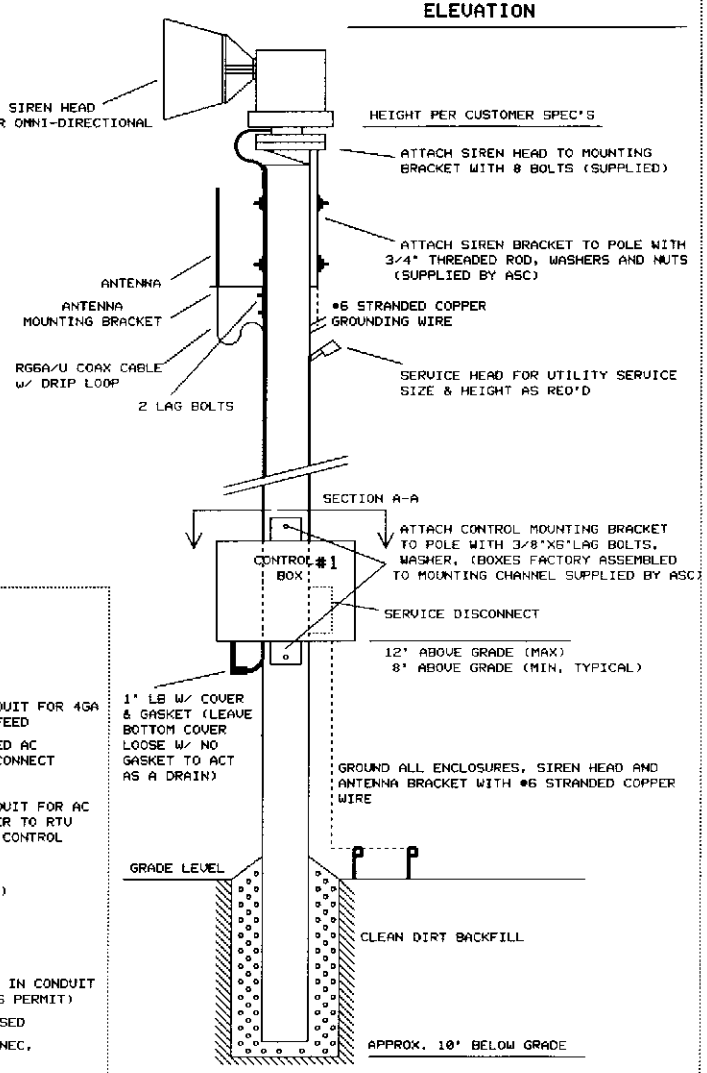
CONDUIT AND WIRE INTERCONNECTIONS



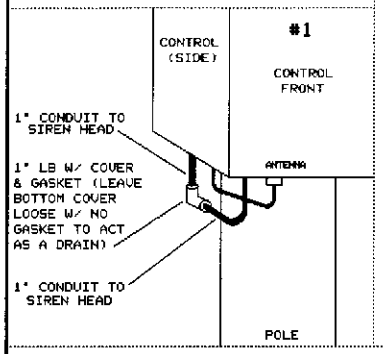
AMERICAN SIGNAL CORPORATION			
INSTALLATION DRAWING TEMPEST DC SIRENS T-121 & T-128			
DRAWN BY: DAM	DATE: 12/16/98	DRAWING NO: 34-0056B	REVISION: A
APP'D BY:	DATE:		SHEET 1 OF 1

REV	ECO	DATE	DESCRIPTION

ELEVATION

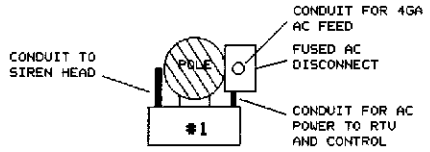


CONDUIT DETAILS



SECTION A-A

TOP-DOWN VIEW OF BOXES ON POLE



BOX 1 - 24W x 24H x 12D (RTU AND CONTROL)

ALL CONDUIT SHOULD ENTER BOTTOM OR LOWER SIDES OF BOXES *** ONLY ***

WIRING BETWEEN BOXES AND TO HEAD SHALL BE IN CONDUIT (ANTENNA CABLE IS EXCEPTION WHERE CODES PERMIT)

NO ALUMINUM OR SOLID CORE WIRE SHALL BE USED

INSTALLATION SHALL BE IN ACCORDANCE WITH NEC, FEDERAL, STATE AND LOCAL CODES

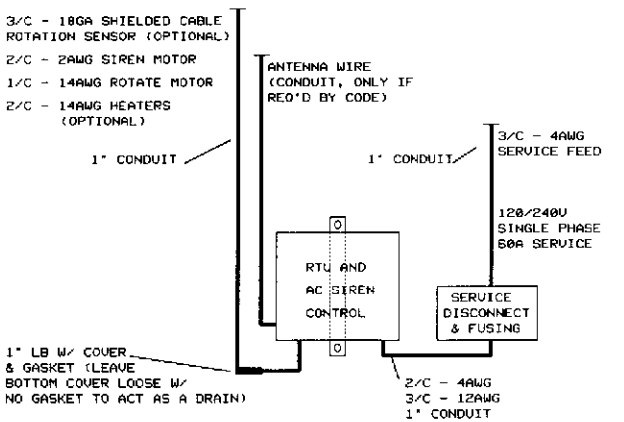
CONTRACTOR SUPPLIED PARTS

(APROXIMATE QTY'S SHOWN FOR GENERAL REPRESENTATION)

(1) POLE - CLASS AND LENGTH T.B.D. PER CONTRACT(50' CLASS 2 POLE TYP.)
(1) METER SOCKET (IF REQUIRED BY UTILITY)
(1) 60 AMP SERVICE FEED 120/24-0 VOLT
(1) 60 AMP WEATHER SAFETY DISCONNECT
(1) CKT/20AMP (1) CKT/40 AMP
(1) 1" WEATHERHEAD
(1) 1" HUB FOR LOAD CENTER
(1) 1" LL WITH GASKET AND COVER
(2) 1" LB WITH GASKET AND COVER
(5) 1"X10' CONDUIT
(8) 1-1/4" 20 HOLE STRAPS FOR CONDUIT
(2) 1" SEALTIGHT CONNECTORS (STRAIGHT)
(6') 1" SEALTIGHT
(1) 5/8"X8' COPPER GROUND ROD
(1) GROUND ROD CLAMP
(70') #6 STRANDED COPPER GROUND WIRE
(20) GALV. STAPLES FOR GROUND WIRE
(16) #10X2" SCREWS
(2) SPLIT BOLTS (COPPER) FOR #2 CABLE
(100') #2 THHN (PRE-CUT TO 50 FT. LENGTHS)
(150') 14 GA. STRANDED WIRE (PRE-CUT TO 3-50 FT. SECTIONS BLK,WHI,RED)
(3) BUTT SPLICE CONNECTOR FOR 14 GA.
(75') #4 CABLE THHN (PRE-CUT TO 5-15' LENGTHS)
(30') 12 GA.STRANDED WIRE (PRE-CUT TO 3-10 FT.SECTIONS BLK,WHT,GRN)
(50') 18 GA. 3-COND. SHIELDED CABLE

CONDUIT AND WIRE INTERCONNECTIONS

3/C - 18GA SHIELDED CABLE ROTATION SENSOR (OPTIONAL)
2/C - 2AWG SIREN MOTOR
1/C - 14AWG ROTATE MOTOR
2/C - 14AWG HEATERS (OPTIONAL)

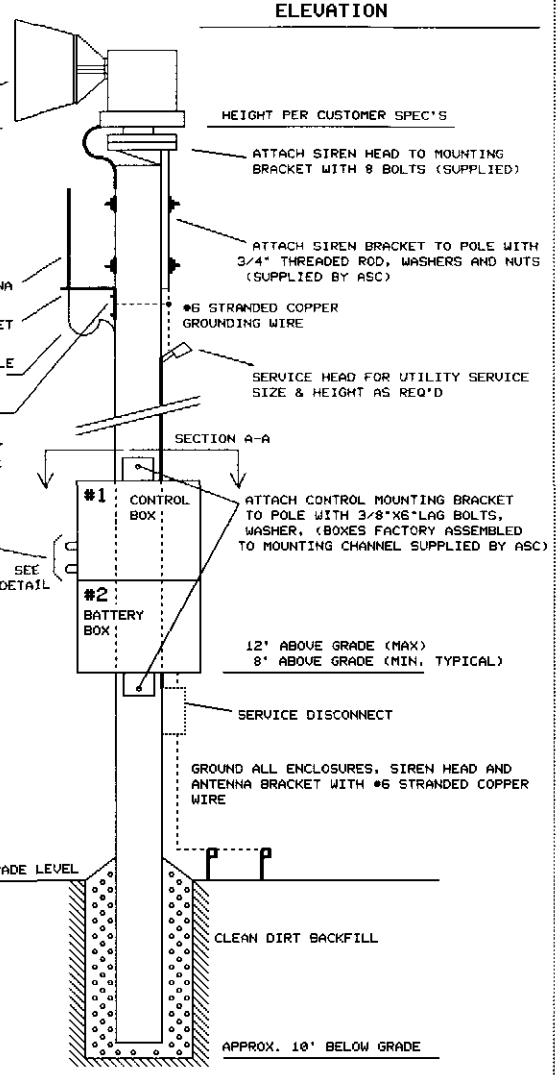


AMERICAN SIGNAL CORPORATION			
T-128 AC & RTU - INSTALLATION DRAWING TEMPEST SERIES SIREN			
DRAWN BY: JEL	DATE: 03/12/02	DRAWING NO: 34-0062A	REVISION: A
APP'D BY:	DATE:		SHEET 1 OF 1

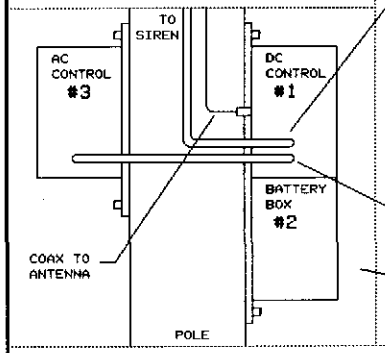
REV	ECO	DATE	DESCRIPTION
1		9/29/00	NEW BOX SIZES
2		4/30/01	ADD ROT WIRE

ROTATIONAL SHOWN. ALSO APPLICABLE FOR OMNI-DIRECTIONAL

ELEVATION

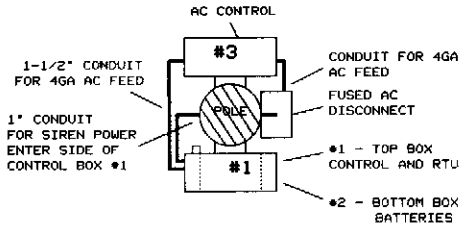


CONDUIT DETAILS SIDE VIEW



SECTION A-A

TOP-DOWN VIEW OF BOXES ON POLE



ALL CONDUIT SHOULD ENTER BOTTOM OR LOWER SIDES OF BOXES *** ONLY ***

WIRING BETWEEN BOXES AND TO HEAD SHALL BE IN CONDUIT (ANTENNA CABLE IS EXCEPTION WHERE CODES PERMIT)

NO ALUMINUM OR SOLID CORE WIRE SHALL BE USED

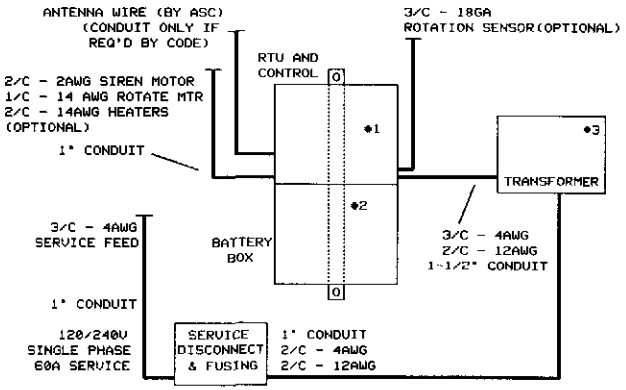
INSTALLATION SHALL BE IN ACCORDANCE WITH NEC, FEDERAL, STATE AND LOCAL CODES

CONTRACTOR SUPPLIED PARTS

(APROXIMATE QTY'S SHOWN FOR GENERAL REPRESENTATION)

POLE CLASS AND LENGTH TO BE DETERMINED PER CONTRACT
METER SOCKET (IF REQUIRED BY UTILITY)
60 AMP SERVICE FEED 120/240 VOLT
(1) 60 AMP WEATHER SAFETY DISCONNECT
(1) CKT/15AMP (1) CKT/40 AMP
(1) 1" WEATHERHEAD
(1) 1" HUB FOR LOAD CENTER
(1) 1" LL WITH GASKET AND COVER
(1) 1" LB WITH GASKET AND COVER
(5) 1"X10' CONDUIT
(100') #2 THHN (PRE-CUT TO 50 FT. LENGTHS)
(8) 1-1/4" 20 HOLE STRAPS FOR CONDUIT
(2) 1" SEALTIGHT CONNECTORS (STRAIGHT)
(1) 1/2" LB WITH COVER AND GASKET
(1) 1/2" CHASE NIPPLE
(6') 1" SEALTIGHT
(4') 1/2" SEALTIGHT
(2) 1/2" SEALTIGHT CONNECTOR (STRAIGHT)
(45') #6 CABLE THHN (PRE-CUT TO 3-15' LENGTHS)
(1) 5/8"X8' COPPER GROUND ROD
(1) GROUND ROD CLAMP
(2) SPLIT BOLTS (COPPER) FOR #2 CABLE
(1) BUTT SPLICE CONNECTOR FOR 14 GA.
(50') 14 GA. STRANDED WIRE
(70') #6 STRANDED COPPER GROUND WIRE
(16) #10X2" SCREWS
(20) GALV. STAPLES FOR GROUND WIRE
(30') 12 GA.STRANDED WIRE (PRE-CUT TO 3-10 FT. SECTIONS BLK,WHT,GRN)

CONDUIT AND WIRE INTERCONNECTIONS



AMERICAN SIGNAL CORPORATION			
T-128 AC/DC - INSTALLATION DRAWING TEMPEST T-128 SIREN			
DRAWN BY: JEL	DATE: 04/30/01	DRAWING NO: 34-0053B	REVISION: B
APP'D BY:	DATE:		SHEET 1 OF 1

ROOF, PARAPET, AND TOWER MOUNTS (TEMPEST T-128)
SIREN SUPPORT PLATFORM

Fig. 1

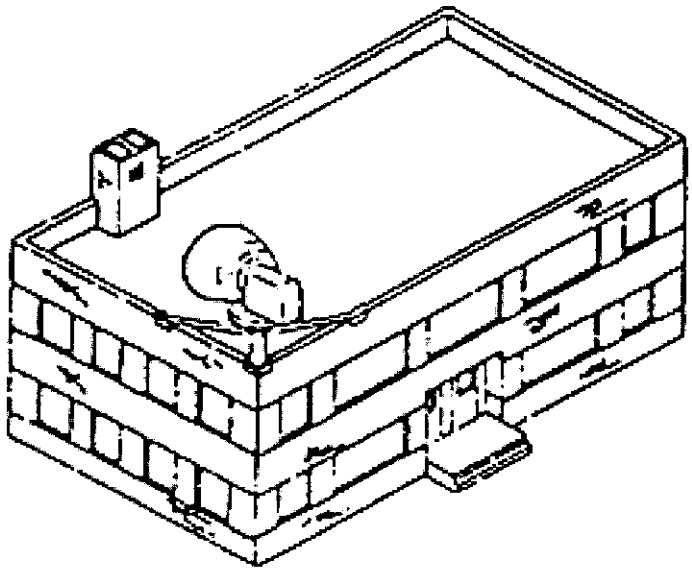
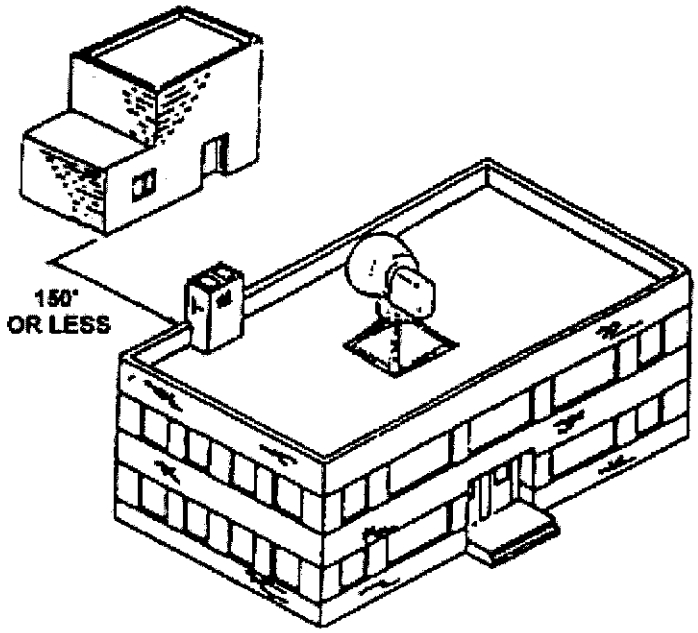


Fig. 2



ROOF, PARAPET, AND TOWER MOUNTS (TEMPEST T-128)
SIREN SUPPORT PLATFORM

Fig. 3

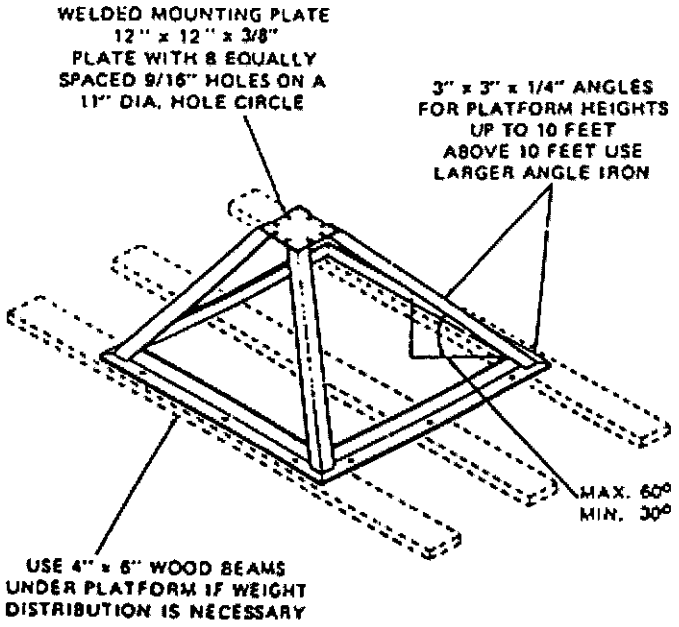
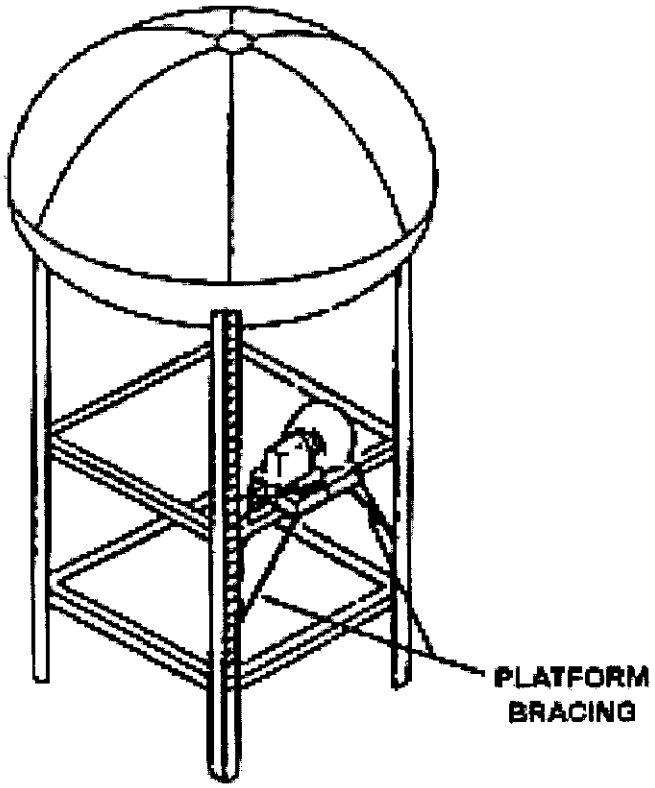


Fig. 4



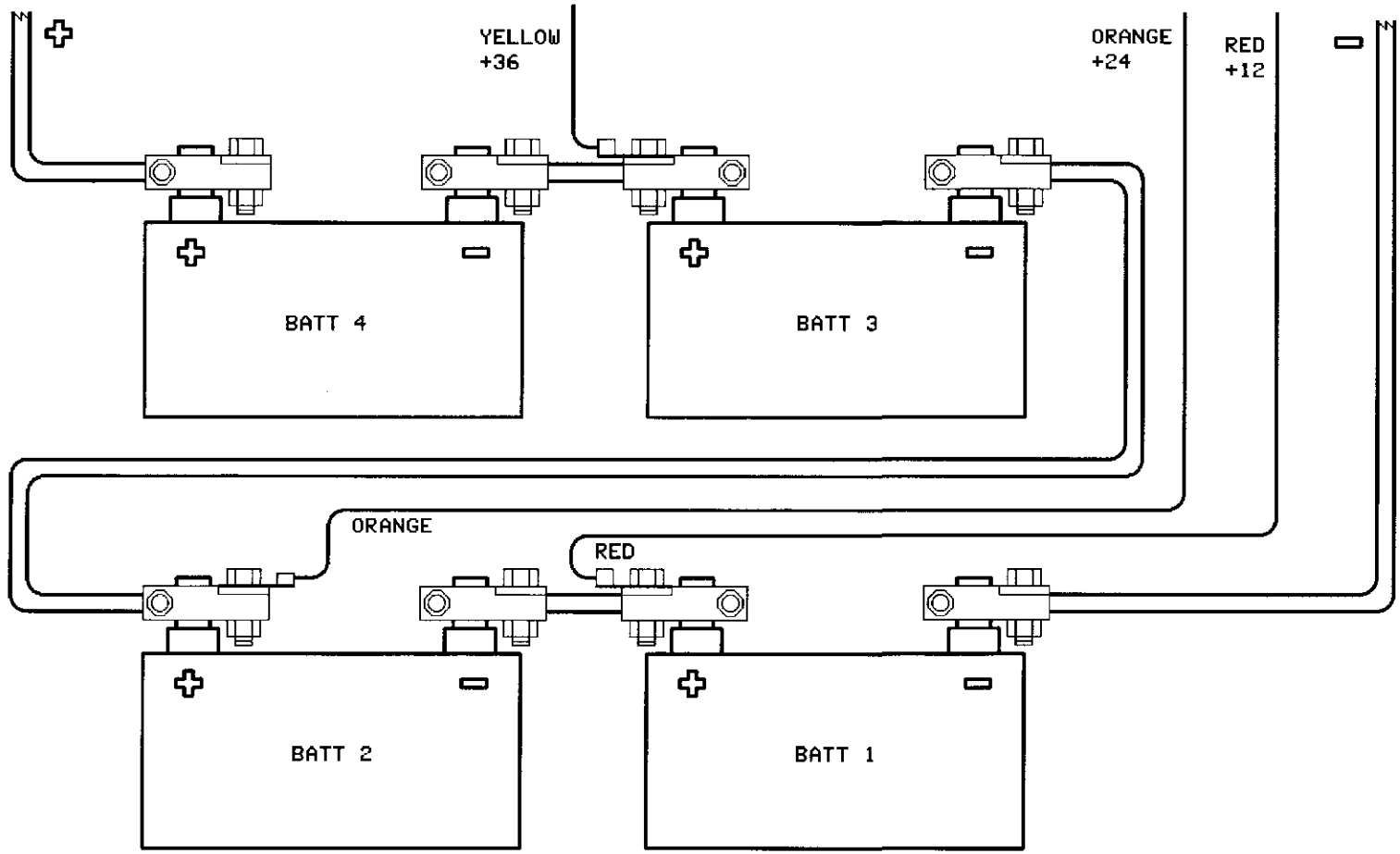
REV	ECO	DATE	DESCRIPTION
B	JRH	4/02/01	Remove BLU +48
C	JEL	12/18/01	Add Batt Label

WARNING -- WARNING WARNING -- WARNING

HAZARDOUS VOLTAGES PRESENT. IMPROPER HANDLING COULD RESULT IN SEVERE SHOCK, SEVERE BURNS, OR EXPLOSION

ALL SERVICE AND MAINTANENCE SHOULD BE HANDLED BY TRAINED, QUALIFIED PERSONNEL

WARNING -- WARNING WARNING -- WARNING



NOTE: ALWAYS CONNECT (-) TERMINAL -LAST- AND DISCONNECT (-) TERMINAL -FIRST-

RECOMMENDED BATTERIES ARE:
DELCO M24MF
SEARS DIE HARD 96411

AMERICAN SIGNAL CORPORATION

48 VOLT BATTERY HOOKUP
BLOCK DIAGRAM

DRAWN BY: JRH DATE: 12/18/01		DRAWING NO: 40-0291B	REVISION: C
APP'D BY: DATE:			SHEET 1 OF 1

Electrical Controls/Siren Activation

Electrical controls to operate the siren can be configured in several ways. However, for all installations there are four (4) main components required for a complete installation; 1. An adequate AC power supply from the local utility company, 2. The internal power supply provided by the system battery pack, 3. The siren motor control assembly through which battery power is supplied to the motor, and 4. The means of activation and associated equipment.

The AC power from the local utility must be supplied to the siren equipment through an adequately fused disconnect switch (not supplied with siren). The method, type, number and location of the disconnect switch is dictated by local, state, and federal codes and customer requirements. However, a disconnect switch should also be provided.

All batteries are mounted in a dedicated enclosure, which should be located directly below the motor control assembly for convenient wiring installation. Power cables and charging leads connect the batteries to the motor control assembly. The motor control assembly also supplies power to the siren via two #2 Awg. Power cables.

The electrical controls needed for operating the siren are pre-wired and contained inside a separate NEMA rated weatherproof metal enclosure. The control enclosure should be mounted near the siren in a position of inaccessible to unauthorized persons. A mounting height of 10 feet above grade is recommended for pole-mounted sirens (as noted above). Install conduit between the control box and the siren, using wire adequate for the power requirements. All power and control wiring should be installed in conduit.

NOTICE: Warranty will be voided if antenna wire or conduit enters the top of the control enclosure. Conduit, antennas and wires should always enter electrical control and junction boxes from the bottom or side to prevent leakage and water damage.

Final Wiring and Testing:

The siren unit motor leads terminate under the sheltered rotating mechanism for 1" (inch) conduit fitting.

Proper starter and/or overload protection must be used to avoid damage to the siren electrical components. Refer to ELECTRICAL INFORMATION for amperage requirements.

For ease of installation all wiring and continuity checks, with the exception of the batteries and the AC power connection, should be done prior to raising the pole. All interconnect wiring should be labeled and satisfactorily tested for continuity. Refer to system wiring diagrams for interconnect requirements. Batteries should be tested with a battery load tester before installing.

After the siren and pole assembly are raised and set in place, the final battery connections and AC power connections can be made. Before proceeding turn the main power switch located inside the motor control panel to the off position. Then connect the batteries, connecting the positive leads first. Next connect the negative leads, leaving the main negative feed between the batteries and motor control cabinet as the very last lead to be connected.

At this time, AC power can be connected to the incoming side of the fused disconnect safety switch. After AC power is connected, the final negative lead can be connected to the battery. After making the final battery connection, the main switch can be closed and the safety switch turned on to start the battery charging circuit.

TEST AND START-UP

CAUTION!!!

Caution: Ear protection must be worn at all times, to prevent hearing damage when the siren is operated. Siren produces 128dB spl at 100 feet.

Testing:

A. Siren unit, motor controller and batteries/chargers:

Before attempting to start or test the siren, check the following:

B. Final check all bolted or assembled components

After continuity checks have been completed, the battery connections made, and AC power applied to the system, the charging current should be verified from the green power LED located on the chargers. The charging current may vary depending on the condition of the battery at the time of installation; however, once fully charged the current should drop to approximately 0.2 amps to 1 amp.

Once the batteries are fully charged, voltage checks can be made to verify proper voltage has been obtained. To do so measure the voltage across the negative distribution block terminals and the number 4 charger lead in the motor control assembly, which should be a nominal 52.5 to 54 VDC under charge. If not, disconnect the chargers from the circuit by opening the main switch in the motor contactor assembly. Measure the voltage across each battery one at a time, with a digital voltmeter; static battery voltage should be a nominal 13.6-14.2 VDC (across each battery).

If batteries are below 12.2 volts use battery load tester to check condition of battery before completing start-up procedures.

CAUTION: THE FOLLOWING TEST WILL CAUSE THE SIREN TO OPERATE MOMENTARILY. EAR PROTECTION MUST BE WORN TO AVOID HEARING DAMAGE.

Momentarily press and hold the test button for one second inside the motor control assembly, causing the siren motor to start. Read the voltage across the batteries, listening and looking to ensure the siren motor has started to sound and rotate. The battery voltage should not drop significantly under test load condition.

Note: The contact closure should be maintained for no less than 2 seconds to avoid damage from inductive forces.

The test of the siren and siren controller is now complete. Testing of the activation interface can now be done.

SIREN ACTIVATION

Siren activation options include, direct switch control, remote radio control, or operation via telephone lines - depending upon specific needs.

Having determined the specific siren activation means, connect the signal source wires to the control cabinet terminal blocks (Refer to activation wiring diagrams). Proceed to test the entire operation of the siren using the radio controls, timer or telephone system according to activation equipment documentation.

OPERATION

The T-48-DC control is designed for universal application. Activation may be by means of remote direct-wired lines, telephone lines and relays or special radio controls. The activating and timing of equipment is to be provided by the procurement agency at time of installation. This manual will not attempt to define the exact operational procedure of the siren. Activation equipment documentation provided separately (Contact ASC technical support at 800-243-2911)

MAINTENANCE

CAUTION!!!

DISCONNECT POWER BEFORE PERFORMING MECHANICAL MAINTENANCE.

Inspection

Typically, sirens operate only in emergency situations, and therefore, very little operational wear is to be anticipated.

Periodic operational tests should be made to verify functionality. The frequency of testing can vary annually. Once every six months, or at other optional intervals as required.

Perform the following inspections:

1. Inspect external fiberglass surfaces for any physical damage.

2. Inspect screened openings to determine that they are unobstructed and that screens are securely fastened.

3. Inspect control panel door gasket and interior to determine that no water leakage exists.

4. Check batteries. Load test each battery individually. Check fluid levels. Add water and / or electrolyte to proper level.

Disassembly, Repair, Replacement and Reassemble

The siren's physical design is such that it precludes most mechanical problems other than those caused by natural disasters or violent physical damage. The siren configuration is constructed from reinforced fiberglass and bolted together to form a weather-resistant enclosure for all moving parts.

The parts drawings illustrate component placement. Upon removal of the fiberglass hood, all working parts are exposed to view.

Disassembly procedures are extremely simple and ordinary mechanics tools are adequate for service work.

TROUBLE-SHOOTING CHECK LIST SYMPTOMS

A. Siren motor does not start and siren does not rotate.

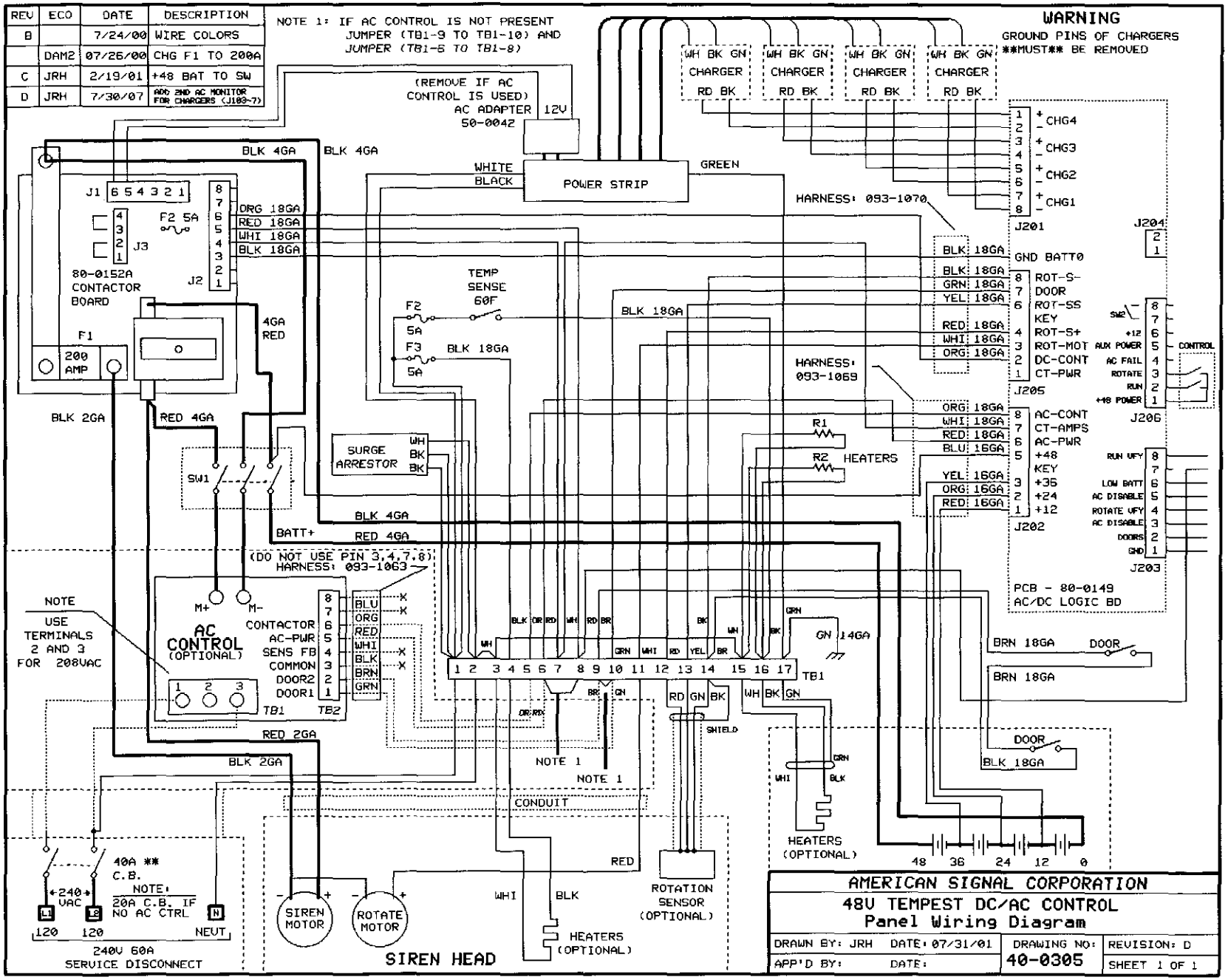
POSSIBLE CAUSE	CORRECTIVE PROCEDURE
1. No power AC/DC to motor controls.	**1.** Check fuses, power supply and batteries.
2. Loose connections in control panel.	**2.** Check and repair.
3. Overload condition with blown fuses.	**3.** Trace overload and correct the cause.
4. Low charge or dead batteries.	**4.** Replace battery and or charger.
5. Improper charge on batteries.	**5.** Load test batteries and check fuses.
6. Low fluid level in battery.	**6.** Add battery electrolyte. Check charge voltage (13.8V). Load test battery.
7. Electric motor windings either open or shorted or bad commutator and brushes.	**7.** Test motor and replace or replace brushes.
8. Loose connection on collector ring assembly.	**8.** Trace and repair.
9. Burned or pitted relay contact.	**9.** Replace relay.
10. Defective contactor.	**10.** Replace contactor.
11. Remote actuating system defective.	**11.** Trouble-shoot and correct.

B. Siren operates with difficulty or erratically.

POSSIBLE CAUSE	CORRECTIVE PROCEDURE
1. Siren air intake clogged.	1. Clear obstruction
2. Build-up of foreign material between siren rotor and stator.	2. Disassemble housing and clean. Air gap should be 0.025" to 0.035".
3. Electric motor, brushes, commutator, rotor or windings damaged.	3. Inspect motor armature. Check supply voltage and current during operation. Test motor and repair or replace. Check commutator and brushes and replace brushes.

C. Siren sounds but does not rotate.

POSSIBLE CAUSE	CORRECTIVE PROCEDURE
1. Overload condition with blown fuses.	1. Trace overload and correct the cause. Replace fuse.
2. Foreign material jamming rotating mechanism	2. Clear obstructions.
3. Loose setscrew on gear drive.	3. Re-tighten.
4. Broken gear	4. Replace.
5. Defective gear motor	5. Replace.

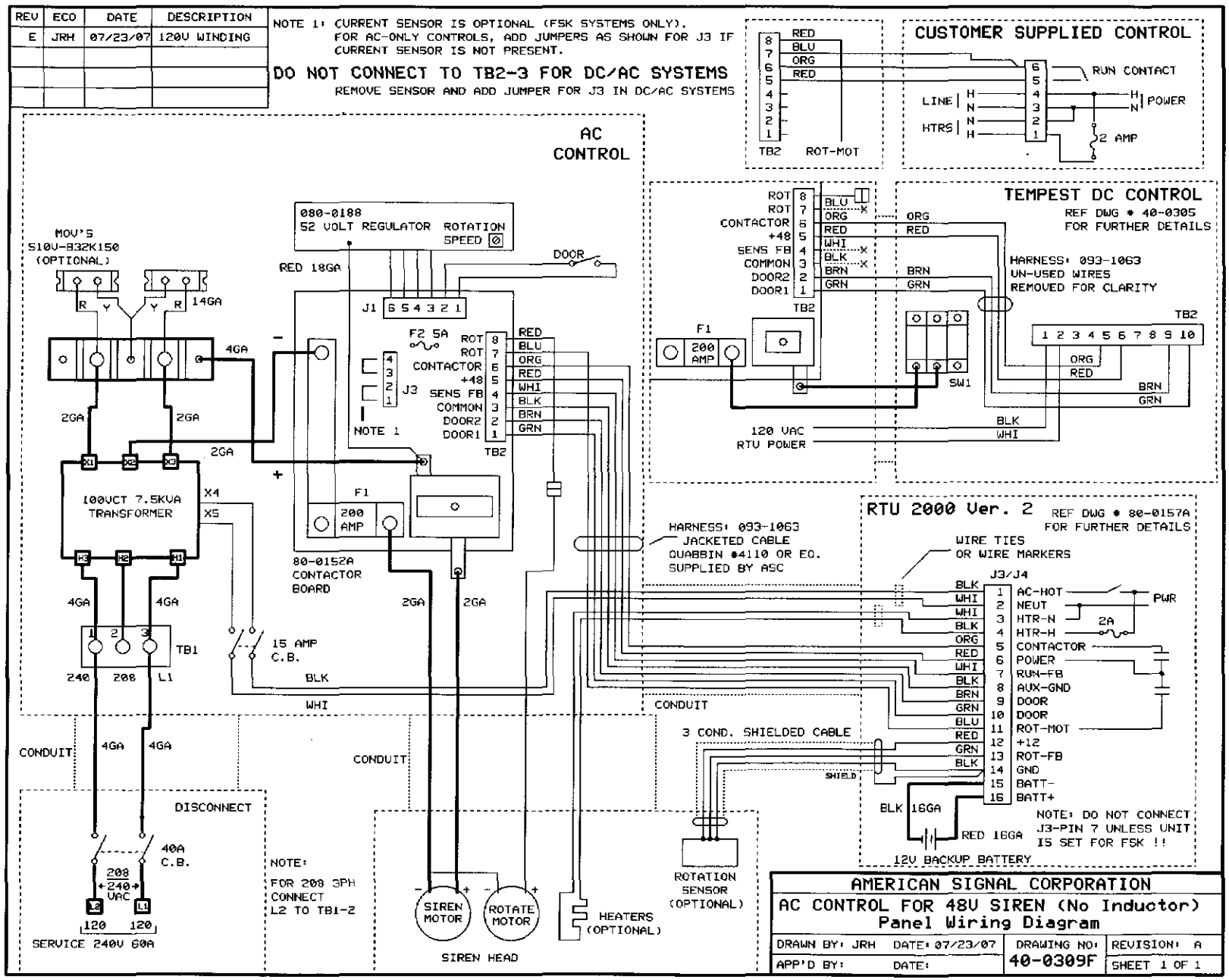

REV | ECO | DATE | DESCRIPTION
B | | 7/24/00 | WIRE COLORS
| DAM2 | 07/26/00 | CHG F1 TO 200A
C | JRH | 2/19/01 | +48 BAT TO SW
D | JRH | 7/30/07 | ADD 2ND AC MONITOR FOR CHARGERS (J103-7)
NOTE 1: IF AC CONTROL IS NOT PRESENT JUMPER (TB1-9 TO TB1-10) AND JUMPER (TB1-6 TO TB1-8)
WARNING
GROUND PINS OF CHARGERS **MUST** BE REMOVED
(REMOVE IF AC CONTROL IS USED)
AC ADAPTER 50-0042
12V
POWER STRIP
WHITE
BLACK
GREEN
WH BK GN CHARGER RD BK
HARNESS: 093-1070
J201
J204
J205
J206
J202
J203
PCB - 80-0149 AC/DC LOGIC BD
80-0152A CONTACTOR BOARD
J1
J2
J3
F1 200 AMP
F2 5A
F3 5A
TEMP SENSE 60F
SURGE ARRESTOR
SW1
R1
R2 HEATERS
HARNESS: 093-1069
BLK 4GA
RED 4GA
BLK 2GA
BATT+
(DO NOT USE PIN 3,4,7,8) HARNESS: 093-1063
AC CONTROL (OPTIONAL)
CONTACTOR
AC-PWR
SENS FB
COMMON
DOOR2
DOOR1
TB1
TB2
NOTE USE TERMINALS 2 AND 3 FOR 208VAC
TB1
GN 14GA
BRN 18GA
DOOR
RED 2GA
BLK 2GA
CONDUIT
NOTE 1
SHIELD
HEATERS (OPTIONAL)
40A ** C.B.
NOTE: 20A C.B. IF NO AC CTRL
240 VAC
120 120 NEUT
240V 60A SERVICE DISCONNECT
SIREN MOTOR
ROTATE MOTOR
SIREN HEAD
ROTATION SENSOR (OPTIONAL)
HEATERS (OPTIONAL)
48 36 24 12 0
AMERICAN SIGNAL CORPORATION
48V TEMPEST DC/AC CONTROL
Panel Wiring Diagram
DRAWN BY: JRH DATE: 07/31/01
APP'D BY: DATE:
DRAWING NO: 40-0305
REVISION: D
SHEET 1 OF 1

REV	ECO	DATE	DESCRIPTION
E	JRH	07/23/07	120V WINDING

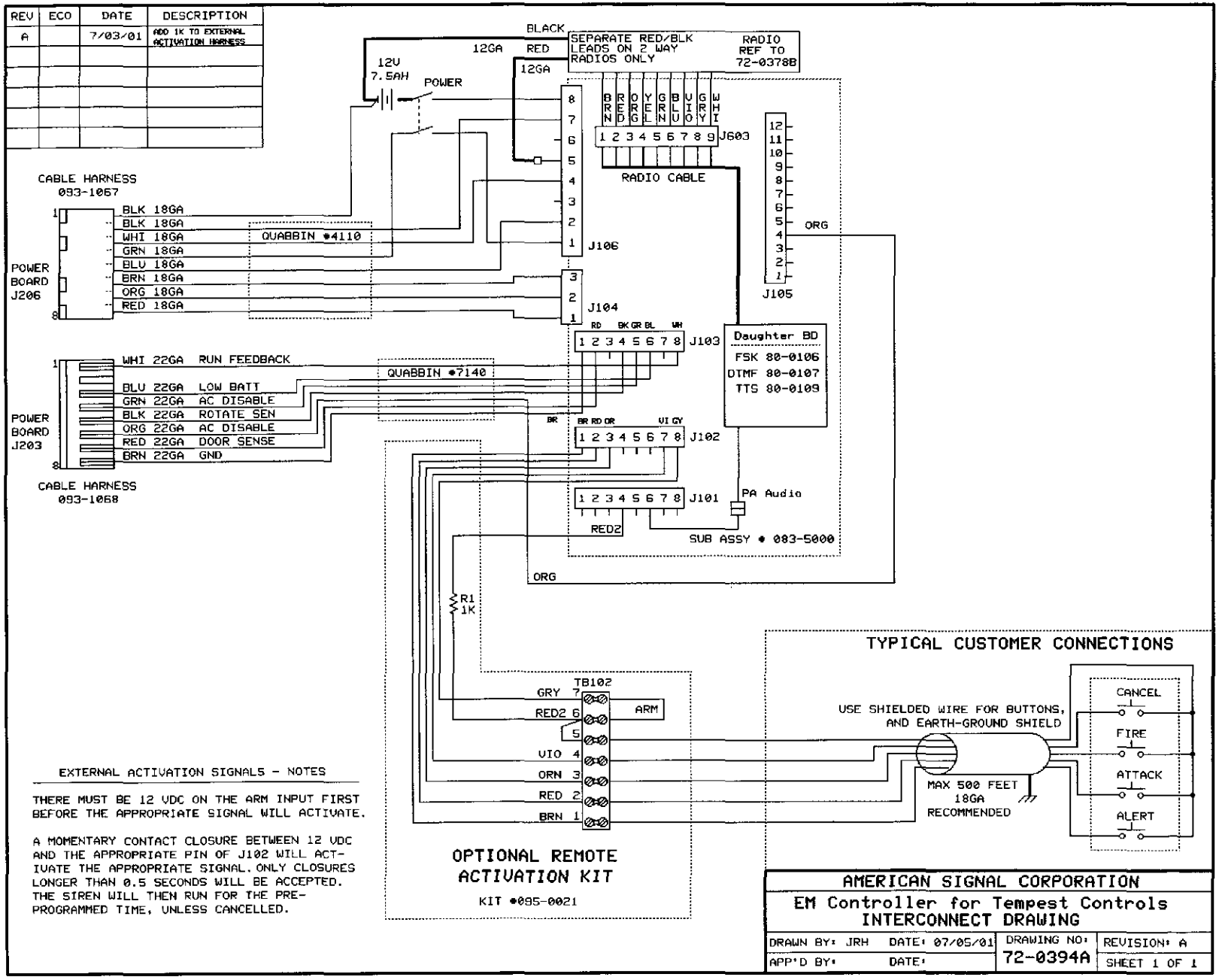
NOTE 1: CURRENT SENSOR IS OPTIONAL (FSK SYSTEMS ONLY).
FOR AC-ONLY CONTROLS, ADD JUMPERS AS SHOWN FOR J3 IF CURRENT SENSOR IS NOT PRESENT.

DO NOT CONNECT TO TB2-3 FOR DC/AC SYSTEMS

REMOVE SENSOR AND ADD JUMPER FOR J3 IN DC/AC SYSTEMS



AMERICAN SIGNAL CORPORATION			
AC CONTROL FOR 48V SIREN (No Inductor) Panel Wiring Diagram			
DRAWN BY: JRH	DATE: 07/23/07	DRAWING NO: 40-0309F	REVISION: A
APP'D BY:	DATE:		SHEET 1 OF 1


REV | ECO | DATE | DESCRIPTION
A | | 7/03/01 | ADD 1K TO EXTERNAL ACTIVATION HARNESS
BLACK
12GA RED
SEPARATE RED/BLK LEADS ON 2 WAY RADIOS ONLY
RADIO REF TO 72-0378B
12V 7.5AH
POWER
12GA
BRN RED ORG GRN BLU VIO GRY WHT
1 2 3 4 5 6 7 8 9 J603
RADIO CABLE
CABLE HARNESS 093-1067
BLK 18GA
BLK 18GA
WHI 18GA
GRN 18GA
BLU 18GA
BRN 18GA
ORG 18GA
RED 18GA
QUABBIN #4110
POWER BOARD J206
J106
J104
J105
ORG
RD BK GR BL WH
1 2 3 4 5 6 7 8 J103
Daughter BD
FSK 80-0106
DTMF 80-0107
TTS 80-0109
WHI 22GA RUN FEEDBACK
BLU 22GA LOW BATT
GRN 22GA AC DISABLE
BLK 22GA ROTATE SEN
ORG 22GA AC DISABLE
RED 22GA DOOR SENSE
BRN 22GA GND
QUABBIN #7140
POWER BOARD J203
BR
BR RD OR VI GY
1 2 3 4 5 6 7 8 J102
1 2 3 4 5 6 7 8 J101
PA Audio
RED2
SUB ASSY # 083-5000
CABLE HARNESS 093-1068
R1 1K
TB102
GRY 7
RED2 6
5
VIO 4
ORN 3
RED 2
BRN 1
ARM
OPTIONAL REMOTE ACTIVATION KIT
KIT #095-0021
TYPICAL CUSTOMER CONNECTIONS
USE SHIELDED WIRE FOR BUTTONS, AND EARTH-GROUND SHIELD
MAX 500 FEET 18GA RECOMMENDED
CANCEL
FIRE
ATTACK
ALERT
EXTERNAL ACTIVATION SIGNALS - NOTES
THERE MUST BE 12 VDC ON THE ARM INPUT FIRST BEFORE THE APPROPRIATE SIGNAL WILL ACTIVATE.
A MOMENTARY CONTACT CLOSURE BETWEEN 12 VDC AND THE APPROPRIATE PIN OF J102 WILL ACTIVATE THE APPROPRIATE SIGNAL. ONLY CLOSURES LONGER THAN 0.5 SECONDS WILL BE ACCEPTED. THE SIREN WILL THEN RUN FOR THE PRE-PROGRAMMED TIME, UNLESS CANCELLED.
AMERICAN SIGNAL CORPORATION
EM Controller for Tempest Controls
INTERCONNECT DRAWING
DRAWN BY: JRH DATE: 07/05/01
APP'D BY: DATE:
DRAWING NO: 72-0394A
REVISION: A
SHEET 1 OF 1

REV	ECO	DATE	DESCRIPTION
C		5/26/00	JACKET/COLORS
D		7/21/00	PART NUMBERS
E		7/24/00	93-1067 CHANGE
F		10/02/00	64,66,67

NOTES

16/18GA WIRES: STYLE 1015/1230 600V
VW-1 105°C MTW CSA TEW

22GA WIRES: STYLE 1061 300V

HOUSINGS: (1) 8 PIN 0.100CC
METHODE 1308-108-422

(2) 6 PIN 0.156CC HOUSING
MOLEX 09-50-8061

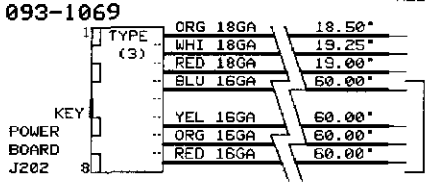
(3) 8 PIN 0.156CC HOUSING
MOLEX 09-50-8081

(4) 4 PIN 0.156CC HOUSING
MOLEX 09-50-8041

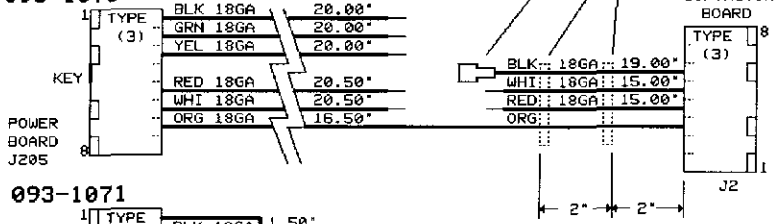
ALL WIRE DIMENSIONS ARE 'RAW' LENGTHS

MOLEX POLARIZING KEY: 15-04-0297
MOLEX PINS: 08-52-0112 (REEL)
08-52-0113 (LOOSE)

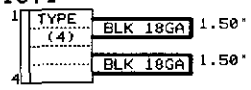
093-1069



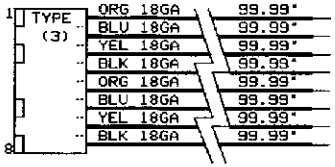
093-1070



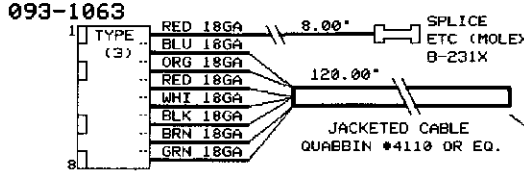
093-1071



DC CONTROL



093-1063

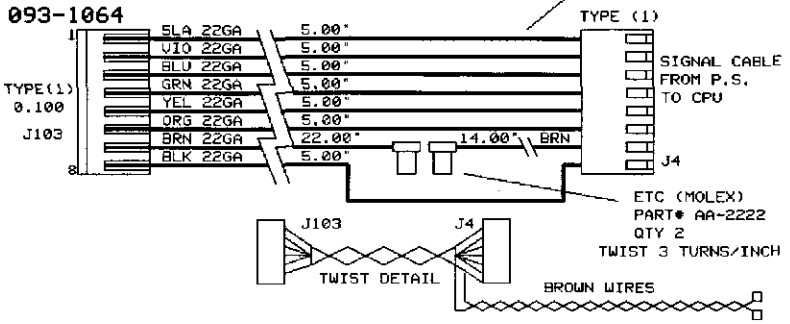


AC CONTROL AND DC EXTERNAL ACTIVATION KIT

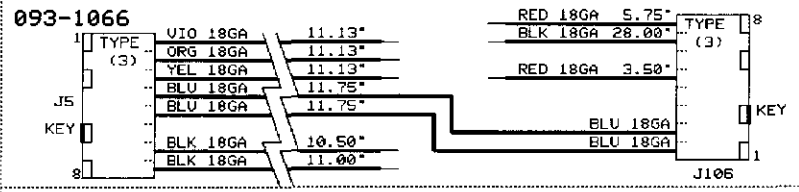
CABLE SUPPLIED WITH EACH AC CONTROL FOR INTERCONNECT TO AC RTU OR DC CONTROL

NOTE: ALL WIRES MAY BE OF SAME COLOR TWIST, 1 TURN/INCH

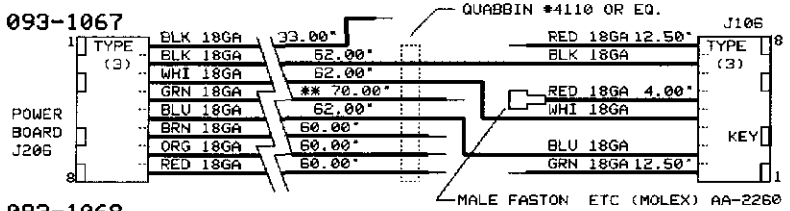
093-1064



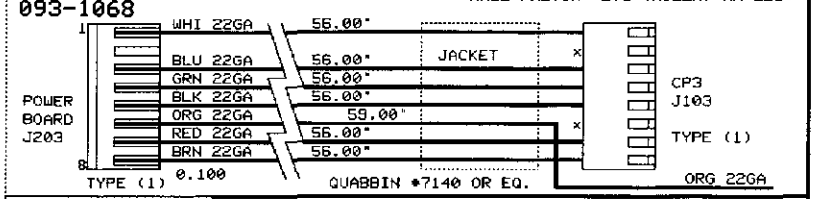
093-1066



093-1067



093-1068



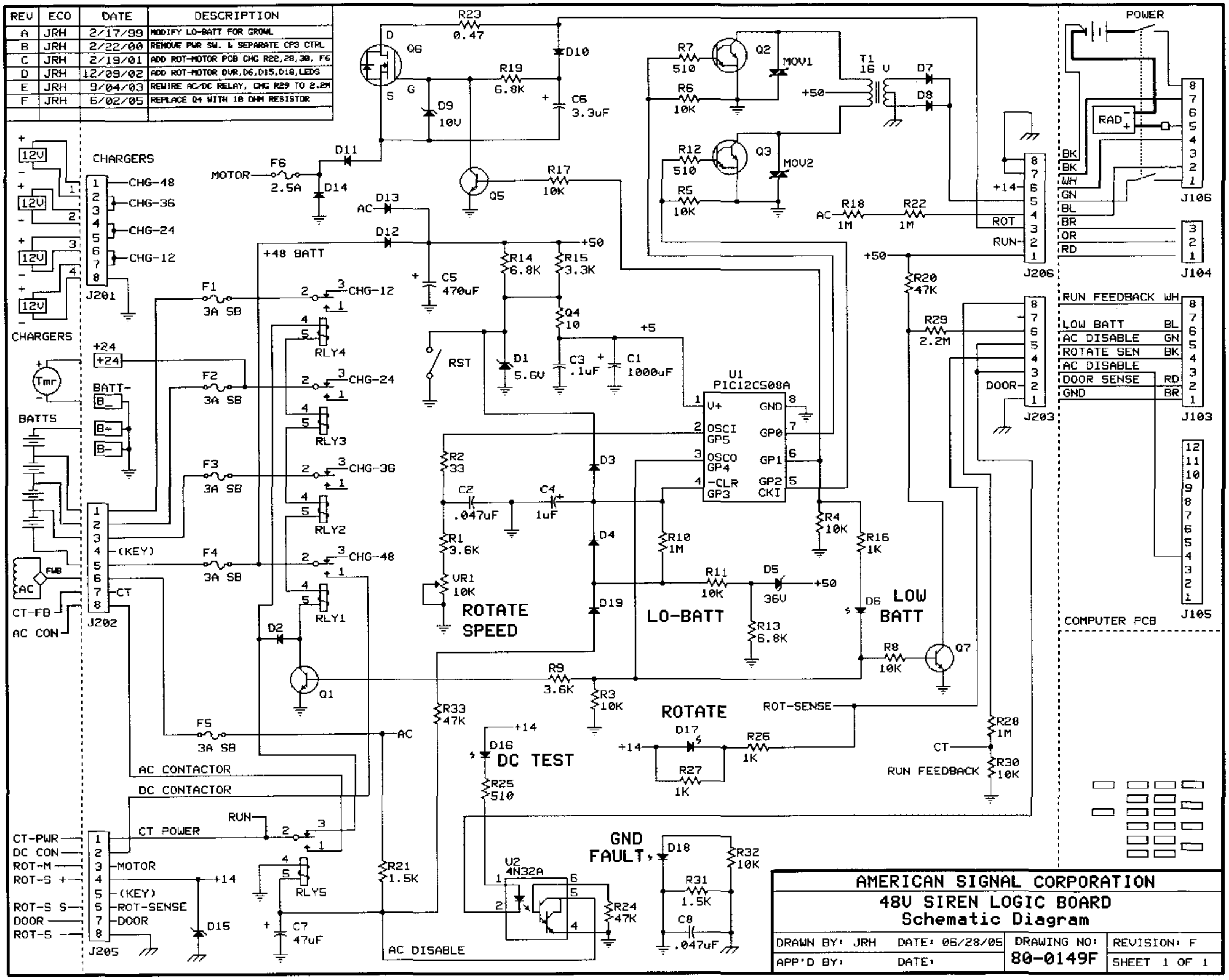
WIRE TERMINATION (UNLESS NOTED)
NO PREP
STRIP 0.375"

AMERICAN SIGNAL CORPORATION

TEMPEST DC/AC HARNESSES INTERCONNECT DIAGRAM

DRAWN BY: JRH	DATE: 10/02/00	DRAWING NO: 72-0390A	REVISION: E
APP'D BY:	DATE:		SHEET 1 OF 1

REV	ECO	DATE	DESCRIPTION
A	JRH	2/17/99	MODIFY LO-BATT FOR GROWL
B	JRH	2/22/00	REMOVE PWR SW. & SEPARATE CP3 CTRL
C	JRH	2/19/01	ADD ROT-MOTOR PCB CHG R22,28,30, F6
D	JRH	12/09/02	ADD ROT-MOTOR OVR,D6,D15,D18,LEDS
E	JRH	9/04/03	REWIRE AC/DC RELAY, CHG R29 TO 2.2M
F	JRH	6/02/05	REPLACE Q4 WITH 10 OHM RESISTOR

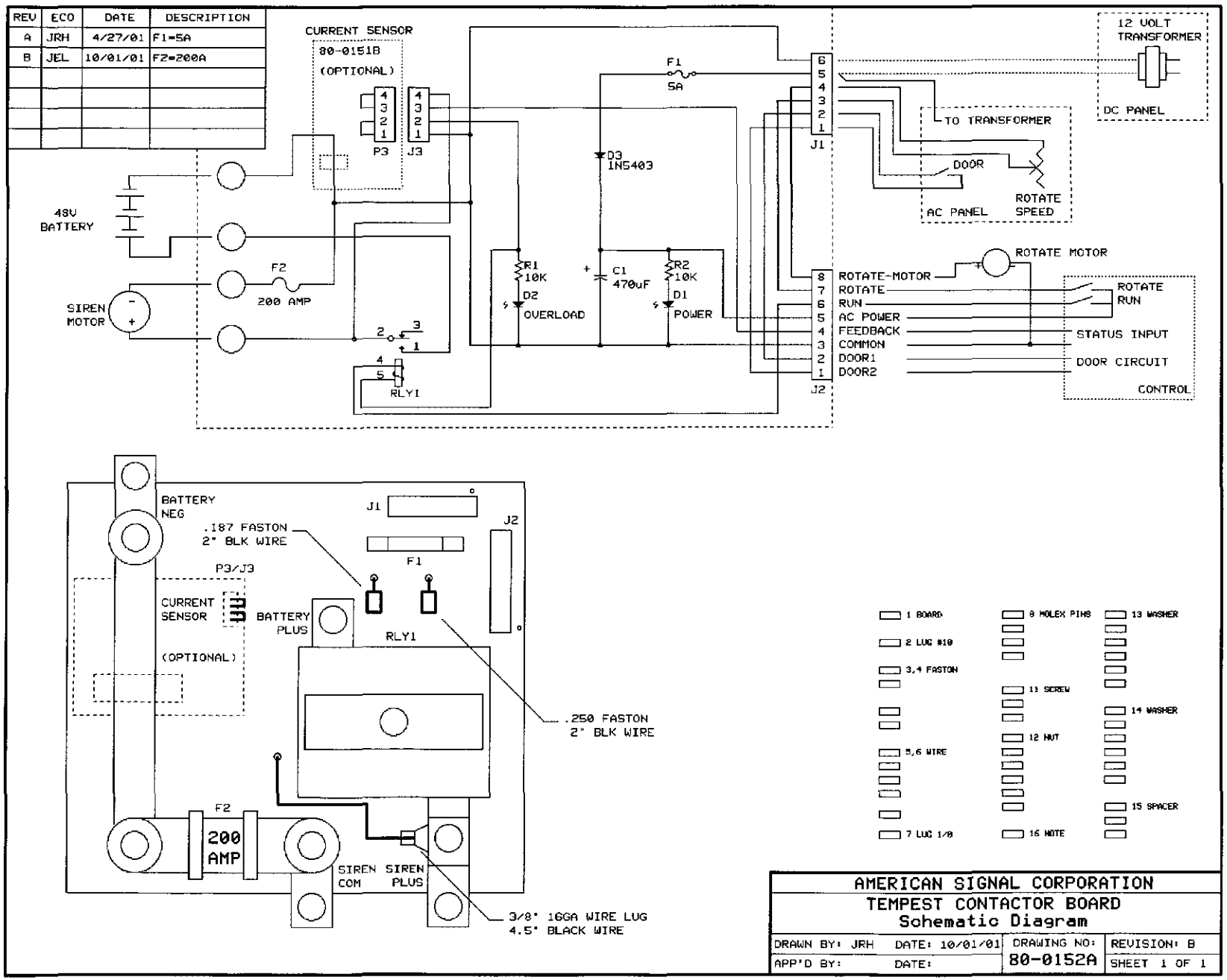


AMERICAN SIGNAL CORPORATION

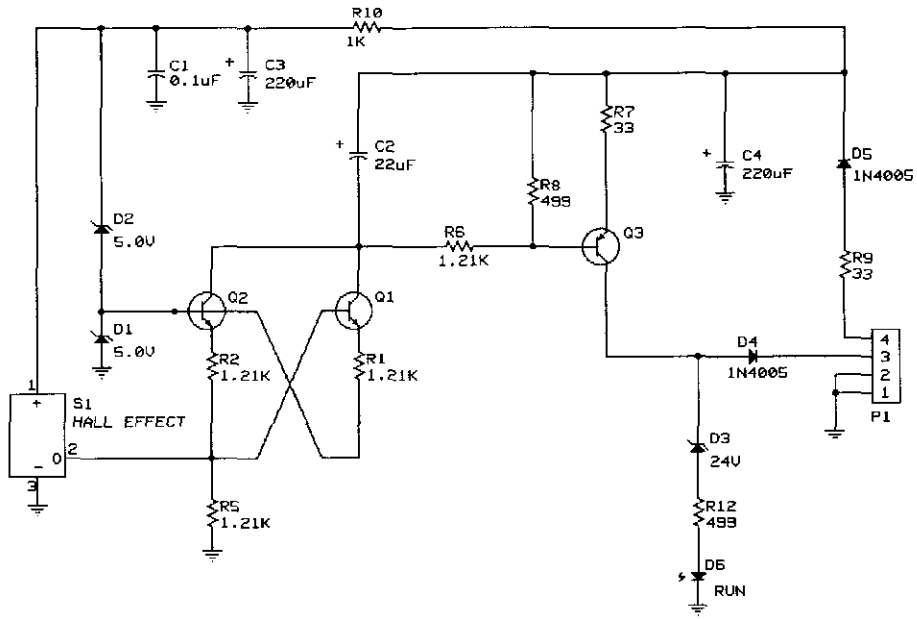
48V SIREN LOGIC BOARD

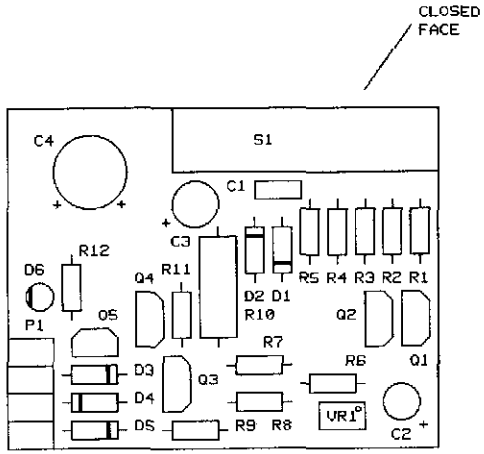
Schematic Diagram

DRAWN BY: JRH	DATE: 06/28/05	DRAWING NO: 80-0149F	REVISION: F
APP'D BY:	DATE:		SHEET 1 OF 1


REV | ECO | DATE | DESCRIPTION
A | JRH | 4/27/01 | F1=5A
B | JEL | 10/01/01 | F2=200A
CURRENT SENSOR
80-0151B
(OPTIONAL)
P3
J3
F1
5A
D3
1N5403
J1
12 VOLT
TRANSFORMER
DC PANEL
TO TRANSFORMER
DOOR
ROTATE
SPEED
AC PANEL
48V
BATTERY
F2
200 AMP
SIREN
MOTOR
R1
10K
D2
OVERLOAD
C1
470uF
R2
10K
D1
POWER
RLY1
ROTATE MOTOR
ROTATE-MOTOR
ROTATE
RUN
AC POWER
FEEDBACK
COMMON
DOOR1
DOOR2
J2
ROTATE
RUN
STATUS INPUT
DOOR CIRCUIT
CONTROL
BATTERY
NEG
.187 FASTON
2" BLK WIRE
P3/J3
CURRENT
SENSOR
(OPTIONAL)
BATTERY
PLUS
J1
J2
F1
RLY1
.250 FASTON
2" BLK WIRE
F2
200
AMP
SIREN
COM
SIREN
PLUS
3/8" 16GA WIRE LUG
4.5" BLACK WIRE
1 BOARD
2 LUG #10
3,4 FASTON
5,6 WIRE
7 LUG 1/0
8 MOLEX PINS
11 SCREW
12 NUT
16 NOTE
13 WASHER
14 WASHER
15 SPACER
AMERICAN SIGNAL CORPORATION
TEMPEST CONTACTOR BOARD
Schematic Diagram
DRAWN BY: JRH
DATE: 10/01/01
APP'D BY:
DATE:
DRAWING NO:
80-0152A
REVISION: B
SHEET 1 OF 1

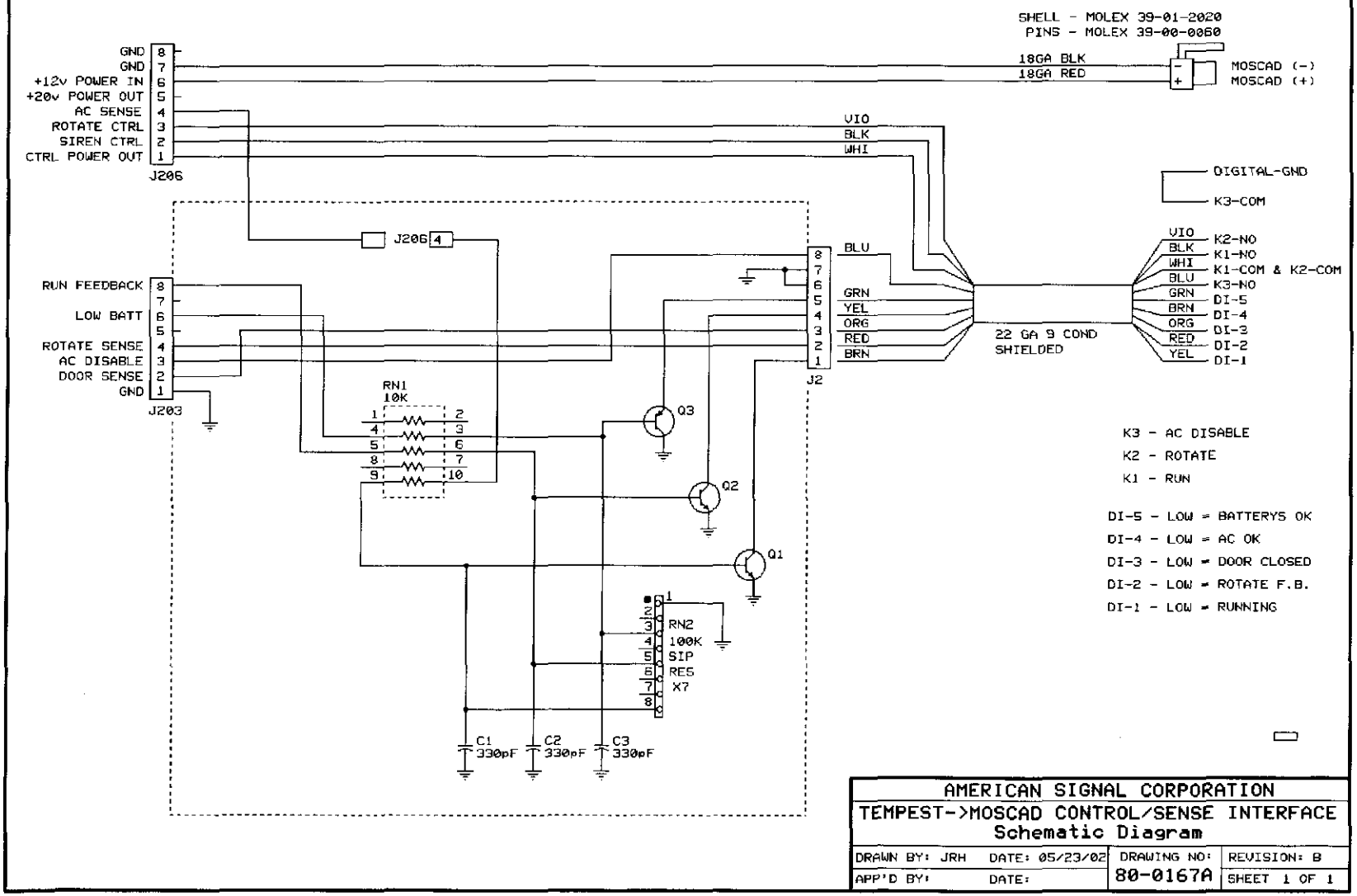
REV	ECO	DATE	DESCRIPTION





AMERICAN SIGNAL CORPORATION			
DC/AC CONTACTOR CURRENT SENSOR rev C Schematic Diagram			
DRAWN BY: JRH	DATE: 11/02/00	DRAWING NO:	REVISION: C
APP'D BY:	DATE:	80-0151C	SHEET 1 OF 1

REV	ECO	DATE	DESCRIPTION
B		05/23/02	Chge Plug #'s



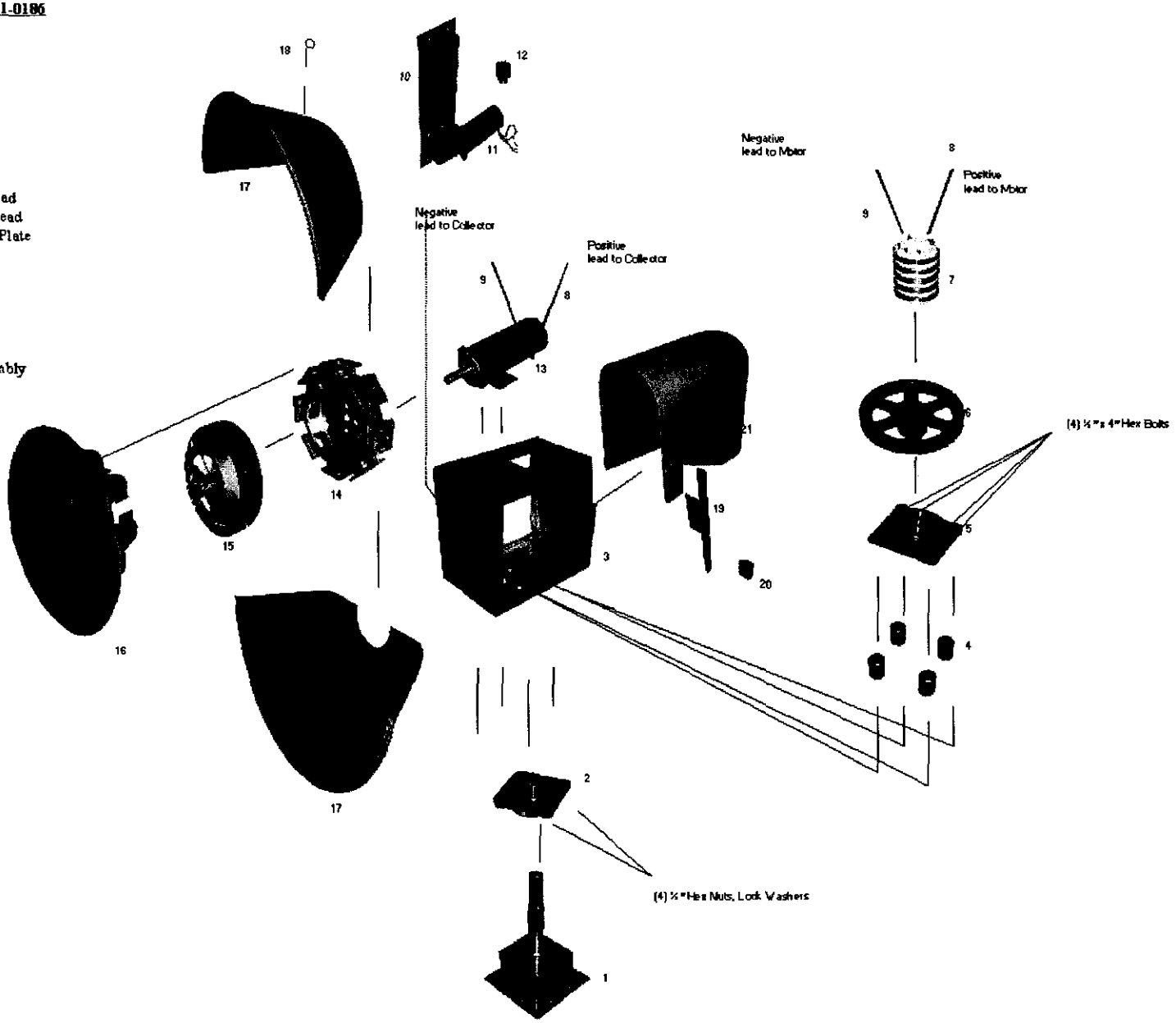
AMERICAN SIGNAL CORPORATION

TEMPEST->MOSCAD CONTROL/SENSE INTERFACE
Schematic Diagram

DRAWN BY: JRH	DATE: 05/23/02	DRAWING NO: 80-0167A	REVISION: B
APP'D BY:	DATE:		SHEET 1 OF 1

Component List TEMPEST T-128 P/N 041-0186

ITEM#	P/N	Description
1	042-0567	Rotation Base
2	018-0011	Bottom Bearing
3	042-0569	Rotation Box
4	005-0041	Bearing Spacers Tube
5	018-0011	Top Bearing
6	011-0048	Large Rotation Gear
7	022-0010	Collector Ring
8	093-1075	4ga. Positive Motor Lead
9	093-1074	4ga. Negative Motor Lead
10	042-0571	Gear Motor Mounting Plate
11	004-0050	Rotation Gear Motor
12	011-0049	Small Rotation Gear
13	004-0054	48 Volt DC Motor
14	003-0055	Stator
15	003-0056	Rotor
16	001-0273	8pc. Horn Assembly
17	001-0274	2pc. Outer Horn Assembly
18	079-0272	Lifting Eye bolt
19	042-0581	Brush Holder Bracket
20	002-0022	Brush Assembly
21	001-0275	Rear Motor Cover



TEMPEST INTERNAL ROTATION SENSOR INSTALLATION/OPERATION PROCEDURE

This document describes the installation procedure as well as operation of the rotation sensor for the Tempest model T-128 siren head. See Figure 5. The rotation sensor is an optional component available for use along with the Compulert FSK two-way telemetry system only. It is designed for use along with the optional current sensor to provide a means of monitoring the siren head's operation without visiting the siren location. The rotation sensor can help keep up on proper operation and maintenance needs. The current model T-128 siren heads that are manufactured for use with Compulert FSK systems are shipped with the rotation sensor installed on the siren head before shipment.

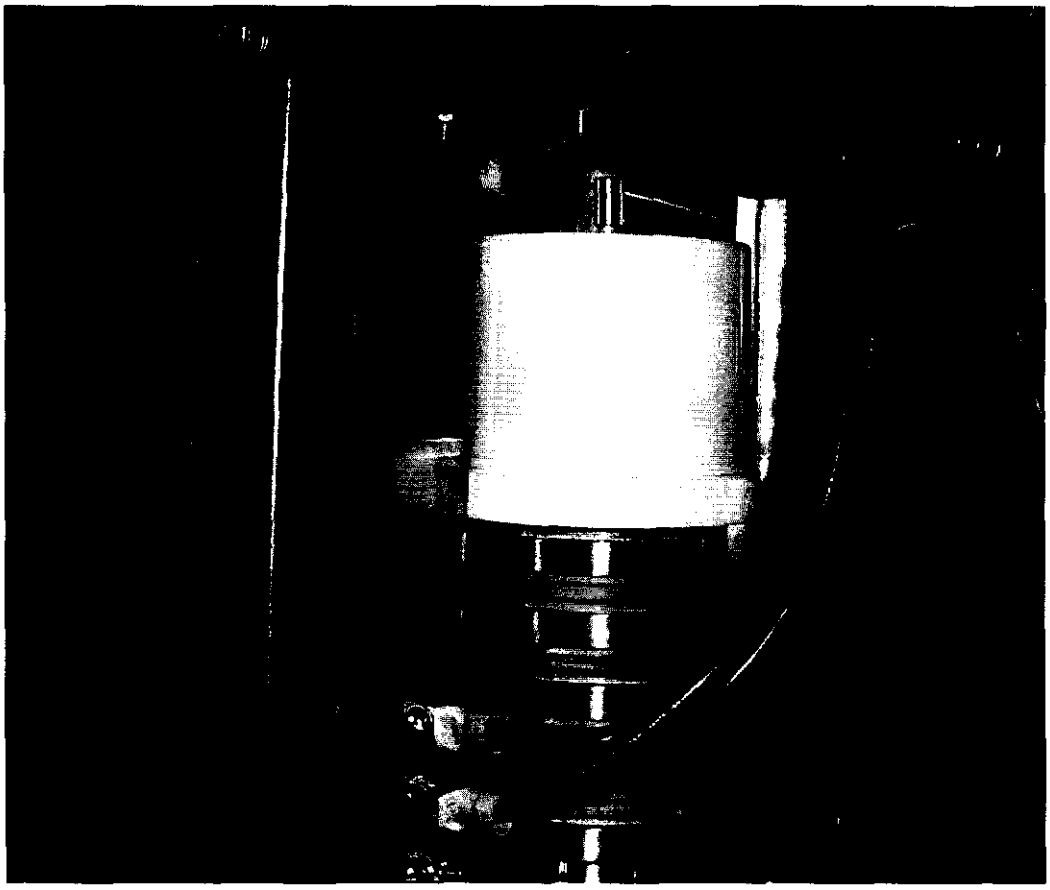


Figure 5

This procedure describes the installation procedure for adding the rotation sensor to your existing siren head. It will also describe the wiring connections that will need to be made during the installation of any T-128 siren head. It will also describe the operation of the rotation sensor.

Operation

The rotation sensor used on the T-128 siren head is a dry closure sensor. The rotation sensor is a small circuit board attached to a PVC enclosure and cap that is attached inside the siren head to the top of the stationary collector ring assembly. The sensor is designed to switch a ground signal that is provided from the Siren Control. The sensor has an armature that spins as the siren head rotates which opens and closes applying a ground signal to the Siren's Control Logic Board. There are a series of small transistors that act to double the amount of pulses that are normally seen. See Figure 6 and 7.

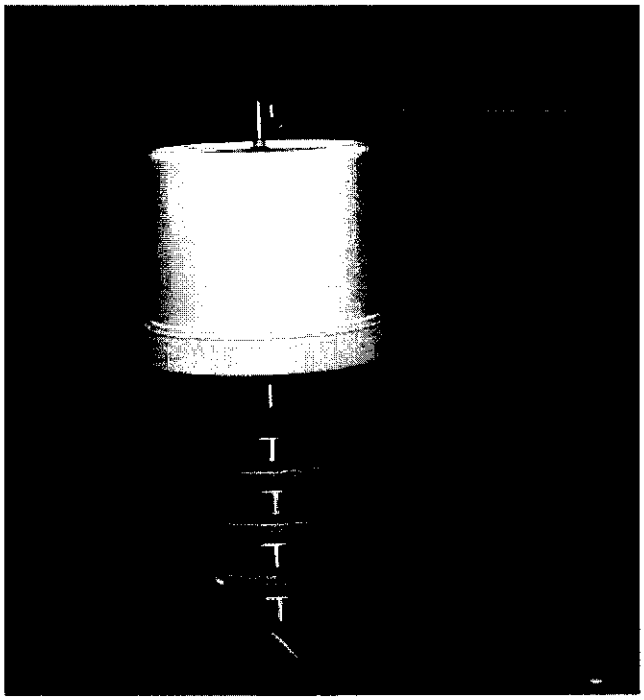


Figure 6

The sensor is to be interfaced with the American Signal Power Board (ASC Part # 080-0149) for a DC-operated siren or the American Signal Power Board (ASC Part # 080-0157) for an AC-operated siren along with the Compulert FSK system. You should always use shielded conductor cable when connecting the sensor's wires to the siren control box, while grounding the shield to earth ground at both ends of the cable or run the cable inside of conduit from the siren head to the siren control box. The rotation sensor has three wires to connect. The rotation sensor an input for power by 12 volts DC, which is no longer needed but is still attached to the sensor's connector. The sensor needs a ground connection. The sensor also has an output wire. This output wire when connected to the siren's Power Board will pulse a logic signal from high to low. There is a pull-up resistor on the Power Board from the output wire pin to 12 Volts DC. When the sensor is at an open state, the pull-up resistor applies 12 Volts DC to the input pin. As the siren head rotates, it causes the armature of the rotation sensor to spin and causes the sensor to close and apply a ground signal to the output wire. When the sensor is at a closed state this causes a transition to the logic low position. The Compulert FSK system can be programmed to count these logic transitions. The Compulert system can be programmed any where from 1 count to 255 counts before the status acknowledges a valid rotation condition. Typically, 3 to 5 counts are used on most system. There is a red rotate LED located on the Power board for visual inspection of these logic pulses. This is handy for aligning and testing of the rotation sensor assembly.

Installation

The rotation sensor comes with the sensor circuit board and armature along with a PVC enclosure and cap. The rotation sensor's cap and enclosure has some pre-drilled holes to allow it to be mounted directly to the top of the collector ring assembly inside the siren head. See Figure 7.

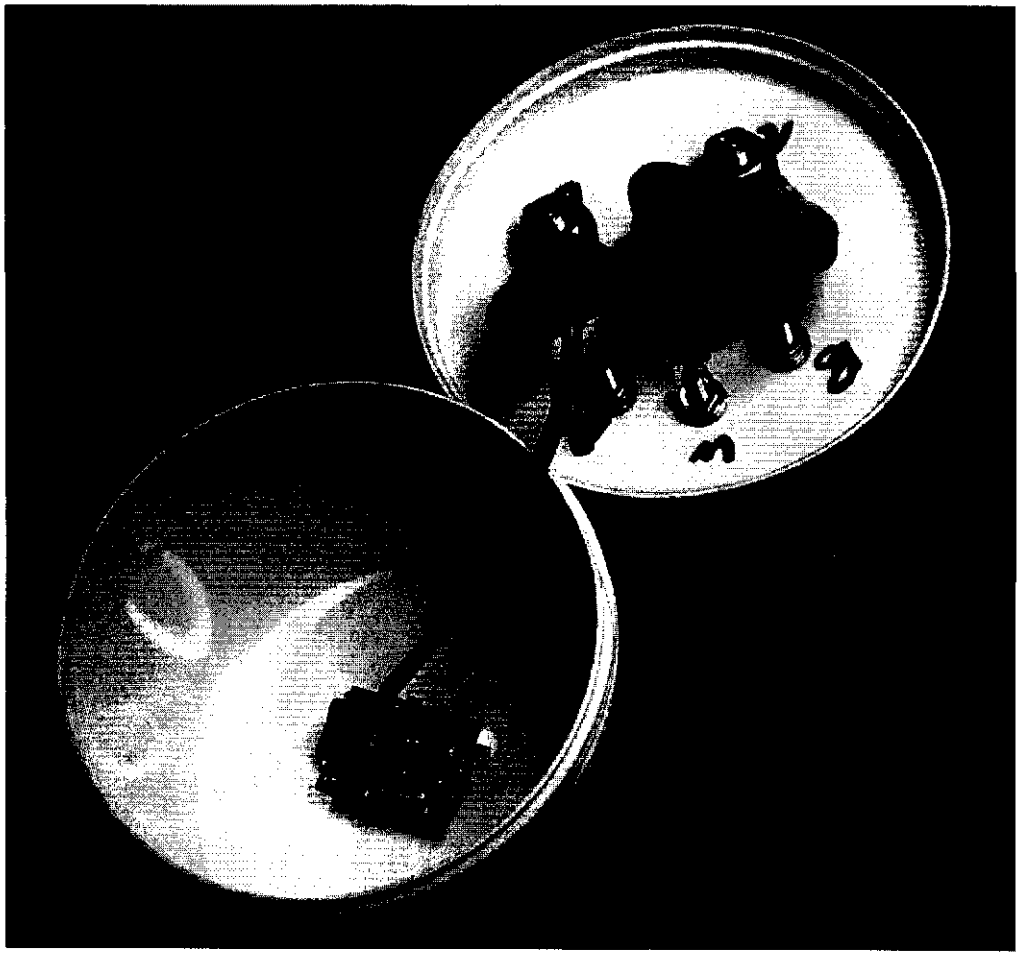


Figure 7

The 3-conductor cable assembly is then fished down inside the center opening of the collector ring assembly and out the bottom base of the siren head. The wires should be terminated in the base of the siren head to a 3-conductor cable and ran down the pole in conduit. The conductor cable should be run into the siren's main control box. The wires to the sensor should be terminated to the proper location.

Wiring

Tempest DC Control Box:

The rotation sensor has three wires to connect into the siren's DC control box. All of the sensor wires are terminated to the main 17-position terminal block. Connect the sensor's wires as follows:

Sensor Wire Color	DC Siren Control Pin
Red Wire	TB1-Pin 12
Green Wire	TB1-Pin 13
Black Wire	TB1-Pin 14

From there they are connected to the power board. The sensor has a black wire, which is ground. The ground is obtained from the power board. The sensor has a red wire, which is power into the sensor. The sensor has a green wire, which is the sensor's output wire. The sensor's output is fed into the power board as an input. This wire makes the rotation LED blink on the power board when the rotation sensor is adjusted and connected properly and the siren head is rotated around.

Tempest AC w/ RTU-2001 Control Box:

The rotation sensor has three wires to connect into the siren's RTU-2001's AC Power Supply PCB. All of the sensor wires are terminated to the main J3/J4 Connector on this circuit board. Connect the sensor's wires as follows:

Sensor Wire Color	DC Siren Control Pin
Red Wire	J3/J4-Pin 12
Green Wire	J3/J4-Pin 13
Black Wire	J3/J4-Pin 14

From there they are connected to the power board. The sensor has a black wire, which is ground. The ground is obtained from the power board. The sensor has a red wire, which is power into the sensor. The sensor has a green wire, which is the sensor's output wire. The sensor's output is fed into the power board as an input. This wire makes the rotation LED blink on the power board when the rotation sensor is adjusted and connected properly and the siren head is rotated around.

Testing

After the sensor has been secured to the siren head's collector ring and the wiring connected to the siren control box, double-check all connections. If you are unsure about the connections to your control or have any questions, do not connect the sensor to the panel. Call the American Signal Service Department instead. You can reach them by dialing 1-800-243-2911. Any damage incurred by incorrectly installing this sensor will not be covered under warranty and may be expensive to repair. Have the model number of the siren control, siren head, customer name, and the American Signal Sales Order available before calling. You can obtain all this information from the Invoice or Packing slip you received with your equipment.

To test the rotation sensor, make sure the siren control is turned on as well as the Compulert/Power board assembly. If using a Tempest DC Siren Control, make sure the siren's batteries are fully charged. Press the Rotate button on the Compulert RTU assembly. It is next to the Cancel button. The rotate button is a momentary button. As long as you hold the button the siren head should rotate. Press and hold the Rotate button and rotate the siren head at least one full revolution. Visually inspect the Rotation LED on the power board. Make sure the Rotation LED blinks off and on steady for one full revolution at a rate of approximately once per second. Otherwise, you will receive intermittent 'No-Rotate' conditions when activating and polling the siren control.

If the LED does blink steady but is slower than that, one can check the rotation motor speed. The rotation motor speed can be adjusted up as needed. For a revolution speed of approx. 3 RPM the rotation motor voltage should be adjusted for approx. 24 Volts DC while the main siren motor is under load and sounding.

The last step is to run the siren's main motor and make sure the Rotation LED blinks. When activating either locally or remotely, the Rotation relay should automatically turn on. Run a siren activation and then have the appropriate agency Poll the siren location to verify the proper status response.

BILL OF MATERIALS

Part Number	Description	Details	QTY	UNIT
041-0186	**ROTATIONAL 128DB TEMPEST**			
001-0273	ASSEMBLY, 8 PC. HORN		1	EA
001-0274	ASSEMBLY, 2 PC. OUTER HORN		1	EA
001-0275	COVER, MOTOR, T-128		1	EA
002-0031	SCREEN, ½ X ½	51 X 51	1	EA
003-0055	STATOR, TEMPEST 128 & 121		1	EA
003-0056	ROTOR, TEMPEST 128 & 121		1	EA
004-0050	MOTOR, GEAR, RT-ANGLE		1	EA
004-0054	MOTOR, 48 VDC		1	EA
005-0041	TUBE, 1-3/4" OD ½" WALL 2" LG		4	EA
007-0018	GASKET, SPONGE RUBBER 7/16"	SLIDE-ON, SELF GRIPPING	2.5	Ft.
011-0048	GEAR, ROTATION, 100TOOTH	1.5 BOAR W/3 SET SCREWS	1	EA
011-0049	GEAR, ROTATION, 12 TOOTH	5/8" BOAR W/ KEYWAY & SCREW	1	EA
011-0052	SHIM, STEEL 1-1/8" TO 1-5/8"	.125" THICK	1	EA
018-0011	BEARING, FLANGE MOUNT	2" BOAR	2	EA
022-0001	BRUSH HOLDER CAP		3	EA
022-0002	BRUSH HOLDER		1	EA
022-0003	BRUSHES		3	EA
022-0010	COLLECTOR RING (5 RING)		1	EA
035-0035	CRATE	56"L x 54"W X 59H"	1	EA
042-0567	BASE, DRIVE		1	EA
042-0568	PLATE, COVER		1	EA
042-0569	BOX, ROTATION		1	EA
042-0571	PLATE, MOTOR MTG., DRIVE		1	EA
042-0572	BRACKET, LIFTING		1	EA
042-0573	BRACKET, "L" REAR		1	EA
042-0581	BRACKET, BRUSH HOLDER		1	EA
042-0587	ROTATION, PULSE, DISK		1	EA
051-0166	COUPLER, FE, 22-18 AWG, F-I		2	EA
051-0167	COUPLER, MALE, 22-18AWG, F-I		2	EA
051-0169	COPPER MECHANICAL LUG		3	EA
051-0170	TERMINAL, RING 4 AWG 3/8" HOLE		4	EA
051-0171	TERMINAL, RING, 4 AWG #10 HOLE		2	EA
051-0229	TERMINAL, RING, 16-14AWG	3/16 HOLE #10 STUD	1	EA
051-0257	TERMINAL, RING, 16-14AWG		2	EA
075-0037	WIRE, 16 AWG RED STRANDED	UL1015 TEW16-1G	10	FT
075-0043	WIRE, 16 AWG BLACK		2	FT

Part Number	Description	Details	QTY	UNIT
075-0073	WIRE, 4 AWG HYPALON		12	FT
079-0020	WASHER, FLAT #8 ZINC		16	EA
079-0036	WASHER, STAR #10 INT – ZINC		2	EA
079-0037	NUT, #10-32 HEX MACHINE		2	EA
079-0049	WASHER, FLAT ½ ZINC		4	EA
079-0050	NUT, ½-13 HEX HEAD – ZINC		4	EA
079-0110	RIVET, POP 3/16" ALUM	LARGE FLANGE	9	EA
079-0116	SCREW, #10-32 X 2 PAN HD	SLOTTED	2	EA
079-0127	NUT, ¼-20 HEX HEAD S/S	STAINLESS STEEL	8	EA
079-0128	WASHER, LOCK ¼ SS	STAINLESS STEEL	28	EA
079-0129	WASHER, FLAT ¼ SS	STAINLESS STEEL	28	EA
079-0133	WASHER, FLAT 5/16 SS	STAINLESS STEEL	8	EA
079-0147	BOLT, CARRAGE, ½-13 X 4	ZINC	4	EA
079-0165	BOLT, ½-13 X 1-1/2 S/S	HEX HEAD STAINLESS STEEL	8	EA
079-0167	WASHER, FLAT ½ SS	STAINLESS STEEL	1	EA
079-0168	NUT, ½-13 HEX SS	STAINLESS STEEL	8	EA
079-0169	WASHER, LOCK ½ SS	STAINLESS STEEL	8	EA
079-0172	WASHER, FLAT 3/8" SS	STAINLESS STEEL	42	EA
079-0211	WASHER, FLAT ¾, ZINC PLATED		4	EA
079-0242	WASHER, FLAT 5/16" FENDER	ZINC 1-1/4" OD	1	EA
079-0251	WASHER, LOCK 3/8 18-8 SS		38	EA
079-0270	SCREW, #8 X ¾" TEK		4	EA
079-0272	BOLT, EYE, ½-13 X 6		1	EA
079-0275	BOLT, 3/8-16 X 1-1/2" SS	STAINLESS STEEL	39	EA
079-0276	BOLT, ¼-20 X ¾ SS	STAINLESS STEEL	19	EA
079-0277	BOLT, ½-20 X 1-1/2 SS	HEX HEAD	1	EA
079-0286	BOLT, ¾-10 X 5" HEX HEAD	ZINC PLATED	4	EA
079-0292	FASTNER, JACK NUT	¼" – 20 SCREW SIZE	4	EA
079-0311	WASHER, FLAT ¼" FENDER SS	1-1/4" OD STAINLESS STEEL	12	EA
084-0001	DECAL, WARNING		1	EA
084-0004	DECAL, "TURN POWER OFF"		1	EA
084-0005	DECAL, WEAR EAR PROTECTION		1	EA
084-0006	DECAL, ROTATION		1	EA
084-0007	DECAL		1	EA
084-0008	PLATE, SERIAL NUMBER, BRASS		1	EA
084-0086	DECAL, ASC LOGO		2	EA
084-0090	DECAL, "UL"		1	EA
210-0069	COATING, TEFLON		.25	EA

Part Number	Description	Details	QTY	UNIT
083-0561	**TEMPEST DC CONTROL 2000**			
066-0043	TEMPEST DC CONTROL BOX		1	EA
035-0037	CRATE, TEMPEST DC CONTROL		1	EA
042-0450	BRACKET DOOR SWITCH		2	EA
042-0597	BRACKET MOUNTING CONTROL		2	EA
042-0598	BRACKET, BATTERY SHELF		1	EA
052-0016	SWITCH, SPST, N.O. PLUNGER		2	EA
063-0046	CORD GRIP, REMKE RSR109		1	EA
063-0144	CORD GRIP, REMKE .188" - .312		1	EA
063-0152	LOCK NUT, PIPE ½		4	EA
063-0170	CORD GRIP, REMKE .375 - .428		2	EA
065-0153	ENCLOSURE, NEMA 4X, 24X24X8	STANDARD CABINET	2	EA
079-0005	NUT, #6-32 X HEX ZINC		4	EA
079-0008	SCREW, #6-32 X ¾	ROUND HEAD PHILLIPS	4	EA
079-0010	WASHER, STAR #6 INTERNAL ZINC		4	EA
079-0017	WASHER, FLAT #6 ZINC		4	EA
079-0055	WASHER, FLAT 3/8 ZINC		4	EA
079-0068	NUT, 5/16-18 HEX MACHINE ZINC		8	EA
079-0069	WASHER, FLAT 5/16 ZINC		8	EA
079-0090	WASHER, STAR 3/8 INT/EXT-ZINC		4	EA
079-0103	5/16 MEDIUM SPLIT LOCK WASHER		8	EA
079-0111	RIVET, POP 3/16" X .675" SS		8	EA
079-0128	WASHER, LOCK ¼ SS	STAINLESS STEEL	4	EA
079-0129	WASHER, FLAT ¼ SS	STAINLESS STEEL	8	EA
079-0226	BOLT, LAG 3/8 X 3-1/2 ZINC	PLATED	4	EA
079-0276	BOLT, ¼-20 X ¾ SS	STAINLESS STEEL	4	EA
079-0299	BOLT, CARRAGE 4/16-18 X 1-1/2"		4	EA
079-0309	NUT, CHANNEL 8/32 BLN		2	EA
079-0310	NUT, CHANNEL ¼-20 BLN		4	EA
084-0001	DECAL, WARNING		1	EA
084-0004	DECAL, "TURN POWER OFF.."		1	EA
084-0005	DECAL, WAR EAR PROTECTION		1	EA
084-0051	DECAL, POSITIVE SIGN +		1	EA
084-0052	DECAL, NEGATIVE SIGN		1	EA
084-0086	DECAL, ASC LOGO		1	EA
084-0090	DECAL, "UL"		1	EA
084-0092	FILM, APPLIQUE DAFR8	FOR RTU PRINTS	2	EA
088-0003	RUBBER FEET		1	EA
088-0008	PLUG, VENT 7/8		4	EA
093-1055	TEMPEST BATTERY CABLE KIT		1	EA

Part Number	Description	Details	QTY	UNIT
083-0559	**PANEL, 48VDC CONTROL 2000**			
007-0009	GASKET, ½" X 2" W/PSA		2	FT
042-0443	MOUNTING CHANNEL S/D		.60	FT
042-0593	CHARGER COVER PLATE		1	EA
042-0594	CHARGER BASE PLATE		1	EA
042-0594	CHARGER BASE PLATE		1	EA
042-0599	PANEL, 22.5 X 22.5 CONTROL	ECLIPSE ENCLOSURE	1	EA
050-0042	TRANSFORMER, WALL, 9VAC		1	EA
051-0006	TERMINAL, RING, 22-18 AWG	#8 RING	3	EA
051-0041	CLAMP, BATTERY, AUTO TYPE		2	EA
051-0046	DISCONNECT, FE, 90EG, INSUL	INSULATED 3/16	4	EA
051-0075	TERMINAL, RING, 16-14 AWG	3/8:	4	EA
051-0101	COUPLER, FEMALE, 16-14 AWG	F-1 ¼	5	EA
051-0166	COUPLER, FE, 22-18 AWG	F-I	15	EA
051-0167	COUPLER, MALE, 22-18 AWG	F-I	4	EA
051-0170	TERMINAL, RING 4 AWG 3/8" HOLE		6	EA
051-0189	POLARIZING KEY, 0.156		2	EA
051-0190	TERMINAL, CRIMP 0.156		4	EA
051-0191	CONNECTOR, 8 POS 0.156		3	EA
051-0199	TERMINAL, CRIMP, 100		2	EA
051-0257	TERMINAL, RING, 16-14 AWG	7/16W #10 HOLE	1	EA
051-0266	POWER STRIP, 5-OUTLET	INTERMATIC	1	EA
052-0016	SWITCH, SPST, N.O., PLUNGER		2	EA
052-0029	THERMOSTAT, SNAP ACTION		1	EA
052-0081	DISCONNECT, 100A		1	EA
060-0002	LIGHTNING PROTECTOR,		1	EA
063-0011	TRW JUMPER STRAP 601-J		1	EA
063-0025	GROUND LUG ITT WEAVER		1	EA
063-0135	FUSE HOLDER BUSS S8301		2	EA
063-0138	TERMINAL BLOCK GR6		17	EA
063-0139	END CLAMPS SCREW ON		2	EA
063-0141	END BARRIER		1	EA
063-0149	SPACER, HEX, 4-40 X ½"	F/F .187	4	EA
063-0173	SPACER, HEX, 4-40 X ¾" .187 FF		6	EA
063-0176	WIRE LUG, 1/0		1	EA
073-0685	RESISTOR 680 OHM 25 WATT		2	EA
075-0001	WIRE, 22 AWG RED UL 1061		2	FT
075-0006	WIRE, 22 AWG BLACK UL1061		2	FT
075-0007	WIRE, 18 AWG RED STRAND		1.34	FT
075-0012	WIRE, 8 AWG YELLOW UL1015	STRANDED	1.67	FT
075-0013	WIRE, 18 AWG BLUE UL1015		1.67	FT
075-0014	WIRE, 18 AWG BLACK UL1015		5.42	FT
075-0036	WIRE, 22 AWG GREEN UL 1061		2	FT
075-0037	WIRE, 16 AWG RED STRANDED		1.84	FT
075-0045	WIRE, 14 AWG BLUE		5	FT
075-0047	WIRE, 14 AWG RED		5	FT
075-0070	WIRE, 16 AWG ORANGE		1.84	FT
075-0071	WIRE, 14 AWG YELLOW	STRANDED UL1015	5	FT
075-0079	WIRE, 16 AWG BLUE		2.17	FT
075-0082	WIRE, 16 AWG YELLOW		2.17	FT
075-0083	WIRE, 14 AWG ORANGE		5	FT
075-0084	WIRE, 18 AWG VIOLET		1.84	FT
075-0087	WIRE, 16 AWG GREEN		.60	FT
075-0090	WIRE, 18 AWG BROWN		14	FT
078-0057	FUSE, SLOW, 2a, 250V 3AG		2	EA
079-0013	WASHER, STAR #4 INTERNAL	ZINC	6	EA

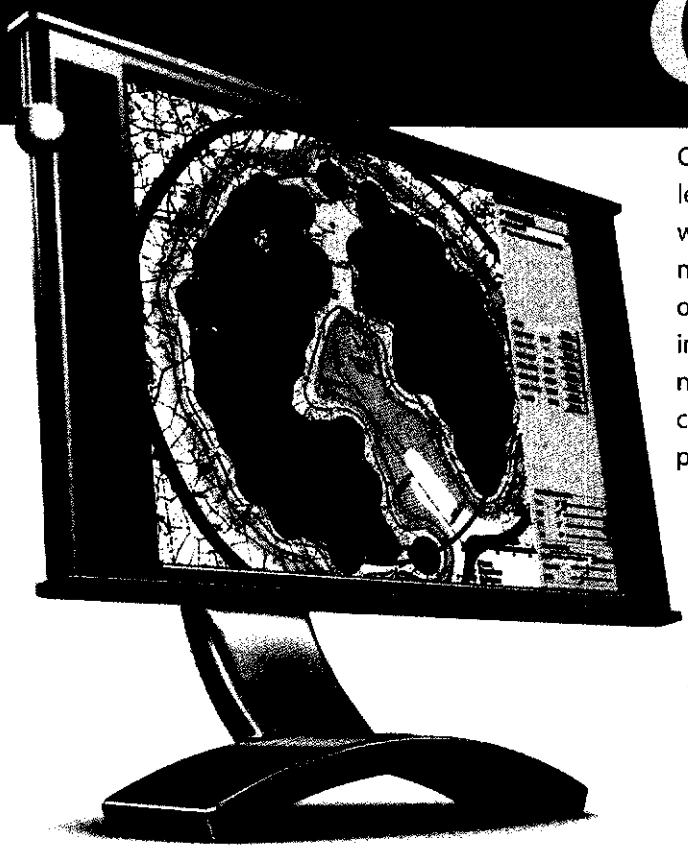
079-0021	SCREW, #4-40 X ¼ BINDER	HEAD ZINC	4	EA
079-0022	SCREW, #6-32 X ½ PANHD	SHEET METAL	8	EA
079-0057	SCREW, #6-32 X 1" PAN PH ZINC		2	EA
079-0270	SCREW, #8 X ¾" TEK	HEX HEAD – ZINC	4	EA
079-0271	SCREW, #10 X 1" TEK	HEX HEAD- ZINC	1	EA
079-0291	SCREW, #6 X ½" SELF TAP	HEX HEAD	12	EA
080-0149	BOARD, LOGIC ASSY. 48VDC		1	EA
080-0149A	PCB BOARD, BARE LOGIC ASSY		1	EA
080-0152	BOARD, DC CONTACTOR		1	EA
063-0176	WIRE LUG, 1/0		1	EA
070-0035	CONTACTOR CT300A-48D7	W/DIODE	1	EA
078-0063	FUSE, 200 AMP, T-TRON		1	EA
079-0005	NUT, #6-32 X HEX ZINC		2	EA
079-0017	WASHER, FLAT #6 ZINC		2	EA
079-0022	SCREW, #6-32 ½ PANHD	SHEET METAL	1	EA
079-0038	SCREW, #10-32 X 3/8 PHILL	PAN HEAD SCREW ZINC	2	EA
079-0301	WASHER, STAR #10 INTERNAL	SS – STAINLESS STEEL	2	EA
079-0302	NUT, 10-32 STAINLESS STEEL		2	EA
080-0152A	PCB, DC CONTACTOR BLANK	BOARD	1	EA
083-0546	CHARGER, BATTERY, 12Vdc		4	EA
088-0004	CABLE TIES, SMALL		2	EA
088-0040	CABLE TIE HOLDER 1" X 1"		2	EA
088-0060-2	WIRING DUCT 1" X 2"		2.67	FT
088-0061	WIRING DUCT CAP 1"		2.76	Ft
088-0125	TAPE, VINYL FOAM DBL SIDED 2"		.167	FT

Part Number	Description	Details	QTY	UNIT
083-0563	**TEMPEST AC CONTROL**			
035-0036	CRATE, AC OPTION	40 X 34 X 20	1	EA
066-0044	TEMPEST AC CONTROL	ENCLOSURE ASSEMBLY	1	EA
042-0597	BRACKET, MOUNTING, CONTROL	BOX TEMPEST	2	EA
065-0153	ENCLOSURE, NEMA4X	24"X24"X8" STANDARD CAB.	1	EA
079-0005	NUT, #6-32 X HEX ZINC		2	EA
079-0008	SCREW, #6-32 X ¾	ROUND HEAD PHILLIPS	2	EA
079-0010	WASHER, STAR #6 INTERNAL	ZINC	2	EA
079-0017	WASHER, FLAT #6 ZINC		2	EA
079-0055	WASHER, FLAT 3/8 ZINC		4	EA
079-0090	WASHER, STAR 3/8 INT/EXT-ZINC		4	EA
079-0172	WASHER, FLAT 3/8" SS	STAINLESS	4	EA
079-0226	BOLT, LAG 3/8 X 3-1/2	ZINC PLATED	4	EA
079-0251	WASHER, LOCK 3/8 18-8 SS		4	EA
079-0309	NUT, CHANNEL 8/32 BLN		1	EA
083-0562	TEMPEST, AC CONTROL PANEL	MC-240-AC 2000	1	EA

Part Number	Description	Details	QTY	UNIT
083-0562	**PANEL, TEMPEST AC CONTROL**			
083-0562	TEMPEST, AC CONTROL PANEL	MC-240-AC 2000	1	EA
049-0120	RECTIFIER, POWER, 200A		1	EA
050-0048	TRANSFORMER, TEMPEST	208/240VAC W/96V C.T.	1	EA
051-0026	TERMINAL, RING, 2AWG 3/8" HOLE		3	EA
051-0038	DISCONNECT, FE, 90DEG, INSUL	INSULATED ¼	2	EA
051-0046	DISCONNECT, FE, 90 DEG, INSUL	INSULATED 3/16	2	EA
051-0050	TERMINAL, RING, 16-14AWG	¼" HOLE	1	EA
051-0191	CONNECTOR, 8 POS, 0.156		1	EA
052-0016	SWITCH, SPST, N.O. PLUNGER		1	EA
063-0063	SPACER, HEX, 6-32 X ½" M/F		6	EA
063-0160	HEAT SINK, 6X5X5		1	EA
063-0161	TERMINAL BLOCK, 600V ACDC	CONNECTOR STUD 2 AWG ¼-20	3	EA
065-0152	PANEL FOR A NEMA 4X		1	EA
074-0079	RESISTOR, 100 OHM, 280-168		1	EA
075-0012	WIRE, 8 AWG YELLOW UL1015	STRANDED	10	FT
075-0013	WIRE, 18 AWG BLUE UL1015		10	FT
075-0052	WIRE, 18 AWG ORANGE UL1015		10	FT
075-0090	WIRE, 18 AWG BROWN UL1061		4	FT
079-0006	SCREW, #6/32 X 3/8 RDHD P		8	EA
079-0023	NUT, ¼-20 HEX MACHINE ZINC		4	EA
079-0036	WASHER, STAR #10 INT – ZINC		6	EA
079-0037	NUT, #10-32 HEX MACHINE		6	EA
079-0052	BOLT, ¼-20 X 5/8" ZINC	HEX HEAD	6	EA
079-0053	BOLT, 3/8-16 X 1" ZINC		4	EA
079-0055	WASHER, FLAT 3/8 ZINC		4	EA
079-0086	SCREW, ¼-20 X ½" ZINC	ROUND HEAD SLOTTED	2	EA
079-0090	WASHER, STAR 3/8 INT/EXT ZINC		4	EA
079-0128	WASHER, LOCK ¼ SS	STAINLESS STEEL	14	EA
079-0129	WASHER, FLAT ¼ SS		11	EA
017-0171	NUT, 3/8-16 HEX HEAD SS		4	EA
079-0172	WASHER, FLAT 3/8" SS	STAINLESS STEEL	4	EA
079-0196	SCREW, #10-32 X ¾ RD PH ZINC		4	EA
079-0271	SCREW, #10 X 1" TEK	HEX HEAD – ZINC	6	EA
080-0152	BOARD, DC CONTACTOR		1	EA
063-0176	WIRE LUG, 1/0		1	EA
070-0035	CONTACTOR CT300A-48D7 W/DIODE		1	EA
078-0063	FUSE, 200AMP, T-TRON		1	EA
079-0005	NUT, #6-32 X HEX ZINC		2	EA
079-0017	WASHER, FLAT #6 AINC		2	EA
079-0022	SCREW, #6-32 X ½ PANHD	SHEET METAL	1	EA
079-0038	SCREW, #10-32 X 38 PHILL	PAN HEAD SCREWS – ZINC	2	EA
079-0301	WASHER, STAR #10 INTERNAL SS	STAINLESS STEEL	2	EA
079-0302	NUT, 10-32 STAINLESS STEEL		2	EA
080-0152A	PCB, DC CONTACTOR BLANK BOARD		1	EA
088-0004	CABLE TIES, SMALL		3	EA
088-0115	HEAT SINK, INSUL STUDS		4	EA
080-0188	BOARD, 52 VOLT REGULATOR		1	EA

Part Number	Description	Details	QTY	UNIT
083-0623	**PANEL, RTU-2001-AC DOOR MT.**			
042-0601	BRACKET, RTU LEFT		1	EA
042-0603	BRACKET, RIGHT CP3 RTU 2001		1	EA
042-0604	PANEL, RTU DOOR		1	EA
042-0606	PANEL, MAIN FRONT RTU		1	EA
042-0607	HINGE, S/S RTU 5"		2	EA
049-0124	DIODE, 1.5KE20A		1	EA
051-0101	COUPLER, Female, 16-14AWG, F-I		2	EA
051-0210	CONNECTOR, 12-PIN, IDC		1	EA
051-0220	CONNECTOR, 12-POS, SINGLE		1	EA
051-0251	COUPLER, F, 16-14AWG,F-I		2	EA
063-0173	SPACER, HEX, 4-40 X 3/4" .187"		2	EA
063-0179	TERMINAL, QUICK DISCONNECT 1/4"		1	EA
075-0042	WIRE, 16 AWG WHITE		3	FT
075-0043	WIRE, 16 AWG BLACK		3	FT
075-0046	WIRE, 14 AWG BLACK		4.5	FT
075-0047	WIRE, 14 AWG RED		4.5	FT
079-0006	SCREW, #6/32 X 3/8 RDHD P		2	EA
079-0021	SCREW, #4-40 X 1/4 BINDER HEAD		8	EA
079-0024	WASHER, STAR 1/4" INT. ZINC		4	EA
079-0086	SCREW, 1/4-20 X 1/2" ZINC		4	EA
079-0285	NUT, KEPS #6-32 (W/ STAR) ZINC		6	EA
079-0304	SCREW, #10-32 X 1/4" SEMS PH		6	EA
079-0310	NUT, CHANNEL 1/4-20 BLN		4	EA
079-0312	LATCH SPRING W/T BAR AND		1	EA
079-0313	NUT, WING #6-32 ZINC		4	EA
080-0105	COMPULERT III, MAIN BOARD		1	EA
080-0113	PCB ASSY., FRONT PANEL #3		1	EA
080-0157	BOARD, RTU 2000 AC POWER SUPPLY		1	EA
084-0092	FILM, APPLIQUE DAFR8		1	EA
084-0095	DECAL, RTU-2001		1	EA
088-0004	CABLE TIES, SMALL 4"		3	EA
088-0006	NYLATCH PLUNGER		2	EA
088-0007	GROMMET, NYLATCH		2	EA
088-0040	CABLE TIE HOLDER 1" x 1"		6	EA
088-0128	BUSHING, NYLON SPLIT		2	EA
093-1064	CABLE TEMPEST SIGNAL CABLE		1	EA

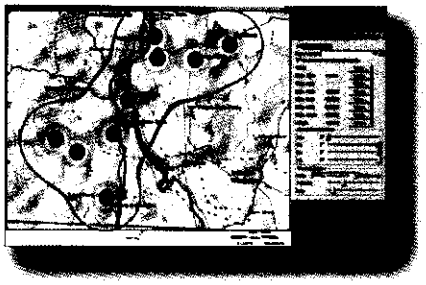
CompuLert™



CompuLert™ is the recognized industry leader in data telemetry computing of two-way "Outdoor Warning Siren" activation and monitoring equipment. With nearly 25 years of experience, it excels in meeting community, industrial, and nuclear safety application needs. CompuLert™ continues to be the choice of customers who are serious about public safety.

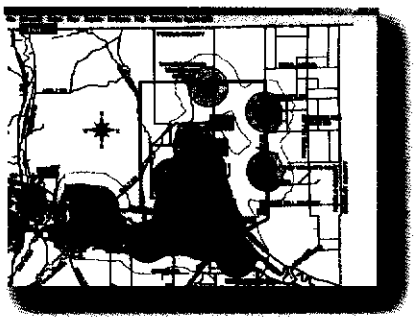
Each CompuLert™ Telemetery System Consists of:

1. **CompuLert™ Windows compatible software**
2. **Digital Universal Siren Controllers**
3. **CSC-960™ Encoder**
4. **Optional RTU interface controllers for interfacing to interior voice warning systems thereby providing coordinated information "inside and outside"**



We enjoy excellent, long-term relationships with our customers. The feedback we have received over the years has served as the building blocks of CompuLert's™ powerful and leading-edge features and options. For example, from a "dropdown" programmable menu, you can easily energize any combination of over 3,000 individually addressable digital universal controllers for sirens, interfaces to interior systems, tone-alert radios, and weather stations. When specific area notification is required, choose from 1 to 99 programmable groups, or an individual siren.

User programmable pre-scheduled testing and polling are easily accomplished from the programming menu. Just select the date, time(s) of day, and number of times per month you wish to run tests. Select from up to nine interactive maps, ranging from county-wide to individual community map views - perfect for county systems where dispatchers activate sirens for their community.



Multiple tone signals, live P.A., and pre-recorded messages are easily activated from CompuLert's™ control equipment, enhancing the performance of any electromechanical or electronic siren system.

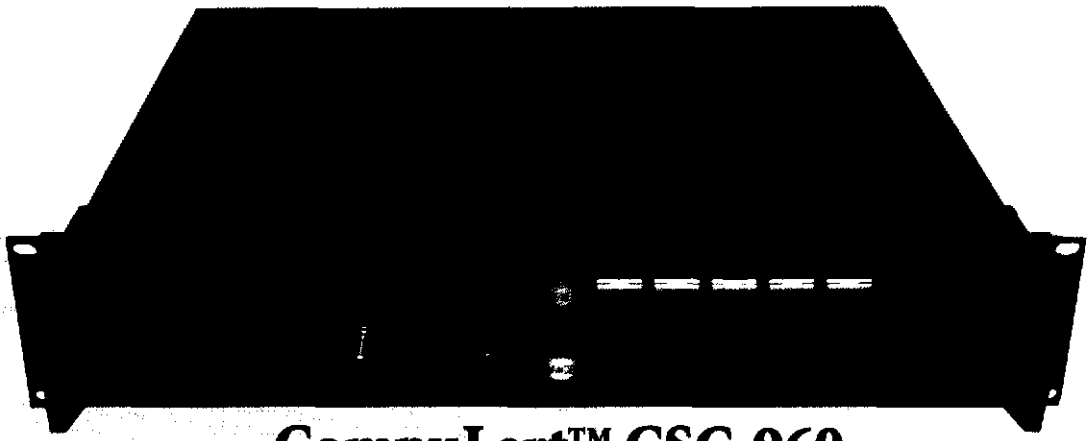
- More than 25 years of field use, reliability and experience.
- Dispatcher friendly, easy to-use, drop down menus with point-and-click operation throughout.
- Customized interactive (quality color presentation) maps with color coded siren icons, provide visual display of siren status and emergency signal activation.
- Proven reliability with user defined system testing, polling, and status reporting.
- Trouble detection alarms notify operator(s) of impending danger due to equipment degradation or failure.
- "Minimum Transmit Time" testing quickly frees up shared radio frequencies for other emergency communication use.
- Robust digital FSK encode/decode protocol for premium level of security and assured operation - even in the most difficult of environments.
- Can interface with DTMF or TTS for compatibility with other existing equipment.
- Compatible with any siren equipment.
- Control redundancy provided with battery back-up from the CSC-960 encoder Access from any authorized PC using remote access communication software.
- Windows 2000/XP compatible.

AMERICAN SIGNAL CORPORATION

TOLL FREE 1 (800) 243 2911 • PHONE 1 (414) 358-8000 • FAX 1 (414) 358-8008 • EMAIL: contactus@americansignal.com

CSC-960™

Command and Control System



CompuLert™ CSC-960

The CSC-960™ encoder combines maximum flexibility with convenience of operation for new or existing *"Outdoor Warning Siren Systems" as well as interfacing to interior Mass Notification Systems used for* emergency warning. Use it as a stand-alone unit, or in multiple-controller arrangements of a 1-way or 2-way control system. Compatible with both DTMF or digital FSK data-tone protocols, it may be used to upgrade your existing equipment, or as a controller for your new warning system. For enhanced operation, connect the CSC-960™ to a new or existing PC using a Windows operating system.

Designed with mounting in mind, the CSC-960™ is easily installed on a desktop, in a 19" rack-mount configuration, or integrated into an existing dispatch console to conserve space.

The CompuLert™ CSC-960™ configuration is determined by the feature set you need as well as the number of RTUs required for sirens and building system interface. For 2-way systems with up to 15 sirens, the CSC-960™ and printer will provide critical status information relating to the operational status of the warning siren equipment. Beyond 15 sirens, the PC Windows adjunct is generally more suitable. For large systems, or where communities require the benefit of enhanced control system(s) features, an operator work station can be provided to include the powerfulCompuLert™ software for "automatic event" report generation, and other convenient features. Now the CSC-960™ will also upload and download (all) command sequences from the PC or operate independently of the PC, when simple, fast, push button activation only is required.

Installation and operation is easy! Just plug it in to any 110 VAC, 60 Hz service outlet, connect it to your radio transmitter, turn on the power, and push the tone-signal/siren(s) button(s) to activate the equipment. The CSC-960™ comes standard with battery back-up and should AC power fail, it will remain operational for a minimum of eight hours. The CSC-960™ also provides continuous operation despite operator workstation failure.

- Convenient front activation panel with 10 programmable push button standard (expandable).
- Two-way operation also configurable for one way.
- Enhanced operation available by adding our CompuLert™ Graphic User Interface software and work station with Windows 2000/XP.
- Use as stand-alone encoder with printer for two way activation and status feedback.
- Compatible with FSK, DTMF and TTS siren decoder controllers
- Communicates with ASC's RTU (Remote Terminal Unit) that can control and m[illegible] or voice or motor sirens as well as interface to interior building voice systems, (Mass Notification Systems) for emergency notification.
- Battery back up and non volatile memory for uninterupted operation during AC failures.
- Easy "plug and play" installation designed for desktop or rack mount for easy dispatch console integration.

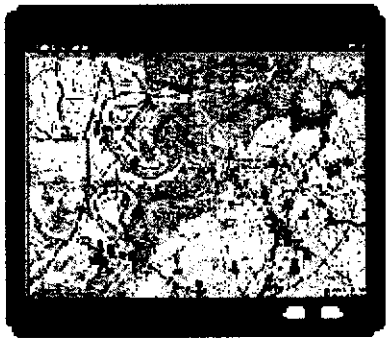
AMERICAN SIGNAL CORPORATION

TOLL FREE 1 (800) 243-2911 • PHONE 1 (414) 358-8000 • FAX 1 (414) 358-8008 • EMAIL: contactus@americansignal.com

DOCUMENT # 010-0022D
REVISION D 08-09-04

CompuLert™ Software

Operation Manual



AMERICAN SIGNAL CORPORATION

4801 W. Woolworth Avenue
Milwaukee, WI 53218
(414) 358-8000

CompuLert™ CSC-960 Encoder and Software Operation Manual

INDEX **Page**

I. **Introduction** 3-4

II. **Emergency Operating Procedure (960 Front Panel)**
- A. Activate Alert, Attack, or Fire Siren Signal 5
- B. Growl Test Operation 5-6
- C. Cancel Siren Operation 6

III. **Activation and Supervisory Procedure (Computer Keyboard)**
- A. Activate Alert, Attack, or Fire Signal 7-9
- B. Growl Test Signal 10-11
- C. Silent-Test (Poll) Siren Status 11-14
- D. Reset Siren Status 15-16
- E. Cancel Siren Operation 17

IV. **CompuLert™ Terms** 18-19

V. **Status Conditions**
- A. Silent-Test Pass (RF-OK) 20
- B. Activate OK (Test OK) 20
- C. Door Open 20
- D. Low Battery 20
- E. A.C. Fail 21

VI. **Detailed Software Description**
- A. Initialization 21
- B. File Menu 21
- C. Command and Status Menu 22-23
- D. Configuration Menus 24-31
  - 1. Sirens 25
  - 2. Events 26-28
    - a. Events Override 27-28
  - 3. Groups 28
  - 4. Demo Mode 29
  - 5. Diagnostics 29
  - 6. Paging & Email 29-31
    - a. Groups Tab 29-30
    - b. Signals Sent Tab 30
    - c. Siren Conditions Tab 30
    - d. USTAT Conditions Tab 31
    - e. Contacts (1), Contacts (2), and Contacts (3) Tabs 31
    - f. Paging and Email Configuration Notes 31
- E. Report Menu 32-33
- F. Maps Option 34-36

I. INTRODUCTION:

Model 960 Central Station Controller Front Panel

The front panel of the Model 960 has been designed to ease the use of the CompuLert™ Emergency Warning System. The following is a description of the Model 960 front panel.

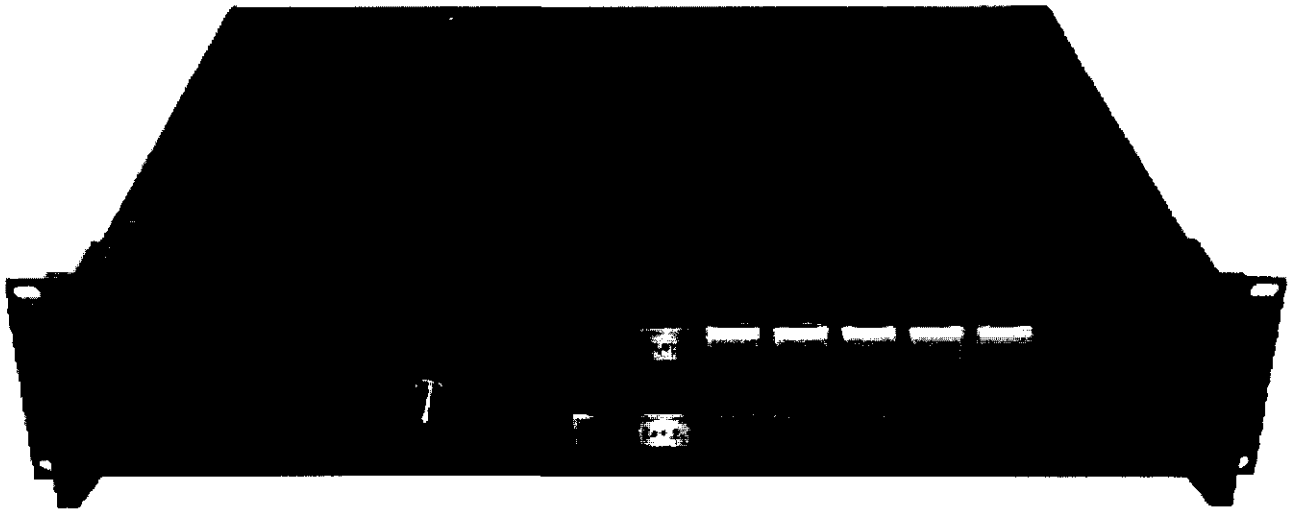


Fig. 1

The following features are found on the face of the Model CSC-960:

Alert Button
Attack Button
Fire Button
Arm Button
Cancel Button
Emergency Enable Key Switch
Transmit Indicator Light
Power Indicator Light
AC Fail Indicator Light
USTAT Reset Button

The **Alert** push-button switch causes all of the sirens in the system to activate with a steady tone for four minutes.

The **Attack** push-button switch causes all of the sirens in the system to activate with a steady tone for four minutes.

The **Fire** push-button switch causes all of the sirens in the system to activate with a steady tone for four minutes.

The **Arm** push-button switch causes all of the sirens in the system to be enabled. All sirens must be armed before they will accept an activation command to sound. Note: This function does not cause any of the sirens to sound.

The **Cancel** push-button switch stops any active siren commands and/or macros, and silences any active sirens.

The **Emergency Enable** key switch must be turned to either Arm position before the Alert push-button can be pressed. This key switch, when enabled will illuminate the appropriate button.

The **Transmit Indicator Light** shows when a siren signal is being sent out to the siren locations. This indicator only lights for a few seconds while the FSK data is being transmitted. This is usually abbreviated on the button and is shown as the word 'XMIT'.

The **Power Indicator Light** shows when the CSC-960 is turned on and powered up. This indicator should be on all the time while the power switch on the CSC-960 is in the 'ON' position.

The **AC Fail Indicator Light** shows when the CSC-960 has lost AC power. This indicator should not be on under normal operations.

The **USTAT Reset** push-button is used to cancel the USTAT speaker, strobe, or other Annunciator. If the system has detected a USTAT from a siren, it will illuminate the push-button and sound the USTAT speaker, strobe, or other Annunciator. Pressing the USTAT Reset Button will silence and acknowledge USTAT condition.

II. Emergency Operating Procedure (960 Front Panel):

A. Activate Alert, Attack, or Fire Siren Signal from Front Panel:
(Operates all Sirens in the system or can be programmed for groups or macro events up to 10 buttons)

Emergency Panel Operation

1. Turn the **Emergency Enable** key so emergency buttons on front panel light.
2. Momentarily press the **Arm (if applicable)** button to enable all of the sirens that you wish to activate. Watch for the Red Transmit Light to come on and then go off within a few seconds. This will happen twice, one for each signal transmission per macro step. This indicates the signal has been sent out.
3. Momentarily press the **Alert, Attack, or Fire** button to sound the desired signal. (Siren will stop automatically after the pre-programmed amount of time.) Watch for the Red Transmit Light to come on and then go off within a few seconds. This will happen a twice, one for each signal transmission per macro step. This indicates the signal has been sent out.
4. To cancel the Siren Tones at any time during the 3-minute period, momentarily press the **"Yellow" Cancel** button. (The **Cancel** button is always active).

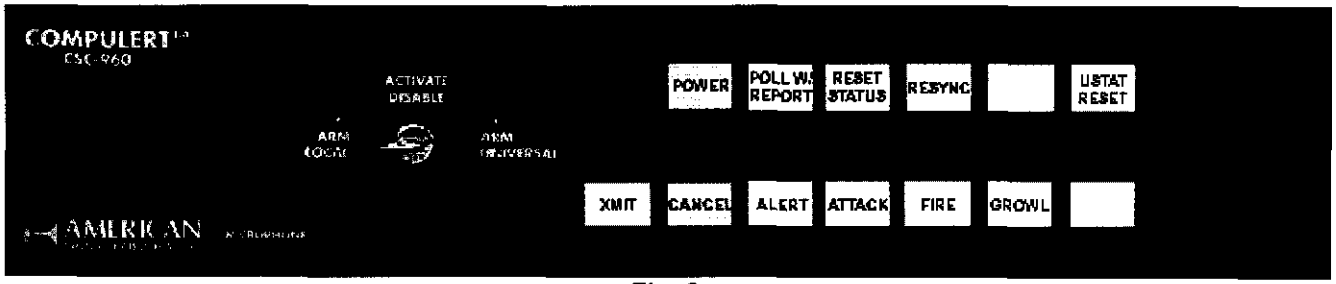


Fig. 2

II. Emergency Operating Procedure (960 Front Panel):

B. Send a Growl Test Signal from Front Panel:
(Performs a 1-second test to a group of sirens or all Sirens in the system).

Emergency Panel Operation

1. Turn the **Emergency Enable** key so emergency buttons on front panel light.
2. Momentarily press the **Arm (if applicable)** button to enable the all of sirens that you wish to activate. Watch for the Red Transmit Light to come on and then go off within a few seconds. This will happen twice, one for each signal transmission per macro step. This indicates the signal has been sent out.
3. Momentarily press one of the **Growl** buttons to execute the Growl Test function. (Siren will make a 1-second burst of sound.) Watch for the Red Transmit Light to come on and then go off within a few seconds. This indicates the signal has been sent out.

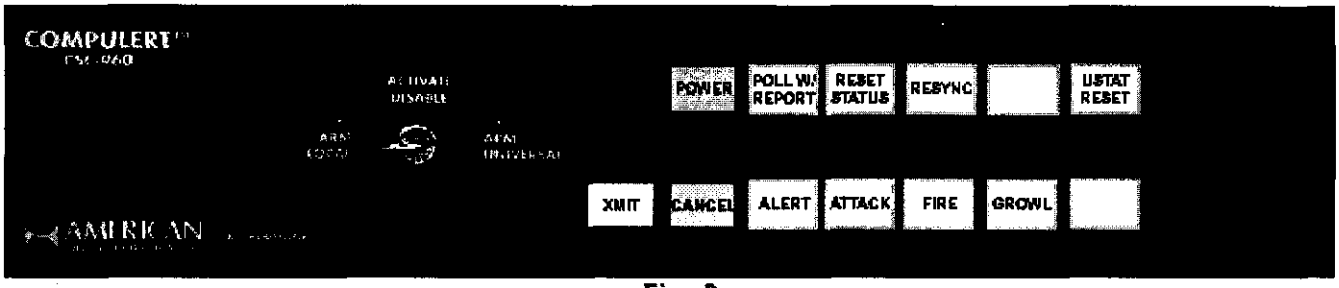


Fig. 3

II. Emergency Operating Procedure (960 Front Panel):

C. Send the **Cancel to all Sirens** in the System. Watch for the Red Transmit Light to come on and then go off within a few seconds. This indicates the signal has been sent out.

Emergency Panel Operation

1. Momentarily press the **Cancel** button; the position of the key will have no effect on this operation. (This will cause the siren to stop running no matter which command has been operated)

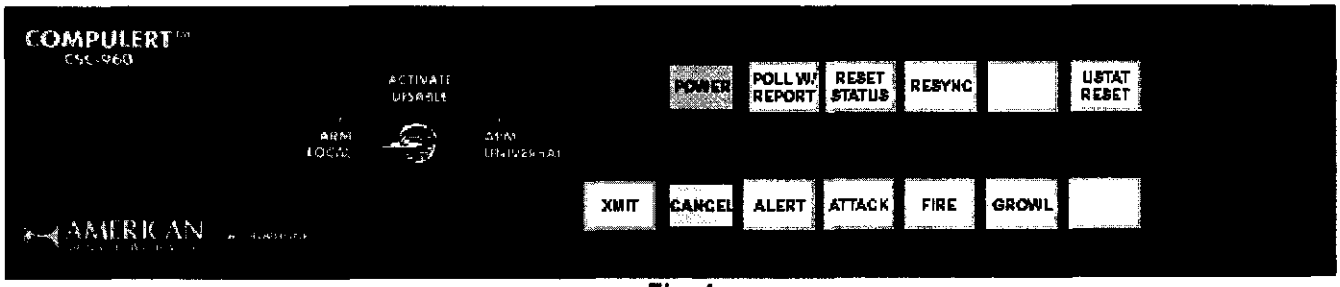


Fig. 4

III. Activation and Supervisory Procedure:

A. Activate the appropriate signal **(Alert, Attack, or Fire)** to specific Siren(s)

Computer Keyboard Operation

1. At the Main screen, select the **Command** Menu. (The **Command** menu contains all the activation commands. These are commands that turn the siren(s) on and make noise.

2. *Select the desired command from the drop down menu.*

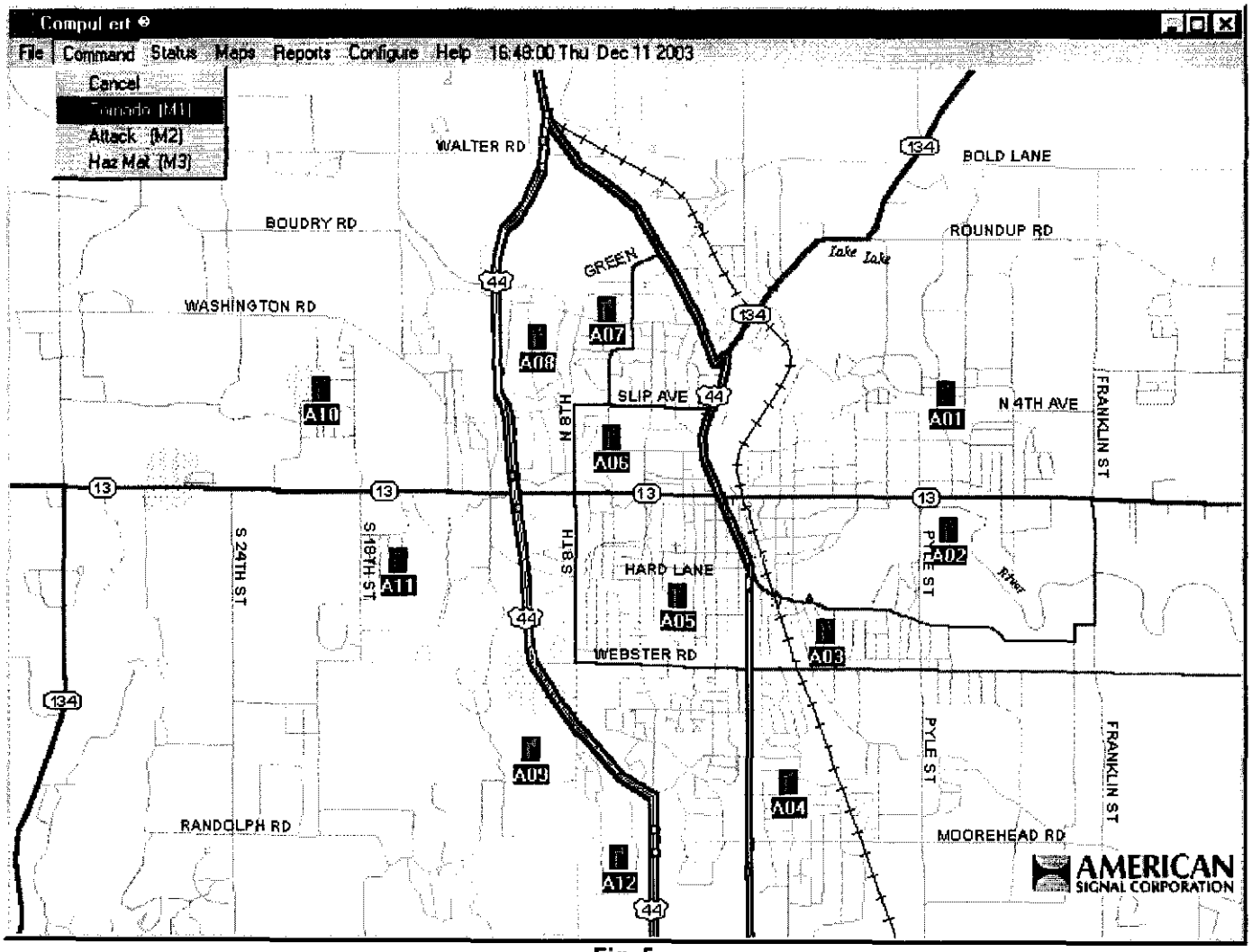


Fig. 5

3. Enter the appropriate password (If applicable), the click on the 'OK' key. Note: If you do not enter the password within 15 seconds, the sequence will abort and you will have to perform the above sequence again.

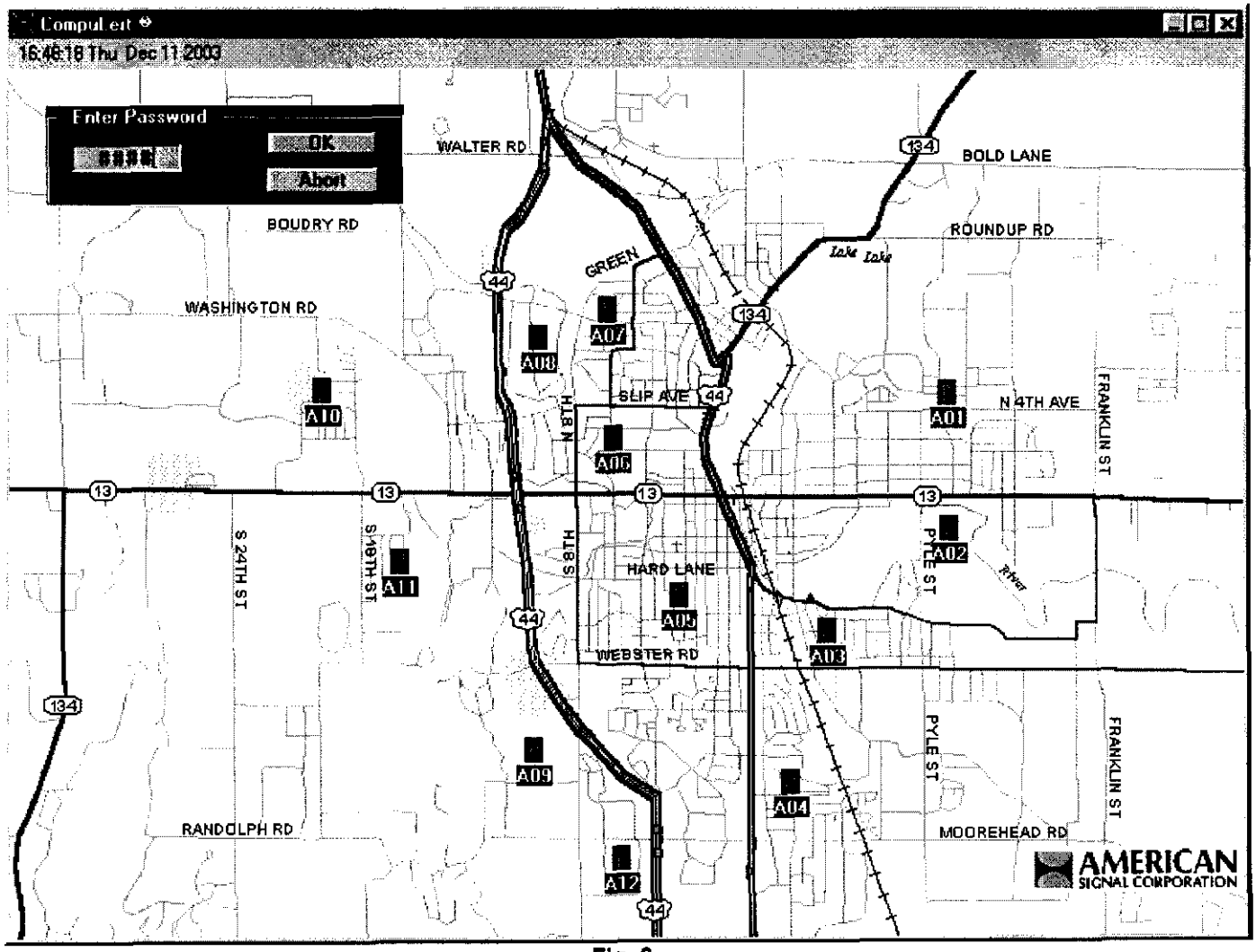


Fig. 6

4. Enter the 3-digit **Address** of the desired Siren(s) as prompted by the Computer. (I.E., for **All Call**, *** or N1* for a group call, N01 for the individual site.) You can either type in the address into the box or chose from the quick select list by clicking on the desired choice in the list. This should automatically put the address into the command box.

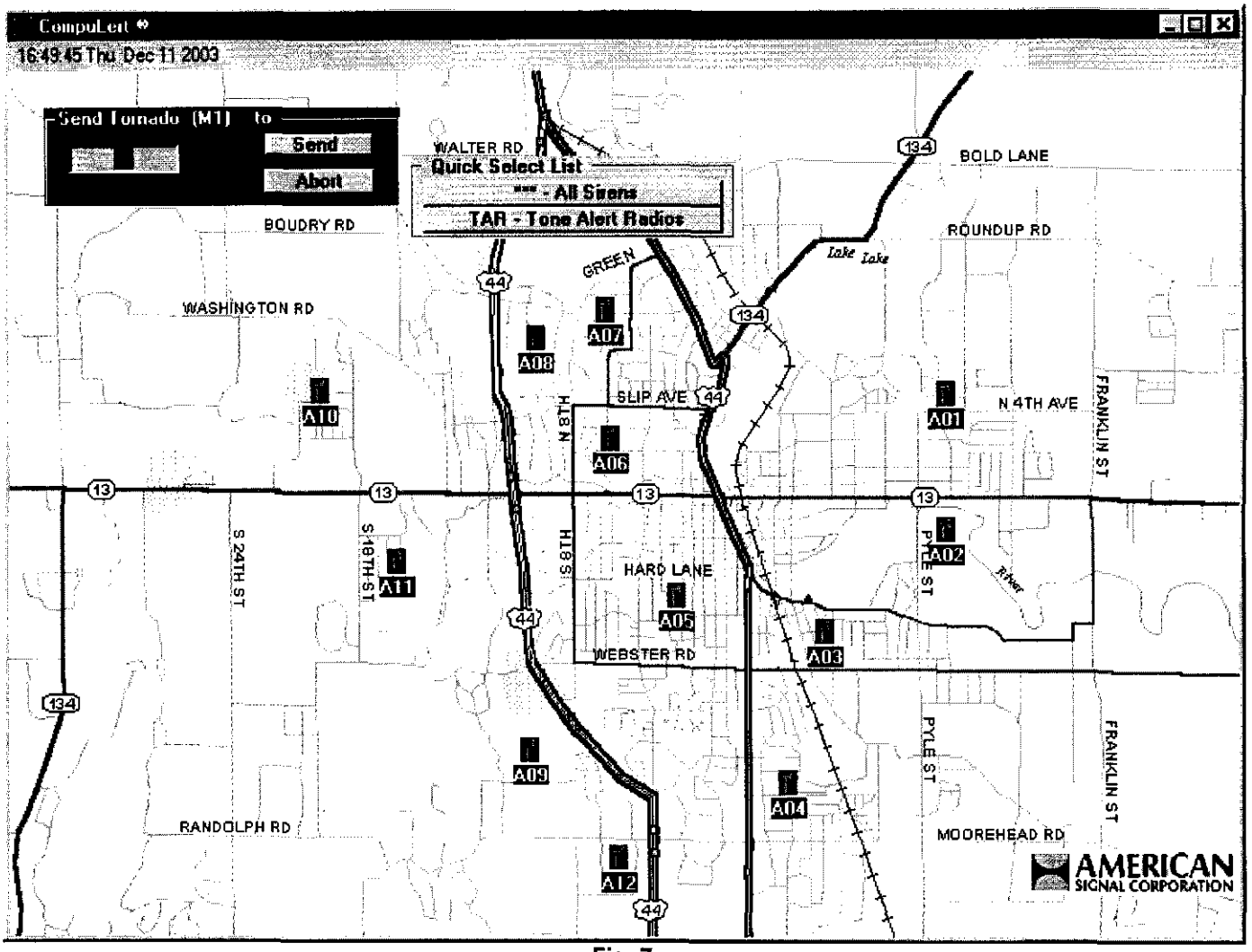


Fig. 7

5. Confirm the information before sending the data. Then press the **Send** key (or **ENTER** Key)
   - Siren(s) will stop automatically after the pre-programmed amount of time, unless Cancelled
   - Only Siren(s), which were addressed, will sound
   - Silent Test will be performed
   - Siren Activation Report will be automatically printed out

III. Activation and Supervisory Procedure:

B. Activate **Growl Signal** to specific Siren(s)

Computer Mouse/pointer/Keyboard Operation

1. Select **Command** pull down menu on the Main screen to advance either the Growl w/ Poll or Growl w/ Report Command. Note: Growl w/ Poll will Growl Test (1-second burst of siren) and Poll the selected siren(s). Growl w/ Report will Growl Test (1-second burst of siren) and Poll the selected siren(s) and print out a report automatically.

2. With the mouse or pointer, select the appropriate Growl Command. Left click to select.

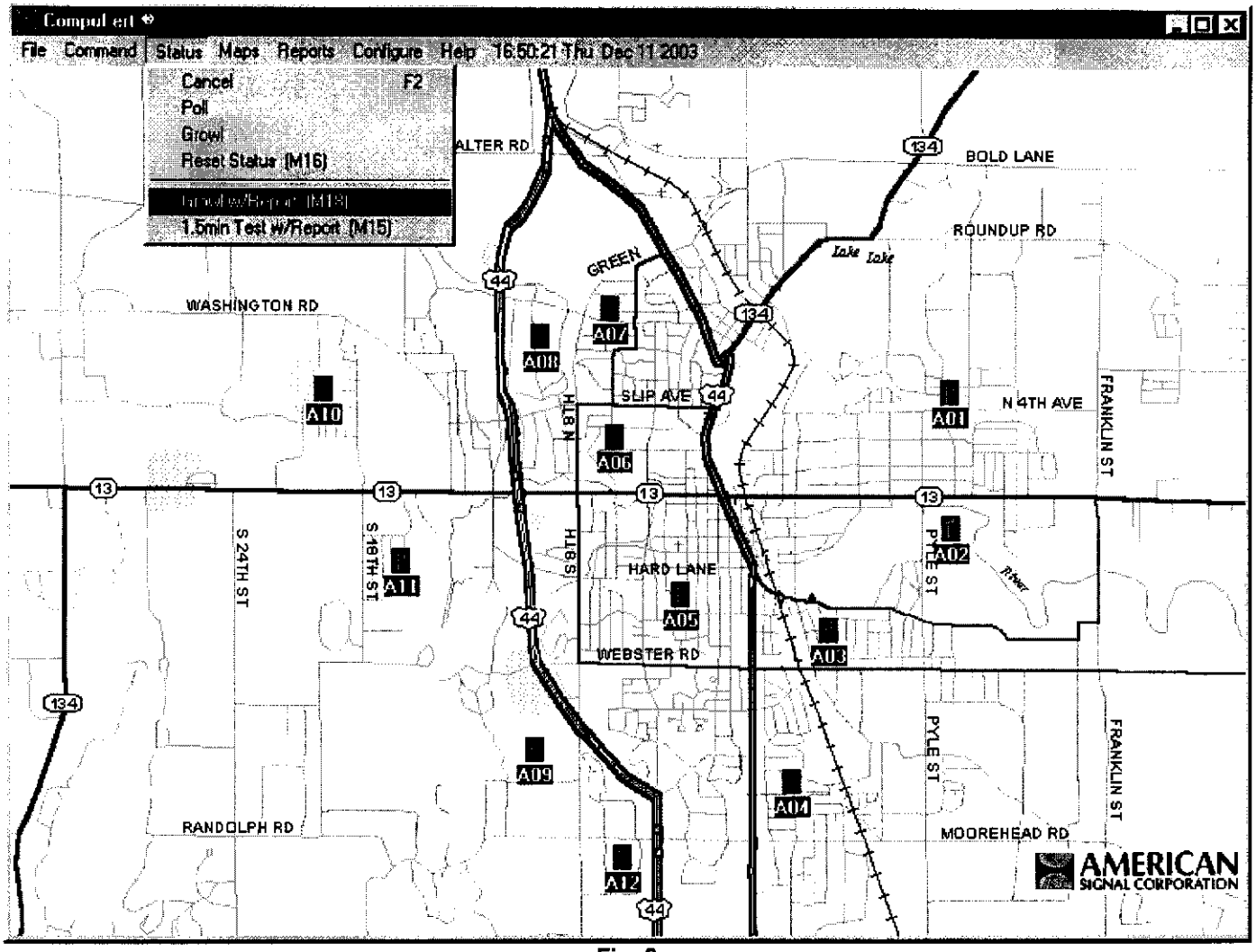


Fig. 8

3. Enter the appropriate password (if applicable), the click on the 'OK' key. Note: If you do not enter the password within 15 seconds, the sequence will abort and you will have to perform the above sequence again.

4. Enter the individual siren address, group address, or *** for all call. You can either type in the address into the box or chose from the quick select list by clicking on the desired choice in the list. This should automatically put the address into the command box.

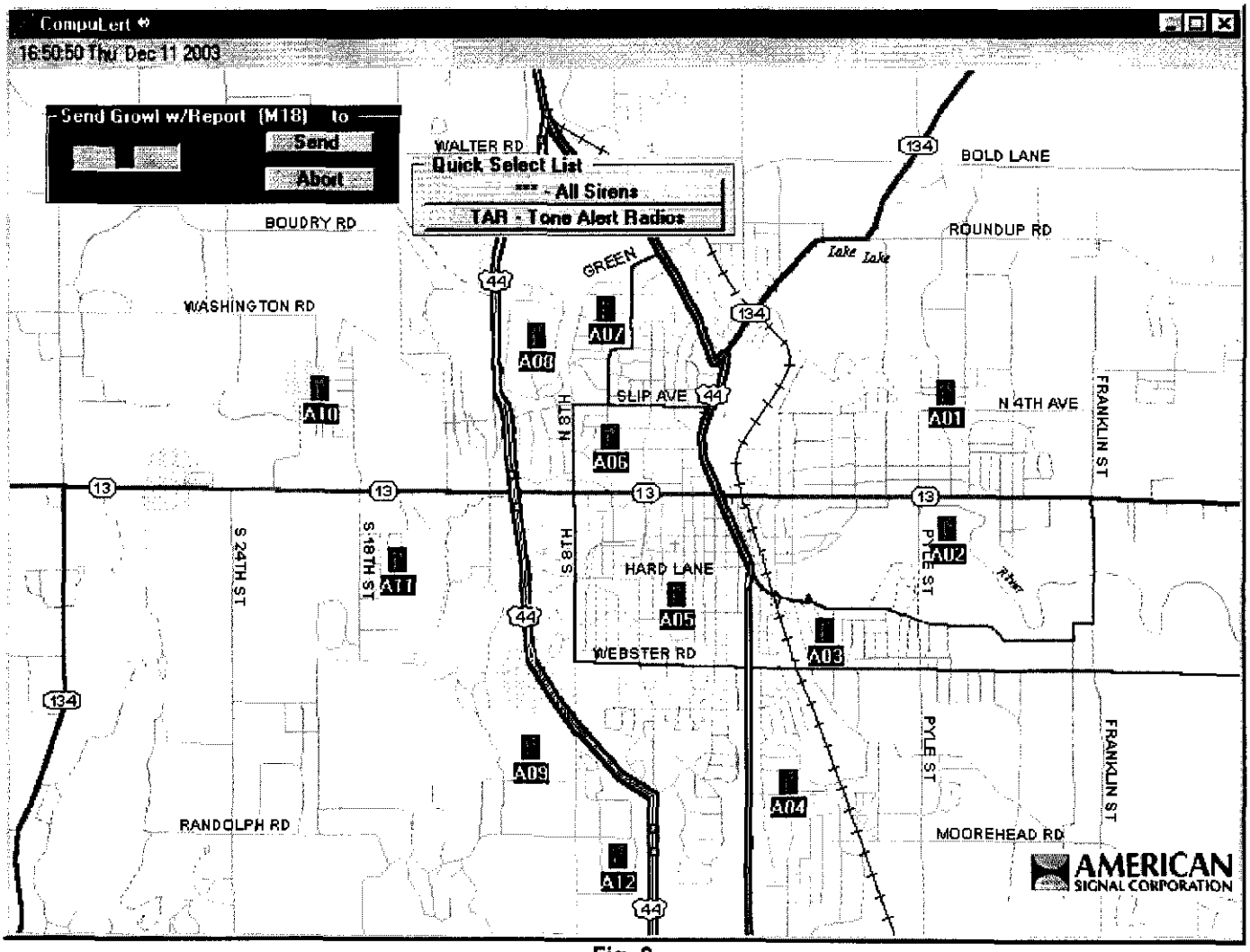


Fig. 9

5. Confirm the information before sending the data. Then press the **Send** key (or **ENTER** Key)

III. Activation and Supervisory Procedure:

C. Send **Poll, Poll w/ Report, or Silent-Test** to specific Siren(s). (**Note**: The Poll command is a radio check to determine the working status and operability of a siren. This should be done after any siren activation. The **Poll** command will not cause the Siren(s) to sound.) The Poll w/ Report or Silent-Test command will first Poll the selected sirens, then it will automatically print a report. **Note:** The Poll command under the Status Menu does the same thing, except the Poll command does not print a report.

Computer Keyboard Operation

1. Select **Status** pull down menu on the Main screen to advance to the **Poll, Poll w/ Report, or Silent-Test** Command. With the mouse or pointer, select the desired command, Left-click to select.

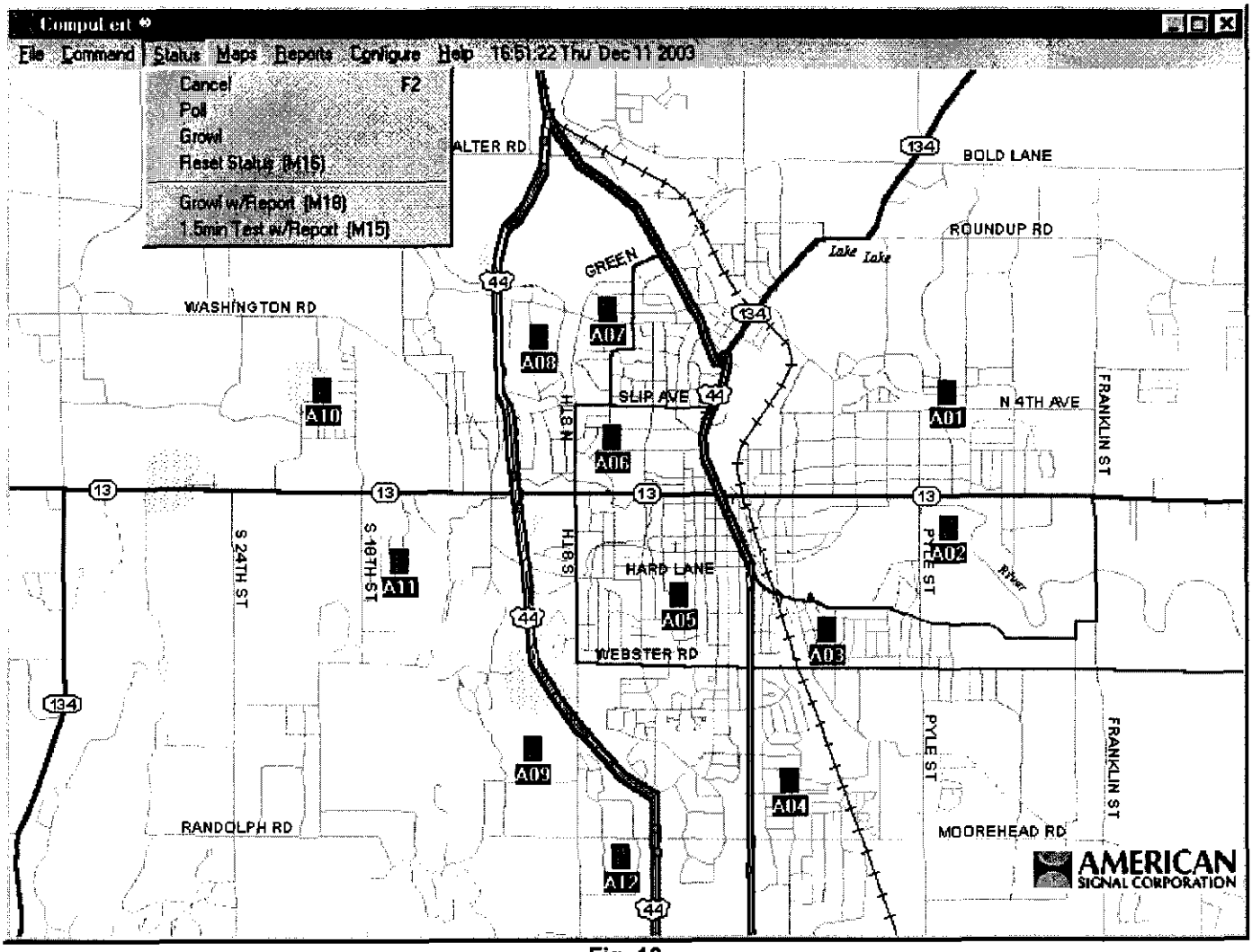


Fig. 10

2. Enter the appropriate password (if applicable), the click on the 'OK' key. Note: If you do not enter the password within 15 seconds, the sequence will abort and you will have to perform the above sequence again.

3. Enter the individual siren address, group address, or *** for all call. (**Note:** You can either type in the address into the box or chose from the quick select list by clicking on the desired choice in the list. This should automatically put the address into the command box. You can also double-click on any siren icon on the map and then choose the Silent-Test command and it will automatically put the siren address into the Silent-Test command box for you.)

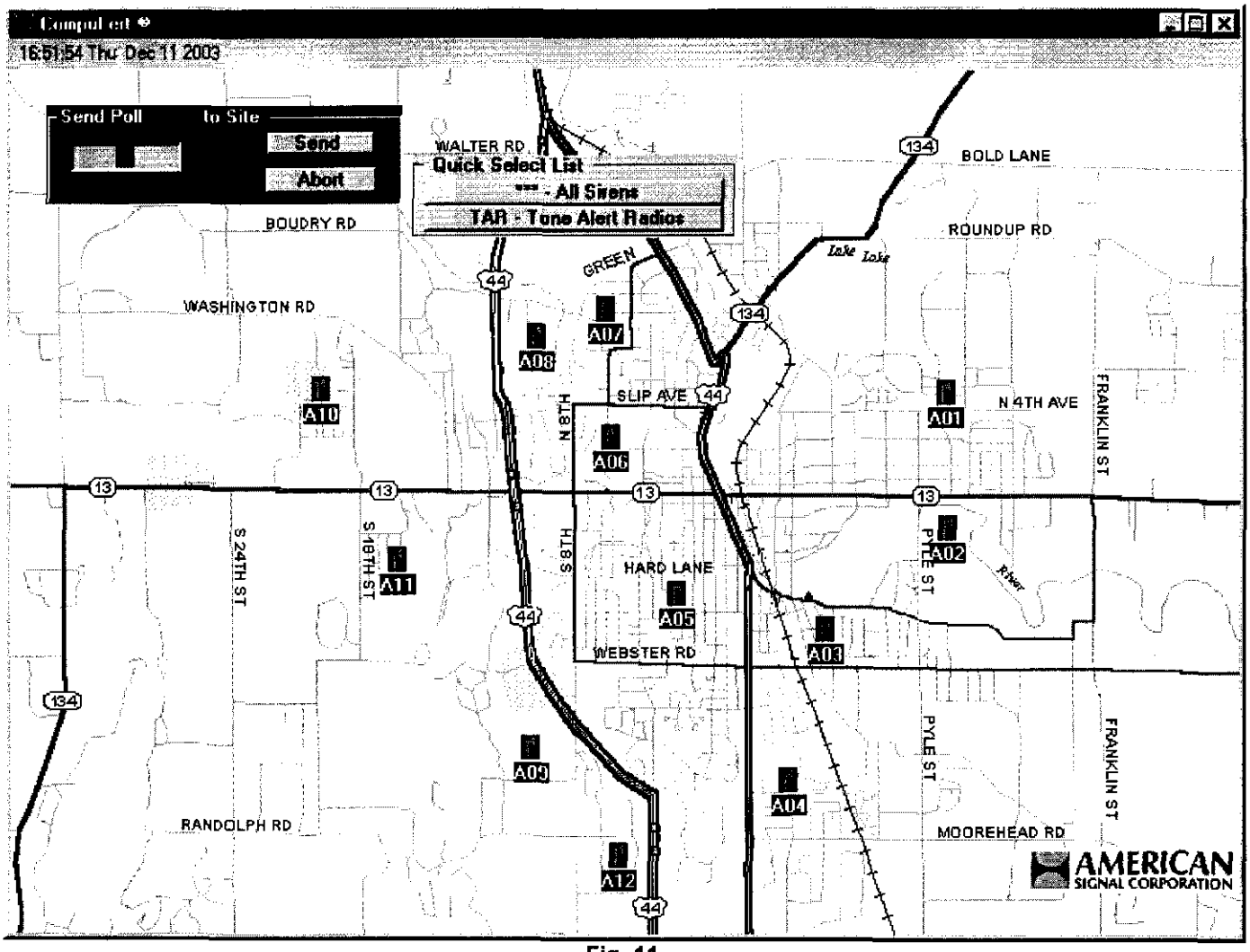


Fig. 11

4. Press **Send** (or **ENTER** key) when the proper function and **Address** have been entered. (Only the specific Siren(s) will be **polled**).

5. (If the **Wild Card** *** digit have been selected, each site will be polled individually and report the status on the screen. The **Silent-Test** command will not cause the Siren(s) to sound).

6. The **Poll or Silent-Test** signal should travel to the siren location, and the Siren control should report back by sending a signal back to the CSC-960. It should then be displayed on the map showing the user all the pertinent information from the siren location. When the Poll w/ Report or Silent-test is all finished collecting the Polling data, the computer then will print out a report.

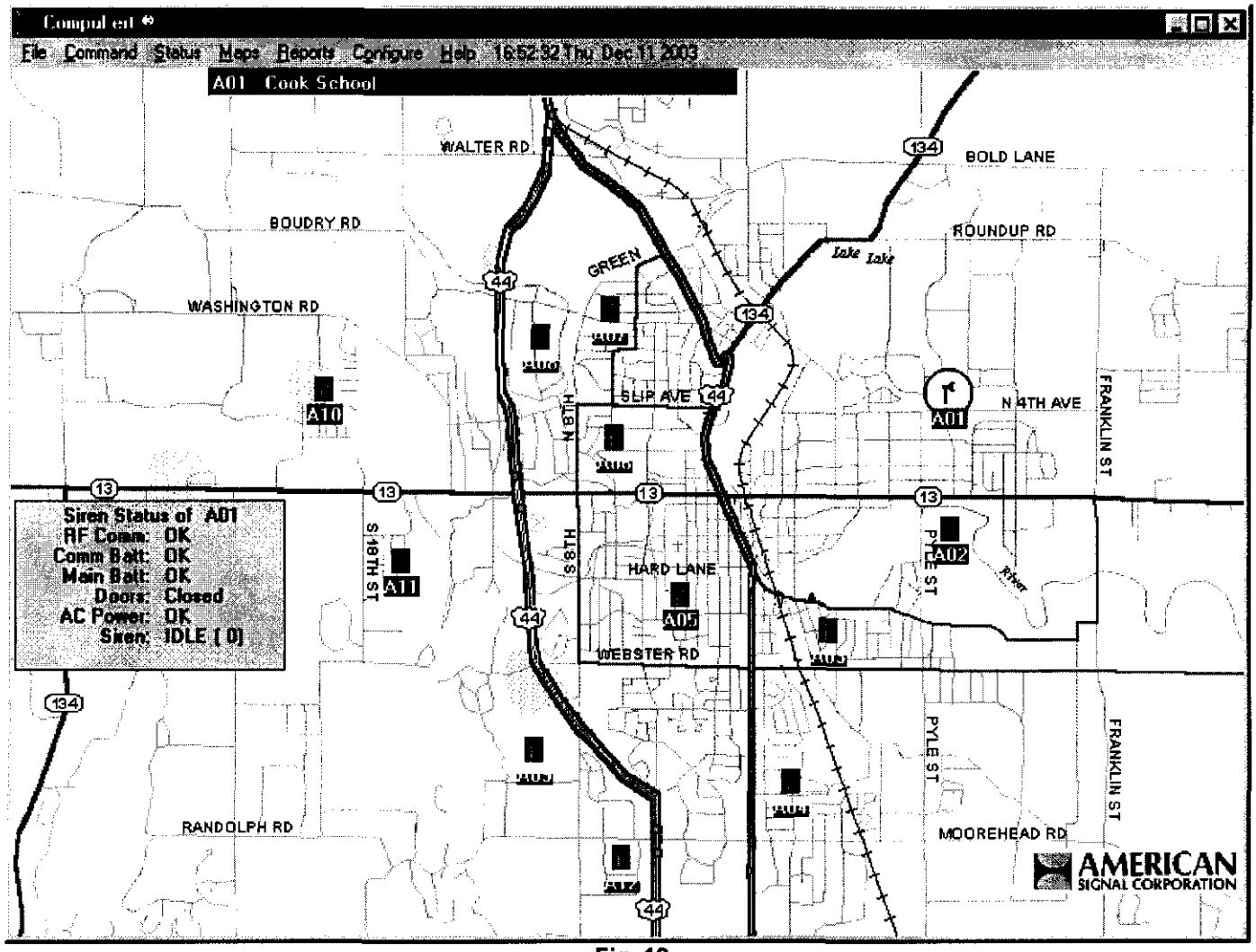


Fig. 12

Example of Silent Test or Siren Status Summary Report:

```
================================================================================
          Municipality, State - Emergency Management Siren System
                              Site-Status Summary
                          16:04:08 Wed  Sep 03 2003
================================================================================
================================================================================
        | Last Response|Silent Test & Poll|  Activation & Growl Test  |
        |--------------|------------------|---------------------------|
        |              |                  |100% ---Fault Conditions---|Door  AC
Adr Num|   Time   Date |PASS Fail Sync Bat|PASS Rot Pwr Ovr Lost      |Open Fail
================================================================================
A01 026 15:17:32 09-02  x
A02 041 15:17:35 09-02  x
```

III. Activation and Supervisory Procedure:

D. Reset the **Status** of the Siren Sites.

Computer Keyboard Operation

1. Select **Status** pull down menu on the Main screen to advance to the **Reset Status** Command.

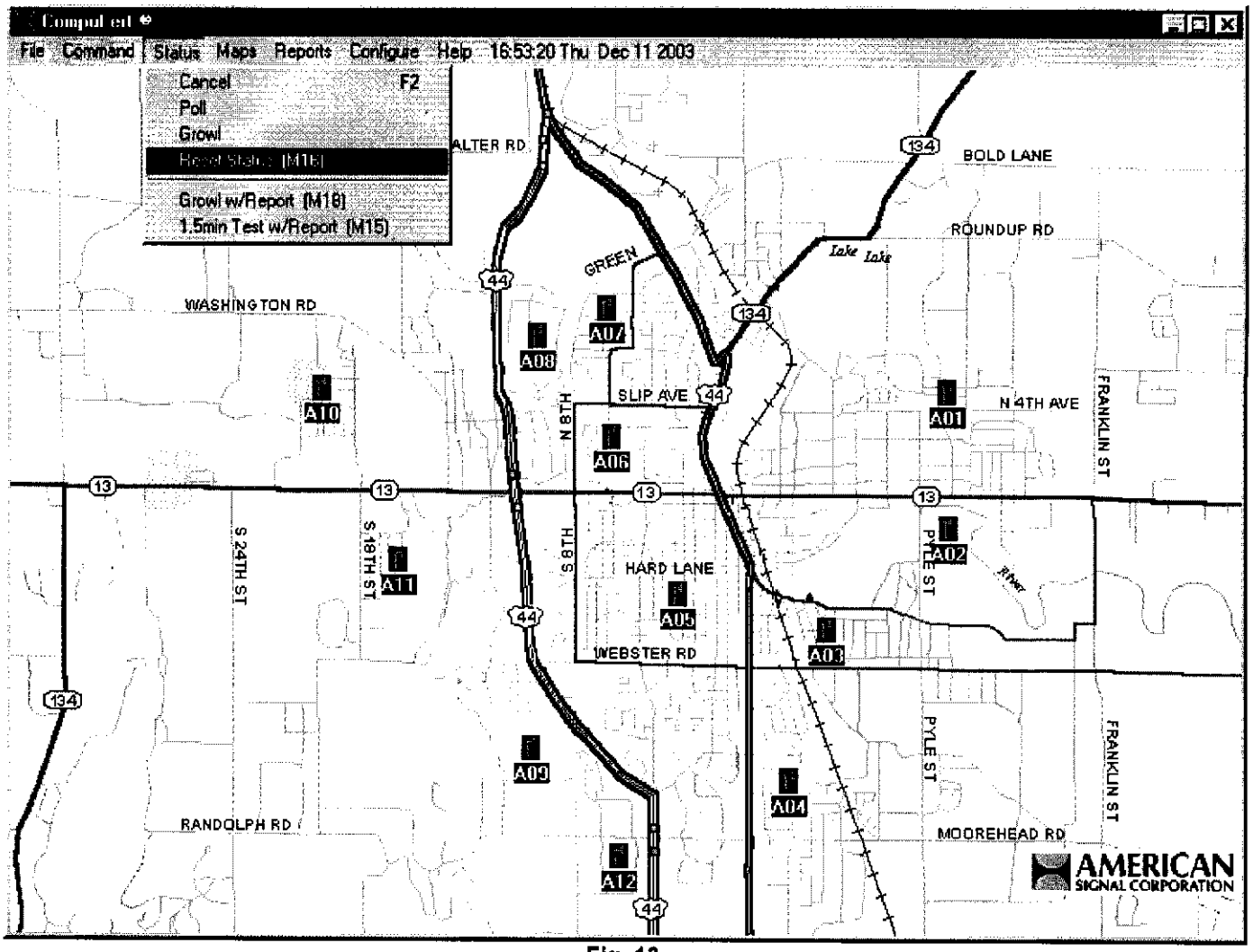


Fig. 13

2. With the mouse or pointer, select the **Reset Status** command. Left-click to select. Enter the individual siren address, group address, or *** for all call.

3. Enter the appropriate password (if applicable), the click on the 'OK' key. Note: If you do not enter the password within 15 seconds, the sequence will abort and you will have to perform the above sequence again.

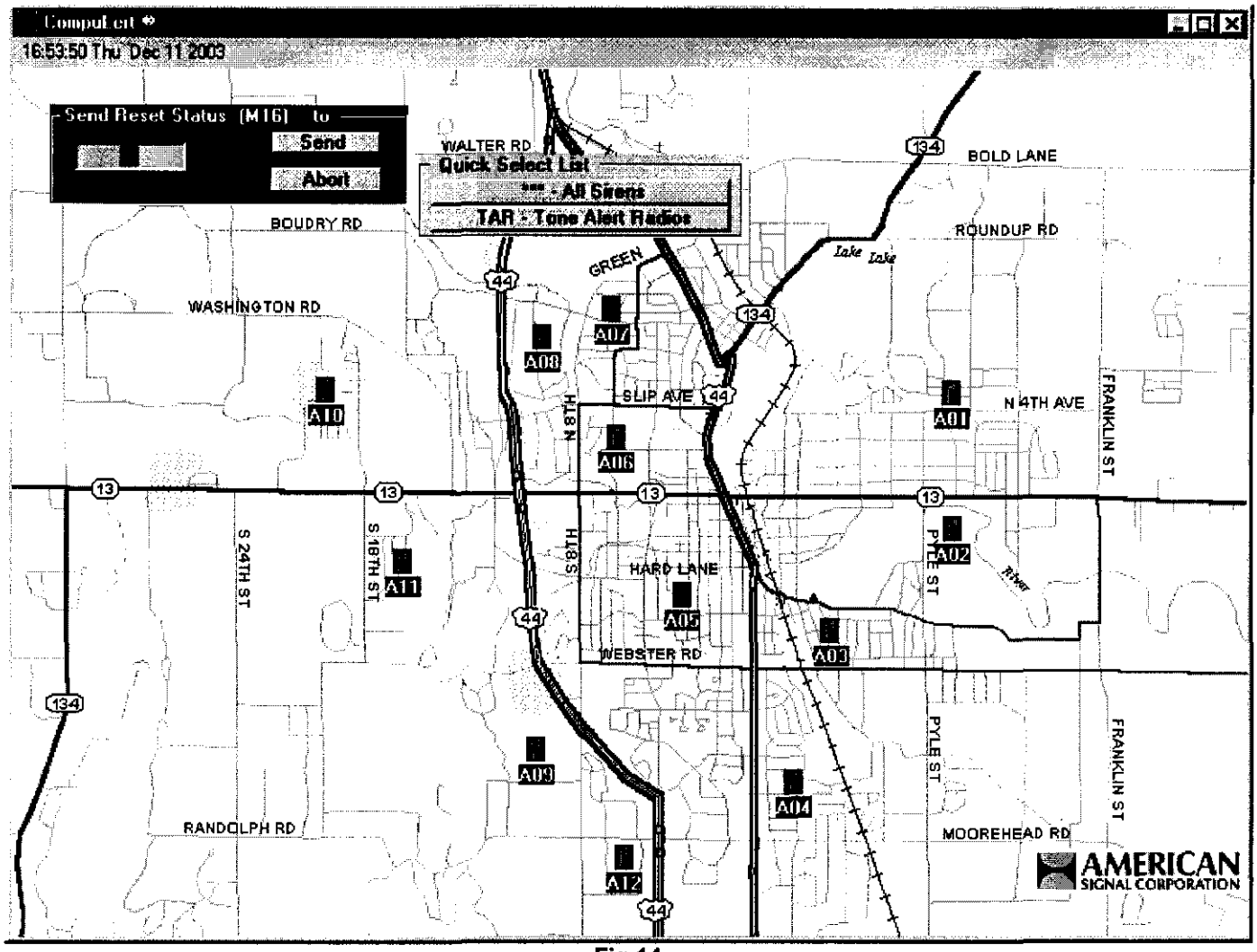


Fig 14

4. Then press the **Send** key (or **ENTER** Key). (The **Status** of the **Addressed** Siren(s) will be **cleared**).

5. It will then clear **Recorded Status Memory** from RTU at the siren location. This should be done prior to any test or activation. This will give you current test data when performing a **Poll** command after the test. **(Note:** To obtain an updated status from a siren or group of sirens after sending a **Reset Status** command, you must send a **POLL** or **Silent-Test** command after the **Reset Status** command.)

IV. Activation and Supervisory Procedure:

E. Cancel Siren Operation (Stops **Operation** of **ALL** sirens in the System)

Computer Keyboard Operation

1. Select the **Command** pull down menu on the Main screen to advance to the Cancel command. (**Note:** The computer's function key **F2** is a shortcut to the Cancel command.)

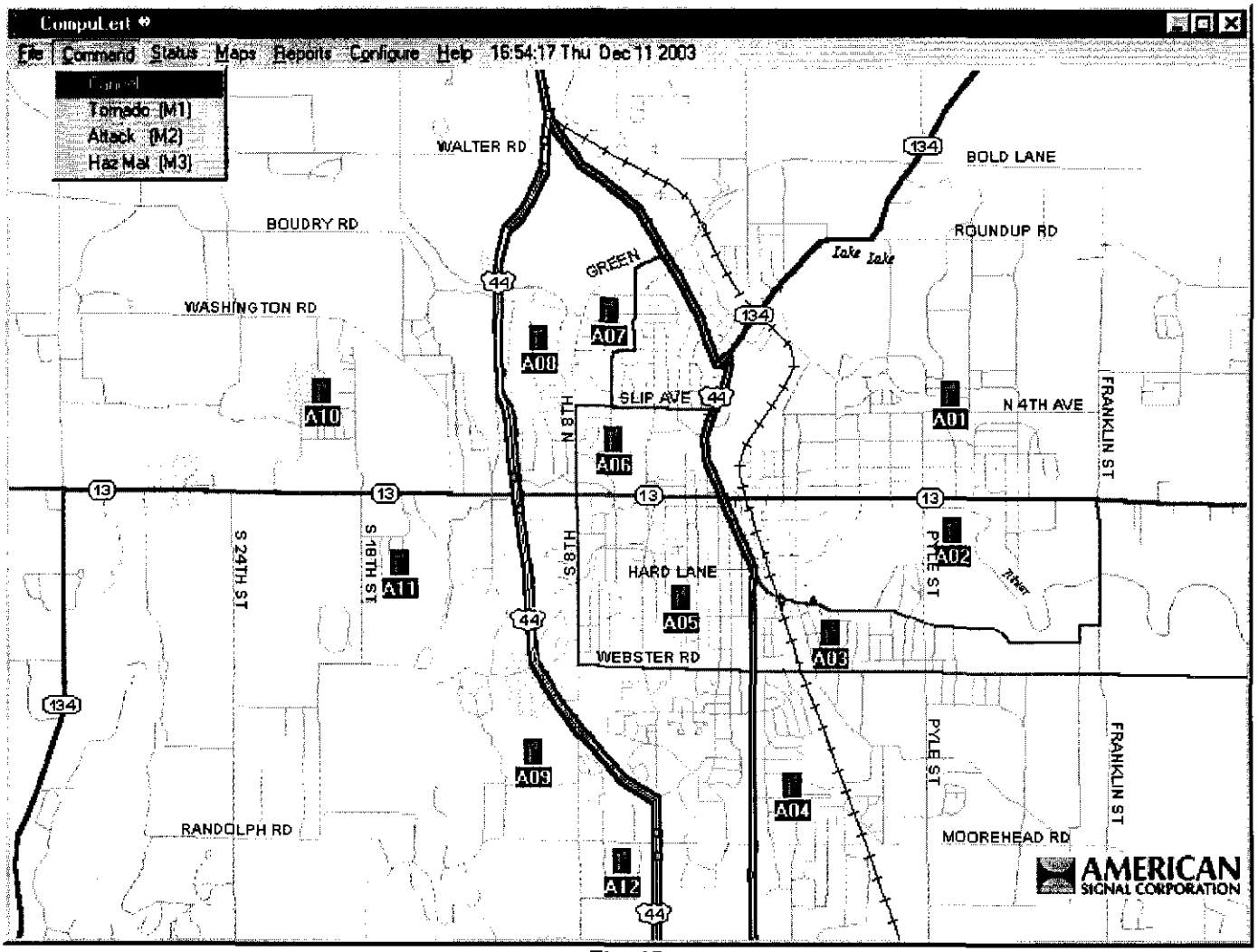


Fig. 15

2. *With the mouse or pointer, select the* ***Cancel*** *command click to select.*

3. Enter the individual siren address, group address, or *** for all call.

4. Then press the **Send** key (or **ENTER** Key).

IV. CompuLert™ Terms:

Commands from the Central Station:

Cancel: A command that stops siren activity, and aborts any macros running.
Alert: A command that causes a steady three to five minute tone at the siren.
Growl: A command to momentarily activate sirens (1 second).
Poll: A command that requests a Remote Terminal Unit (RTU) to send its status condition to the Central Station.
Poll w/ Report (Silent-Test): A command that performs a Poll, and then prints out a report.
Reset Status: Reset Status, a command that will reset the following status flags at the Remote Terminal Unit (RTU): Run Status, Overrun Status, and Message Error.
Resync: A command that is used to get a Remote Terminal Unit (RTU) in sync with the Central Station. If a remote doesn't respond to a **Poll**, send a Resync, and then Poll again. It would not have responded the first time if it were out of sync. (Typically part of the Reset Status Command)

Status Report Headers:

Status: A header provided when Remote Terminal Unit (RTU) answers a Poll from the Central Station. A typical response would be "RF-OK" or "Door_Open. This header is decoded and displayed on the screen as a pop-up box showing the user all information from a given site.

USTATS: Unsolicited Status, a heading provided when a Remote Site Reports a status without being polled (unsolicited report). A typical example would be "Low_Comm_Batt", or "AC_Fail". A USTAT "AC Okay" would indicate that a fault condition was corrected. In this case, the AC being restored would cause a USTAT AC Okay".

Command Menu: The menu in the CompuLert™ program that contains all type of activation commands. These are commands that turn on and off the sirens.

Status Menu: The menu in the CompuLert™ program that contains all type of commands that are used for obtaining and resetting the status from a siren control.

Configure Menu: The Configure (configuration) Menu provides a means of customizing a system by adding and deleting Siren Sites, editing automatically timed events, editing or making groups of sirens, as well as editing any map symbols.

File Menu: The File Menu provides access printer selection and fonts, saving data for backup purposes, and for establishing notes about a siren system.

Report Menu: The Report Menu allows reports to be generated from systems activities.

Automatic Timed Event: A command that is processed automatically by the program on a scheduled time and day basis. The command type, day, and address are programmed in the Configure Event Menu. The events will be processed according to the time and day of the system clock when the system is not in the Configure Menu. The following commands are available as **Auto-Events:**

Auto Silent-Test with Report
Auto Growl with Report
Auto-Reset-Status
Auto-Status Summary Report

The **Auto Poll w/Report (Silent-Test with Report)** performs a Poll command automatically under the system clock and calendar and Poll results are sent to the hard drive and can be sent to the screen and/or printer.

The **Auto Growl with Report** performs a 1-second test of the siren and is performed automatically under the system clock and calendar and the Poll results are sent to the hard drive as well can be sent to the printer.

The **Auto-Reset-Status** sends Reset Status command automatically under the system clock and calendar. The command is logged on the printer.

The **Auto-Status Summary** prints the current system status on a one page **Summary Report Form** for at-a-glance review of the system conditions.

V. Status Conditions:

A. Silent-Test Pass (RF-OK):

Silent-Test Pass (RF-OK) status will supply us with an indication that the radio path between the Central Control unit and the Remote Terminal Unit (RTU) is operational.

If this radio path is not functional, a Silent-Test Fail or No_Response status or will be printed. Situation in which this would occur:

1. Radio frequency occupied at the time of Poll or activation commands being sent by other parties, so that a valid code could not be received at the siren site to allow a response.

2. Synchronization error in that the Remote Terminal Unit (RTU) is at the siren location would not respond to a new valid code.

Solution: Send a Reset Status command to the specific site and send another poll the site to get a current status. If no response continues, a service tech would need to check for radio problems.

B. Activate OK (Test OK):

Activate OK provides an indication that all components are operating properly at the siren site.

Such status is provided after an actual siren signal activation or growl test.

Solutions:

1. If **Test Pass** is not present on the status report, check other status lines on report format for indication of problems.
2. If another status is noted refer to that section.
3. If no other status is present to indicate a problem, a visual inspection at the siren location is required.

C. Door Open:

The **Door Open** status gives an indication that the siren control enclosure door has been opened.

Situations in which this could occur:

1. Service Technician unlocks and opens the enclosures for servicing of the site.
2. Unauthorized person(s) have broken into the cabinets and security/police should be contacted.

D. Low Batt:

Low Batt: Low Battery Condition

The battery has been discharged to a point of requiring maintenance.

Solution: A Service Technician should be dispatched to evaluate battery condition for replacement.

E. AC Fail:

The **AC Fail** status indicates that there has been a commercial power failure at the site and the siren unit is on battery power only.

Solutions:

1. A Service Technician should be dispatched to determine if all circuit breakers and fuses in the charging circuit are functional. If it is determined that local utility power is out, contact the local utility company to restore power.

VI. Detailed Software Description:

This portion of the manual describes in detail the operation of the CompuLert™ software. First, the initialization is described followed by a breakdown of the program by menus.

A. Initialization:

In Windows, the CompuLert™ Icon is displayed under the Start Menu, Then the Programs listing. To activate the software, select the CompuLert™ ICON.

B. File Menu (Only on Version 6.x Series Software):

The **File Menu** contains all the printer settings for any reports, events, groups, or siren listings that may need to be printed out for reference. You can select your printer by clicking on the sub-menu Select Printer. All printers that are loaded onto your machine in the Windows Printers box will show up here. You can click on the down arrow at the end of the line to see all of the available choices. To select one, simply click on one and it should then be highlighted in the Printer box. This action should highlight the **Save Changes** button in the **Select Printers** box. Be sure to click on **Save Changes,** as this will then write this information into the CompuLert™ Configuration file. In case there is no printer on the machine, there is a choice for none. Be sure to choose this and then click on **Save Changes.** A choice needs to be made and saved into the CompuLert™ configuration file. Otherwise, if you try to print a report, either manually or from an Auto-Event, the CompuLert™ program may give you an error and close down.

Once you have chosen your printer, you must also then select a printer font. If you do not choose one, the specified printer will substitute one and the reports will not print properly aligned. The most commonly used font is 'Courier New', 'Bold', Size '11'.

There is the ability to establish a notes file. This can be used to save and view any type of notes about a siren system. This can be used for tracking maintenance history, contacts names for siren location access, or any other type of information you may want to track.

There is the **Backup** feature, which allows the user of the software to make changes to his siren system and then make a backup disk. This backup feature will copy all changed and report files, and make a compressed ZIP file. You will then have the choice of the location to save this file, either on the computers main hard drive, a floppy, or other device.

There is the **Update** feature, which allows the user to receive an updated disk from ASC or to reinstall his backup disc if something happens to the files or the customer's computer.

There is also an **Exit** command to close the CompuLert™ program.

C. *Command and Status Menu:*

From the either the **Command or Status Menu**, it is possible to send activation commands to chosen individual sirens, groups of sirens, or all sirens. The command to be sent is selected by clicking on the desires command function as indicated in the menu, entering the proper password (if applicable), and then entering the siren address as prompted by the system.

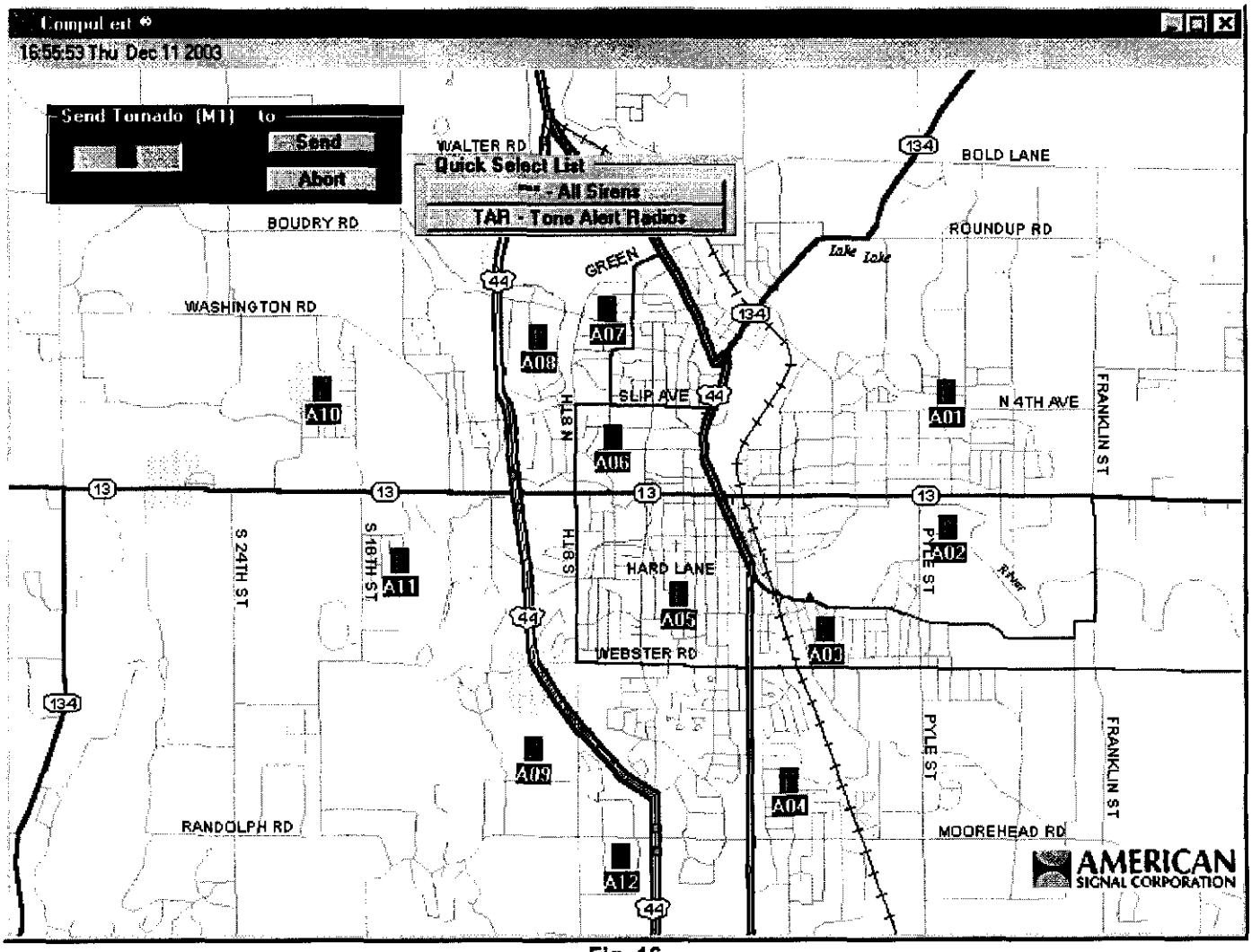


Fig. 16

There are many ways to input a siren address. One way is to type in the box the desired command. A second way is to choose off of the Quick Select List the desired group of sirens. A third way is to hold down the Control key on the computer's keyboard, and then left-click with the mouse on all of the desired siren icons on the map. This is called a Map-selected group. A fourth way is to double-left click on any siren icon to display the siren's status, then to choose the Command function from the command menu. This will put the siren address into the Command box automatically for you. Once this has been done, the user will be given an opportunity to Send or abort the command selected. In the event the user proceeds, the command will be sent to the Central Station Controller, which transmits the command to the Sirens, and the command sequence is complete for all commands except a Poll command.

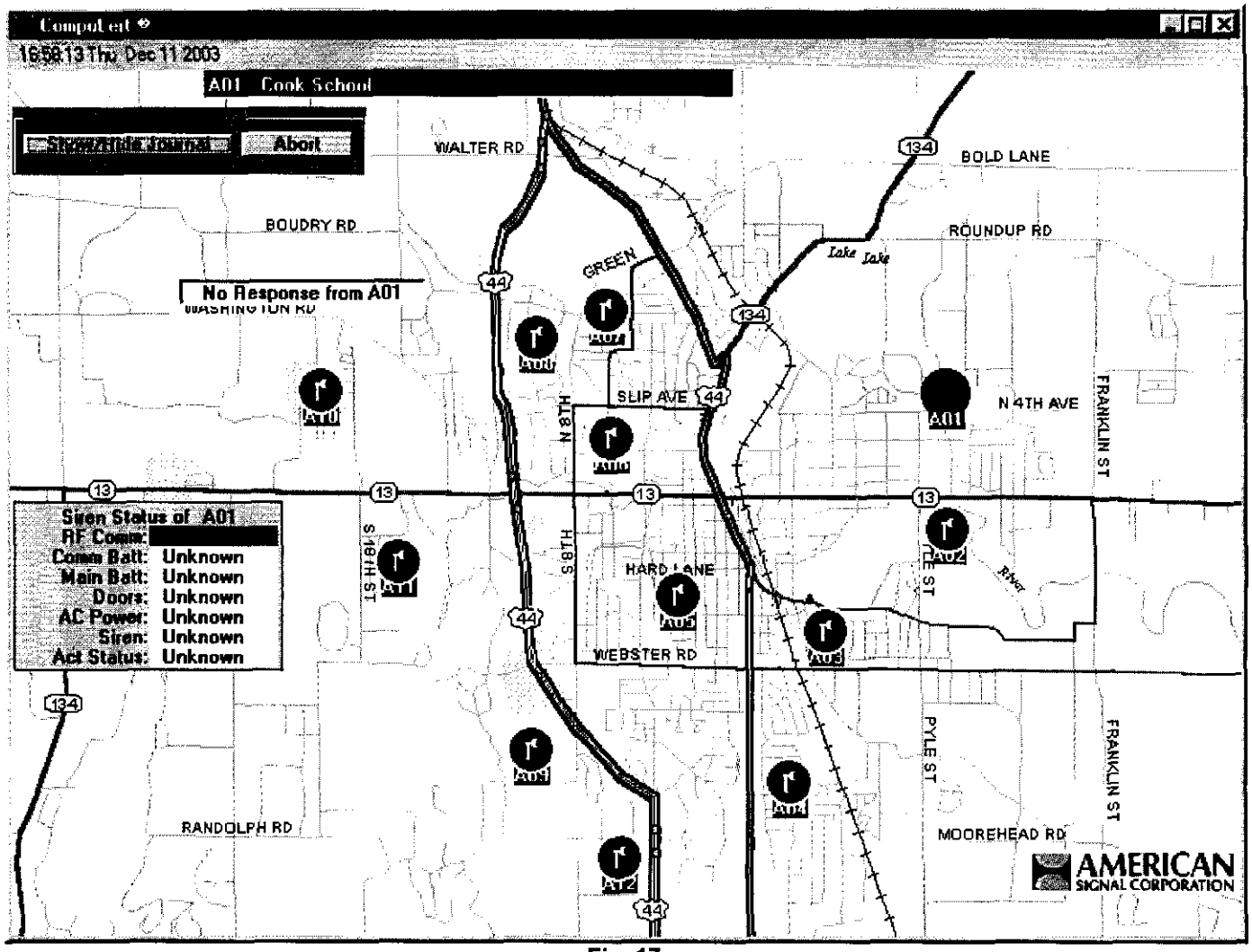


Fig. 17

When a Poll, Poll w/Report or Silent-Test is sent, the program will wait for a response from the sirens(s) being polled and display the status box on the screen. If there is no response from the siren after seven (7) seconds, a second poll is sent. If a poll is not received a second time, "RF Comm. Fail" will be logged and will turn the siren icon for that siren red indicating a problem. This indicates a lack of communication between the Remote Terminal Unit (RTU) and CSC-960 Encoder. If the remote address entered contains wild cards (a "*" in place of one of the address characters), and the command being sent is a Poll or Silent-Test, the program will search the Siren Site file for all remote addresses which match the wild card in association with any other command are sent directly to the controller. If it is necessary to exit from a wild card Poll or Silent-Test before it reaches completion, the **Abort** button may be pressed. This will cause the software to terminate its current set of instructions.

If the address entered in a group address (first digit = "9"), the software will search the group file for all members of the group and send the command to each remote individually. Any address within a group, which contains wild cards, is handled as described in the proceeding paragraph.

D. Configure Menu:

The **Configure Menu** allows the operator to customize the siren system to meet the needs of the system. The operator can add, delete, or change Siren sites in the system. Automatic timed events can be programmed to allow un-manned control of the system. Also, the system of siren sites can be defined into separate groups for added convenience. The **Configure Menu** provides the Siren, Event, and Groups options to allow the above customization.

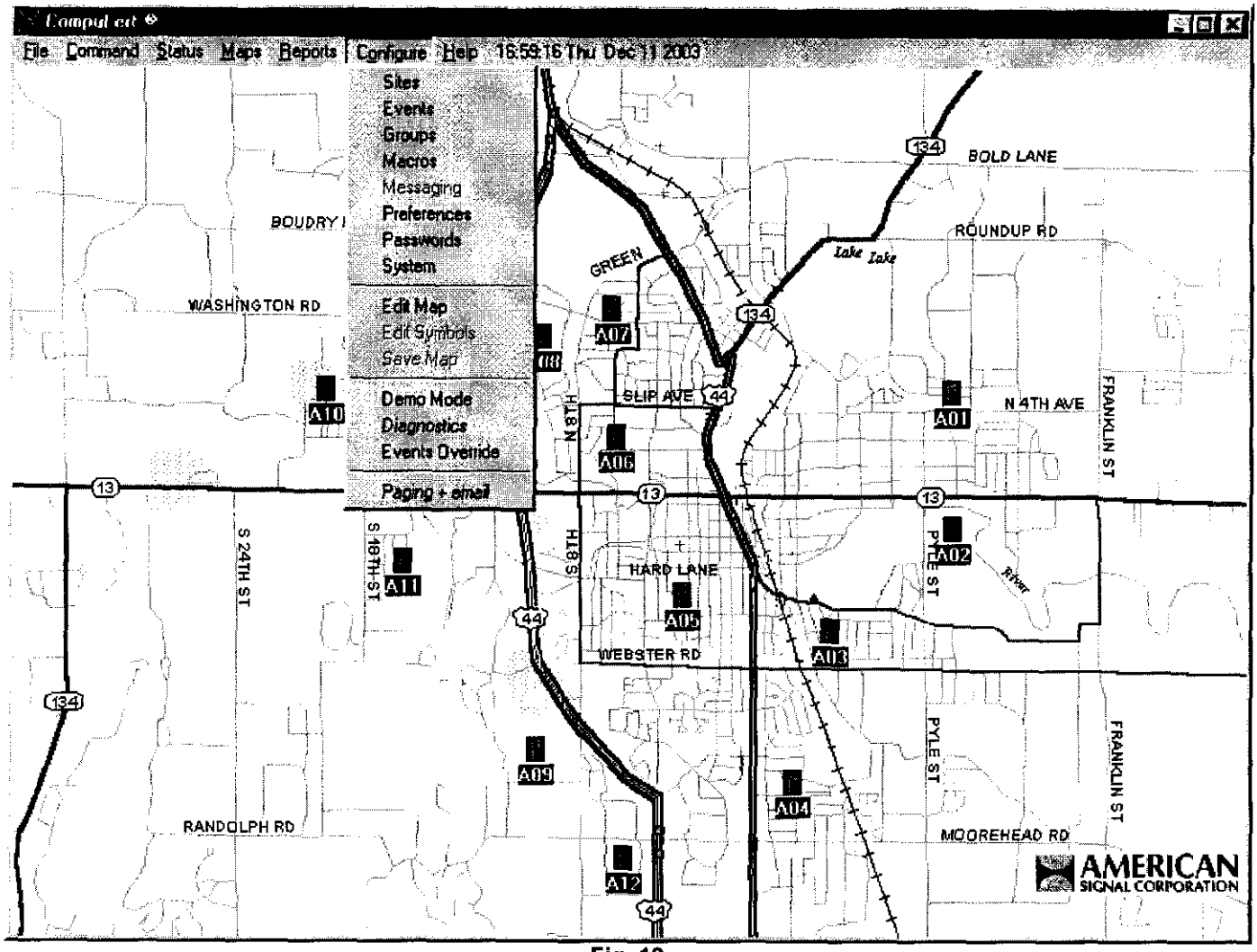


Fig. 18

1. Configure Menus - Siren:

Upon selecting the **Siren** option, the user can choose to Add, Delete, Edit, Print all items, or Cancel to return to the **Configure** Menu.

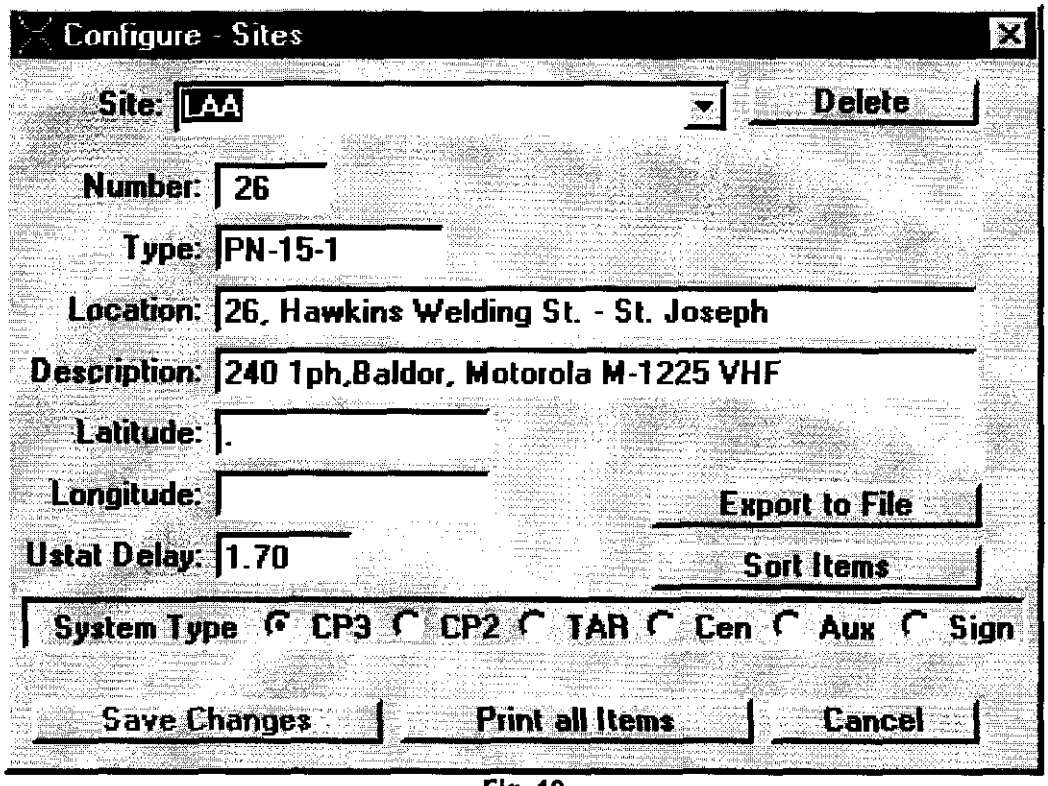


Fig. 19

To **add** a Remote Terminal Unit (RTU) the operator types in the **new** siren address into the highlighted Siren line box and then use the TAB key to move between fields to enter the siren type, location, description, global position, and USTAT delay. Next, the 8-digit siren type is entered, followed by the 40-character location and description fields. Three digits are mandatory in the siren field. The remaining fields may be terminated at any time by pressing the TAB Key. The Add sequence can be terminated at any time by pressing the Escape (ESC) key or clicking on the CANCEL button. Be sure to click on the **Save Changes** button when done adding a siren. Be sure to then click on the **Sort Items** button. This will re-shuffle the siren addresses and put them in either alphabetical or numeric order in the siren site list.

To **delete** a siren site from the system, the user selects the siren address in the Siren line by clicking on the down arrow. This will highlight in the box the address and will display the information about that siren location. The user then presses the Delete key at the end of the line. This will temporarily delete the siren until the **Sort Items** button is pressed. **Note**: This action will permanently delete the siren address and information.

The **Export To File** allows the siren site listing to be exported and saved as a text file. This can then be edited with any MS Office or text editor program.

The **Print All Items** option provides a print out of all remote sites along with the type, location, and description currently configured. Be sure the printer is configured and saved in the File menu before printing this information. Be sure the printer is on line before selecting this option as well.

2. Configure Menus - Events:

Unmanned control of the system is made possible by programming Events to occur at scheduled times. The following list of commands makes event processing a powerful tool.

Auto Poll w/ Report (Silent-Test)
Auto Growl w/ Report
Auto-Reset-Status
Auto Siren Summary

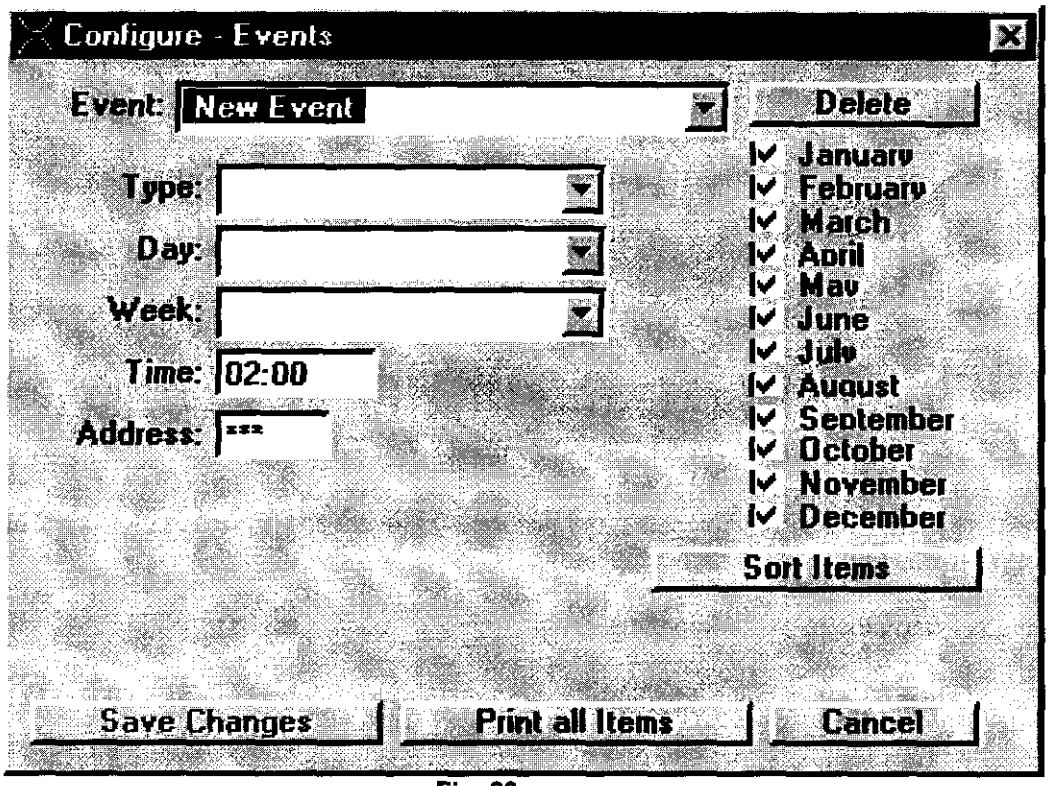


Fig. 20

All Auto-Event activity is automatically logged into the report file that is contained on the computer's hard drive. These activities can be printed to the screen, printer, and file. These all can be chosen or any combination.

Selecting the **Events** option causes the Events Menu to be displayed. Selecting a New Event allows the user to add automatically timed events to occur when the system is on line. Next, the type of event is chosen. You can use the arrow at the end of the line to view all available types of events. The operator selects the appropriate event by highlighting the event. Upon selecting the desired event, the next step is to pick the day of the event to happen. This can be any one individual day, or everyday. The next step is to pick which week and which months you wish the event to happen. Choose the time for the event and be sure to use military time where 23:50 is 11:50 pm. Choose the siren address for the event. The address may include wild cards or be a user-defined group.

When all information is entered and correct, click on the highlighted **Save Items** button. Be sure to then click on the **Sort Items** button as this removes any previously deleted items and puts all events in timed-order.

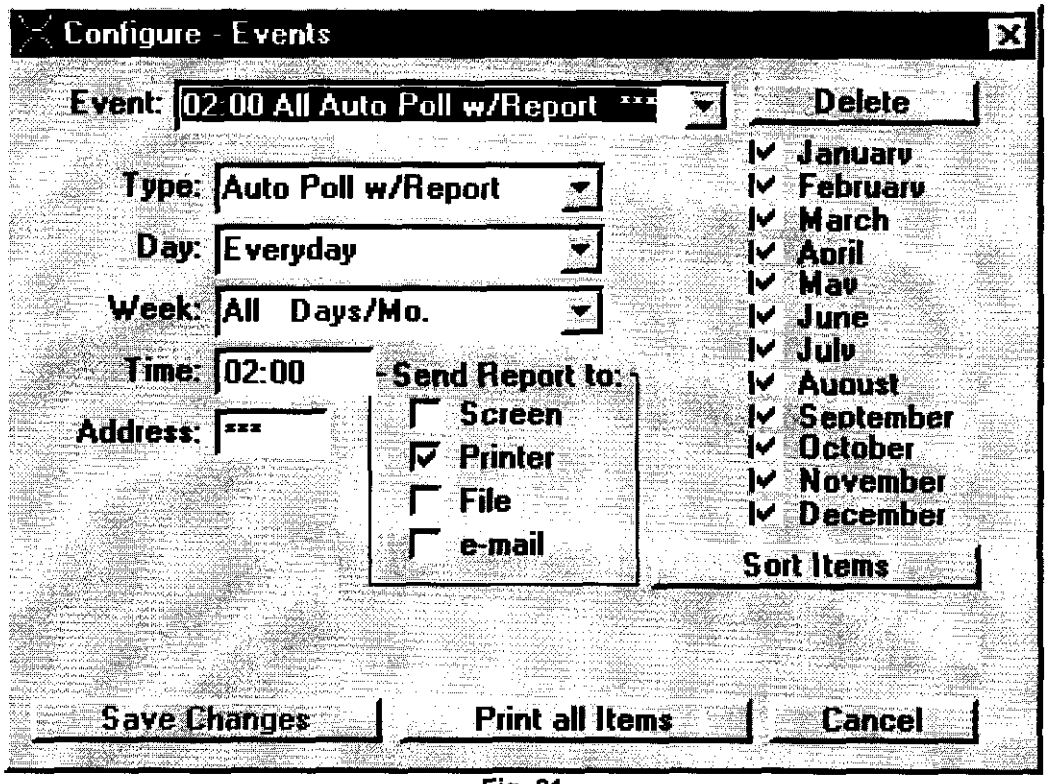


Fig. 21

To delete an auto-timed event, select the event on the event line, and then click the **Delete** button, the click on **Sort Items** to permanently delete the item.

The following are samples of the automatic event processing operations.

Example 1: Silent-Test (Poll) all sites daily, then reset status.

Set up an Auto Sil-Test w/ Report for *** (all sites) to occur everyday. Follow this by a Reset Status *** (all sites) daily occurring 5 minutes after the poll. The results of the poll may be reviewed daily to determine the status of the system.

Example 2: Growl all remotes once a week, verify operation and save data for reports.

Set an Auto Growl *** with Report for 12:00 on Monday. At 12:10 set an Auto-Reset-Status ***.

The Auto Growl with Report causes a 1-second activation of the siren. It will then Silent_Test (Poll) the entire system (a Test-OK status is expected) plus printing and recording the result of each Remote Terminal Unit (RTU). The Auto-Reset-Status clears any run status out of the Remote Terminal Unit's (RTU's) memory.

a. Events Override

To temporarily stop **all** Auto Events from happening for a particular day without having to delete the events, click on the command **Events Override** located under the **Configure Menu. Note:** This will also stop the Compulert Paging & Email from sending all pages and emails (where applicable).

You will see a **red box with Events Override** located over the map near the Command Menu when the Events Override is active. This will disable all events for that day until 12:00 midnight. At that time, the Events Override will automatically turn off and all programmed events will resume. **Note:** Going into the Diagnostics Menu will also turn on the Events Override.

To manually turn off the Events Override, either double click on the red Events Override box on the map, or click on the Events Override command under the Configure menu.

3. Configure Menus – Groups:

The Groups Menu allows the user to assign siren sites into common groups so that all sites in the group may be later controlled with a single command. The Groups Menu allows the operator to Add, Del (delete), Configure Group (configure a group), Print all group items, or Cancel to exit to the Configure Menu.

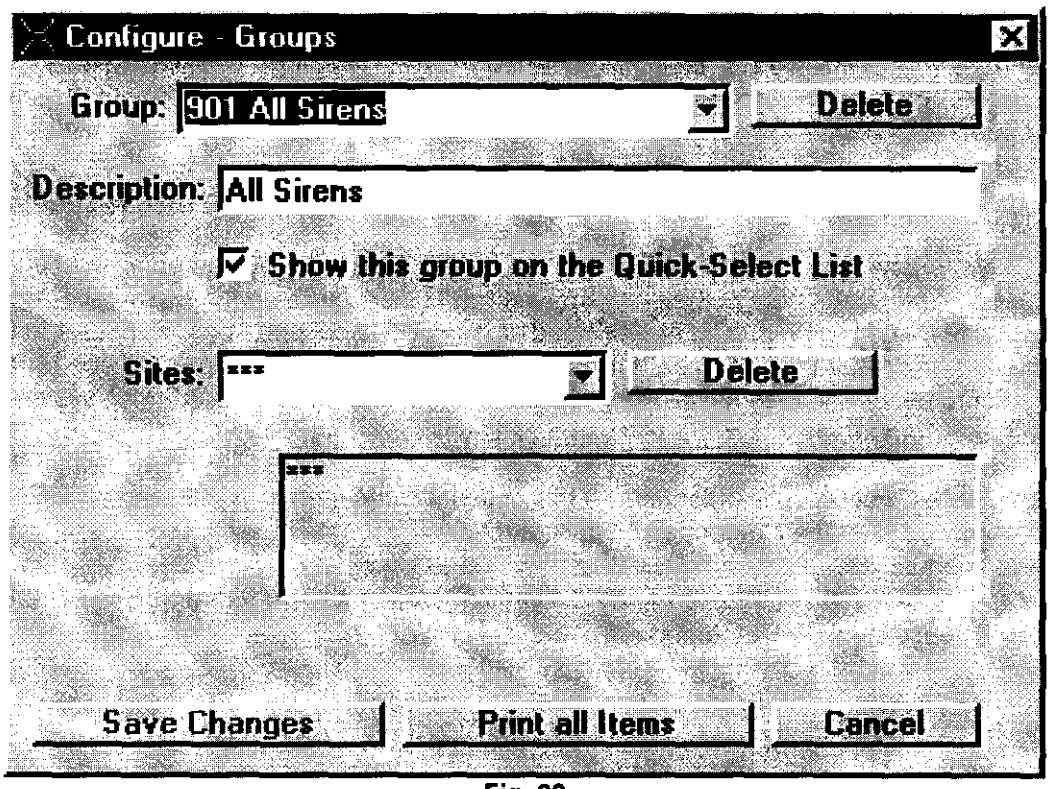


Fig. 22

The operator selects the Group number in the Group line to define a new Siren site group (user defined group). **NOTE:** *Once a new group is added, the user must add the siren addresses to the newly defined group.*

To remove a user-defined group from the system, the operator selects the Group number in the Group line, and then clicks on the Delete key to remove.

To Change Groups:

To change the sirens in a defined group, first highlight the group number in the group line, then in the sirens line, highlight the siren address to remove. Click on the delete key at the end of this line to remove the siren address. **NOTE:** Group addresses are pre-assigned three digit numbers form 901 through 999 and are similar to the siren site addresses.

4. Configure Menus – Demo Mode:

Demo Mode is enabled clicking on this command under the Configure Menu. This will display a red box located on the map under the Command Menu. When in Demo Mode, the computer's serial port is disabled so

no commands are sent out to the sirens. The Compulert ™ software will simulate activations and responses from sirens when polled. This can be a useful way of training personnel on software operation without actually sounding any sirens. **Note:** The CSC-960 Encoder's front panel buttons are always **LIVE** and cannot be put into Demo Mode.

To disable the Demo Mode, double-click on the red Demo box on the map, or click on the Demo Mode command under the Configure Menu.

5. Configure Menus – Diagnostics:

The Diagnostics Menu is a part of the Compulert™ software used to program the information into both the CSC-960 and the RTU's out in the siren location. Authorized and properly trained personnel should **only** access this menu. For more information regarding the Diagnostics Menu, consult your authorized American Signal Corp. or authorized dealer.

6. Configure Menus – Paging & Email (Only on Version 6.x Series Software) (Optional):

This driver was developed to provide numeric and alphanumeric pager and email support for CompuLert ™. The CompuLert ™ paging portion of the program works in conjunction with the Airsource Paging program via a phone line and a modem for both paging numeric and alphanumeric pagers. The CompuLert ™ email portion of the program uses your default mail handler, which can be either Microsoft Outlook for use on a network mail system or Microsoft Outlook Express for Internet mail systems. No other paging or email systems can be used or interfaced with the CompuLert ™ system software at this time.

Once configured, operation is automatic. If this optional component is purchased and installed, the setup options can be accessed from the CompuLert ™ configuration menu. There are three message matrix tabs, two email Contacts tabs and a Group tab. It is best to start with the Group Tab.

Note: If the **'Events Override'** is turned on in the Compulert ™ program, this will disable paging and emailing until the **'Events Override'** is turned off.

a. GROUPS Tab

Enable checkmarks - These checkboxes allow global Enable/Disable of all pager and email activities. You may select to enable paging and/or email activities.

NOTE: The EVENTS-OVERRIDE configuration menu item of CompuLert ™ will also provide temporary disabling of pager and email activities during emergency situations. However, activities will be enabled at midnight.

You may select either item or both items depending on the system requirements.

When you change these Checkmarks and press the SAVE button, CompuLert will disconnect or connect to the selected services. This may result in a request for the Email Profile/Username or the activation of the Air Source Paging program.

Email Subject Text - This text string will prefix the Group Name and appear in the SUBJECT line of any email.
Example: Email Subject Text: "Siren Message for" Group Name for ID-A: "Emergency Management" The Subject line for Emails to Group A would be: "Siren Message for Emergency Management"

Group Names for IDs - When a siren event occurs, it is often necessary to page multiple people, often referred to as GROUPS of people. The paging driver allows up to 8 groups of pagers and Email Contacts to be referenced when an activity is triggered. These groups are referenced in the other configuration sections by single letter ID's, A thru H, for aesthetic purposes. However, an ID is not very useful in describing the group of people that will be contacted.

This section of 8 entry fields provides a means of identifying the group ID's with short phrases

i.e. Emergency Management
Siren Maintenance
American Signal
John Doe

These description fields will be displayed in the other configuration sections during setup in a yellow box at the bottom of the screen whenever the cursor is over a Message Group ID Checkbox.

NOTE: When using the paging portion of the program, you must setup the paging software separately (see the Airsource Paging manual for further details). You must also assign groups in the paging software. These group names in the paging program **MUST** match the group names in the Compulert ™ program.

Logon Profile Name - This is the Email Profile Name, which is used by a Network for connection to the Network Email system. If this field is not valid, a window will appear during startup that will ask you for a Profile Name. If you wish to answer the question each time the program starts, just leave this field BLANK. If you want CompuLert to automatically connect to your Email Exchange Server, then a profile must be preset and its name should be placed in this field.

If you are not on a Network, you can place your Name in this field, or leave the field BLANK if you are the *only person using Outlook Express.*

b. SIGNALS SENT Tab

This configuration section allows pages to be sent whenever Activation signals are sent to the sirens. Although CompuLert ™ includes other testing, control and monitoring functions, only the commands, which cause the sirens to make noise, are listed in this section. Place a checkmark in the boxes to the right of the description fields to cause notification of any or all of the pre-defined paging groups when the siren activation signal is sent. NOTE: To limit the number of pages sent, a special duplicate-signal function prevents multiple pages ONLY if the same siren signal is sent within a 5-minute period.

c. SIREN CONDITIONS Tab

This configuration section allows pages to be sent whenever errors occur during POLLING or TESTING. *It is usually used by the service personnel to address maintenance issues. However, it can also be used in an* emergency situation to inform the Emergency Management personnel that certain coverage areas have not been properly notified. They can then dispatch portable equipment to the affected areas.

Place a checkmark in the boxes to the right of the list of siren error conditions to cause notification of any or all of the pre-defined paging groups when an error occurs.

NOTE: To limit the number of pages sent, the siren errors will not trigger paging until 5 minutes after the last siren is polled. If only one siren has a problem, a full location description if the siren will be sent along with the error information. If more than one siren has errors, the sirens will be grouped together by error conditions and sent as single pages.

d. USTAT CONDITIONS Tab

This configuration section allows pages to be sent whenever unexpected errors occur. The list of error conditions describes failures, which are normally caused by external means, such as loss of power or vandalism.

Pages are normally sent to Service personnel. If they think that someone is tampering with the sirens, they can then request police backup.

Place a checkmark in the boxes to the right of the list of siren error conditions to cause notification of any or all of the pre-defined paging groups when an error occurs.

NOTE: To limit the number of pages sent, AC Failure conditions will be delayed by 5 minutes. All other conditions will cause immediate pages. However, if a signal is sent to the sirens, this will force any pending AC Failure pages to be sent immediately.

e. CONTACTS (1), CONTACTS (2), and CONTACTS (3) Tabs

These sections allow entries of up to 54 names and email addresses, which will be used to address outgoing Emails. These sections are ONLY used for Email and will not be used by the Pager software. Outlook or Outlook Express MUST is properly configured before Emails can be sent. The names in these sections do NOT have to appear in your Address Book.
If you setup your Email program to make a copy of all Emails, then your "Sent" folder will provide a log of all Emails that were sent by CompuLert.

You can also cause an ASCPAGE.LOG file to be generated. To activate this log, Select CONFIGURE - PAGING & EMAIL, and then minimize the window, do NOT close it. As long as the ASCPAGE icon appears in the Startup toolbar, all pager & email activities will be logged. If you close the ASCPAGE program, Emails and Pages will still be generated, but no entries will appear in the ASCPAGE.LOG file.

f. Paging & Email Configuration Notes

If you select the **HELP - ABOUT** Menu item, two items will be of interest for troubleshooting:

Email: Active
Pager: Inactive

These items will indicate whether the Email and Paging programs are active. If you have enabled either of the two items on the GROUPS tab, but they appear as "Inactive", then check the following:

Email - Make sure that you have Outlook or Outlook Express properly configured. Note: these programs do NOT have to be open to automatically sent Emails.

Pager - The "Air Source Pro" program MUST be Open to allow Pages to be sent. Its Icon MUST appear in the Startup toolbar. If you close the program at anytime, it will cause the Pager Indicator to show "Inactive".

E. Report Menu:

The **Report Menu** provides the user a means to print a different type of reports depending upon how much system information they require. All of the reports can be accessed from the Reports menu. In addition, there are several shortcuts to aid in printing these reports. These are Today's Activities and Yesterday's Activities. You can also access the Siren-Status Summary as well. This is a concise chart-form based report to see the Last Polling status of the siren system. See figure below.

```
================================================================================
        Municipality, State - Emergency Management Siren System
                              Site-Status Summary
                          13:32:40 Fri  May 30 2003
================================================================================
================================================================================
       | Last Response|Silent Test & Poll|  Activation & Growl Test  |
       |--------------|------------------|---------------------------|
       |              |                  |100% ---Fault Conditions---|Door  AC
Adr Num|  Time   Date |PASS Fail Sync Bat|PASS Rot Pwr Ovr Lost      |Open Fail
================================================================================
A01 026 13:25:11 05-30  x
A02 041 13:25:00 05-30  x
A03 001 09:18:27 05-19  x
A04 002 09:18:33 05-19  x
--------------------------------------------------------------------------------
```

1.	Date and Time:	Date and Time of last received status.
2.	Silent-Test Pass:	Radio Path to Site is OK, no other status at Site.
3.	Silent-Test Fail:	No Response was received from Site during last Poll.
4.	Sync:	Too Many comm. errors occurred at Site (do Re-Sync).
5.	Activate_OK (Pass):	The RTU turned on, siren sounded, and had indications from the main motor current, rotation, and acoustic sensors.
6.	Activate_No_Power:	The RTU turned on, but no main motor current flow.
7.	Activate_No_Rotate:	The RTU turned on, but no siren head rotation.
8.	Activate_Low_Level:	The RTU turned on, but no acoustic sensor indication.
9.	Activate_Low_No_Rotate:	The RTU turned on, but no acoustic or rotation sensor indication.
10.	Activate_Lost	The RTU did not turn on when told to.
10.	Overrun:	The RTU turned on but was on longer the decoder allowed.
11.	Door Open:	Siren Site detected an intruder or open cabinet door.
12.	Low Battery:	Site Backup Battery has dropped below acceptable level
13.	AC Fail	Site has lost AC Power.

SIREN ICON LEGEND

SIREN NORMAL - READY FOR OPERATION

SIREN STATUS BOX CURRENTLY DISPLAYED

SIREN SELECTED AND/OR IN ACTIVATION MODE

NON-CRITICALPROBLEM - SIREN INSPECTION REQUIRED

SIREN CRITICAL FAULT CONDITION (ROUTE ALERTING REQUIRED)

Fig. 24

ICON COLOR	STATUS CONDITION
Green	RF-OK
Green	Activate_OK
Green	Test_OK
Green	RTU_Restart
Yellow	Door_Open
Yellow	Activate_No_Rotate
Yellow	Test_No_Rotate
Yellow	Overrun
Yellow	Activate_Low_Level
Red	AC_Fail
Red	No_Response_from_Poll
Red	Low_Comm_Batt
Red	Activate_No_Power
Red	Test_No_Power
Red	Activate_Low_No_Rotate
Red	Activate_Lost

F. Maps Option:

Integrated Graphics: The maps option provides an illustration of a siren system layout. Individual sirens or groups of sirens can be easily located. Text and graphics information may be included on the display to provide a better definition to the entire system or a portion of the system.

The maps are defined by the user and designed at AMERICAN SIGNAL CORPORATION one (1) map is provided as standard with the Graphics Option. These are Standard Windows Bitmaps set for a certain size. These map sizes can range in size, but your monitor and video card must be capable of supporting the proper resolution and colors. As a default size or unless otherwise specified, maps are done in a size of 800 pixels by 600 pixels with 256 colors. Consult with your AMERICAN SIGNAL CORPORATION representative if you require more than the standard number of maps, or larger size maps. Each map is invoked by choosing the desired map under the Maps menu. There can be an overall siren maps, group maps, zone maps, or siren icon listings for extremely large siren systems.

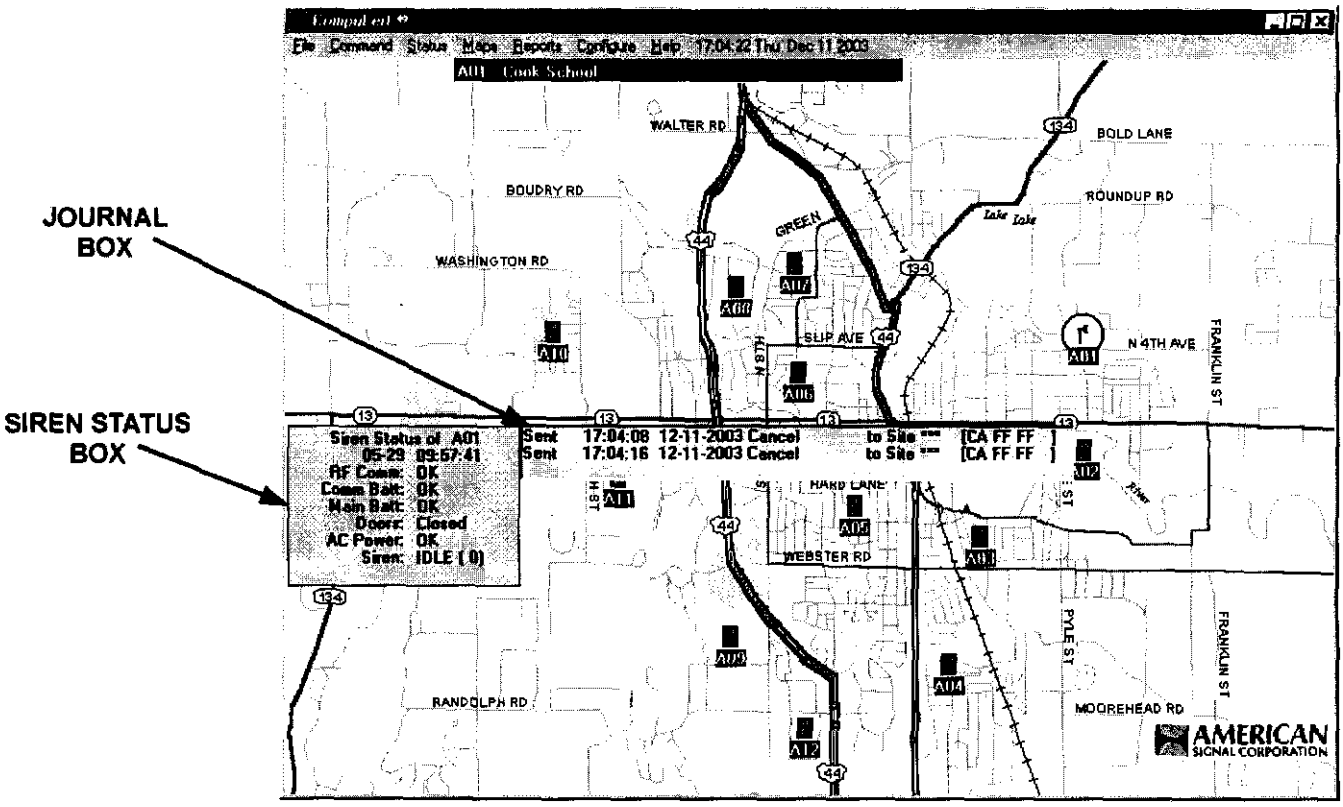


Fig. 25

Zoom Map Buttons: With systems that contain an overall system map and zone maps, there can be Zoom buttons placed onto the maps to zoom in or out from one map to another directly from clicking on the zoom button located on the map (**Note:** The zoom feature is only available on Version 6.x Series software).

Siren Icons: The ICONS indicating siren location and site address (three digit) will change from a static condition to a red color if there is an unsolicited or a polled fault condition at a siren site. Examples of the fault conditions are Door Open, AC_Fail, No_Response, Activate_No_Power, etc. This will give the operator a visual indication of problems in the field so that attention can be paid to the site immediately. Once the fault condition is corrected, the red siren will return to a static condition.

Siren Status Box: To view the fault condition, simply double left-click on the red siren icon and the Siren Status Box will appear showing you in red the fault condition. This status box will show you the last status

information from a particular siren. It will show you the date & time of the Poll to tell you when this status information was obtained. It will tell you if the siren location is communicating with the CSC-960 Encoder. It will also tell you the last time the siren was sounded, if the siren operated properly or if there was a failure. The status box will also show you the status of the main AC line, cabinet door status, and the status of the communications battery. If everything is in a normal operating status at the siren location, there will be nothing highlighted in red in the status box.

Journal Box: To see overall system activity, you can choose to show the Journal Box. To show the box, simply click on the Reports menu, then on the command Show/Hide Journal. It is a green box that appears over the map. It will show you lines of text as siren system activity is performed. To temporarily hide the Journal Box, you can double left-click on the green Journal Box. The next system activity will make the Journal Box reappear. To permanently close the Journal Box, simply click on the Reports menu, then on the command Show/Hide Journal.

Map Editing: Certain features of the map can be edited, changed, and/or deleted. These items can be done by choosing the Map Edit mode located under the **Configure Menu**, then by clicking on **Edit Map**. This will cause the red symbols box to appear.

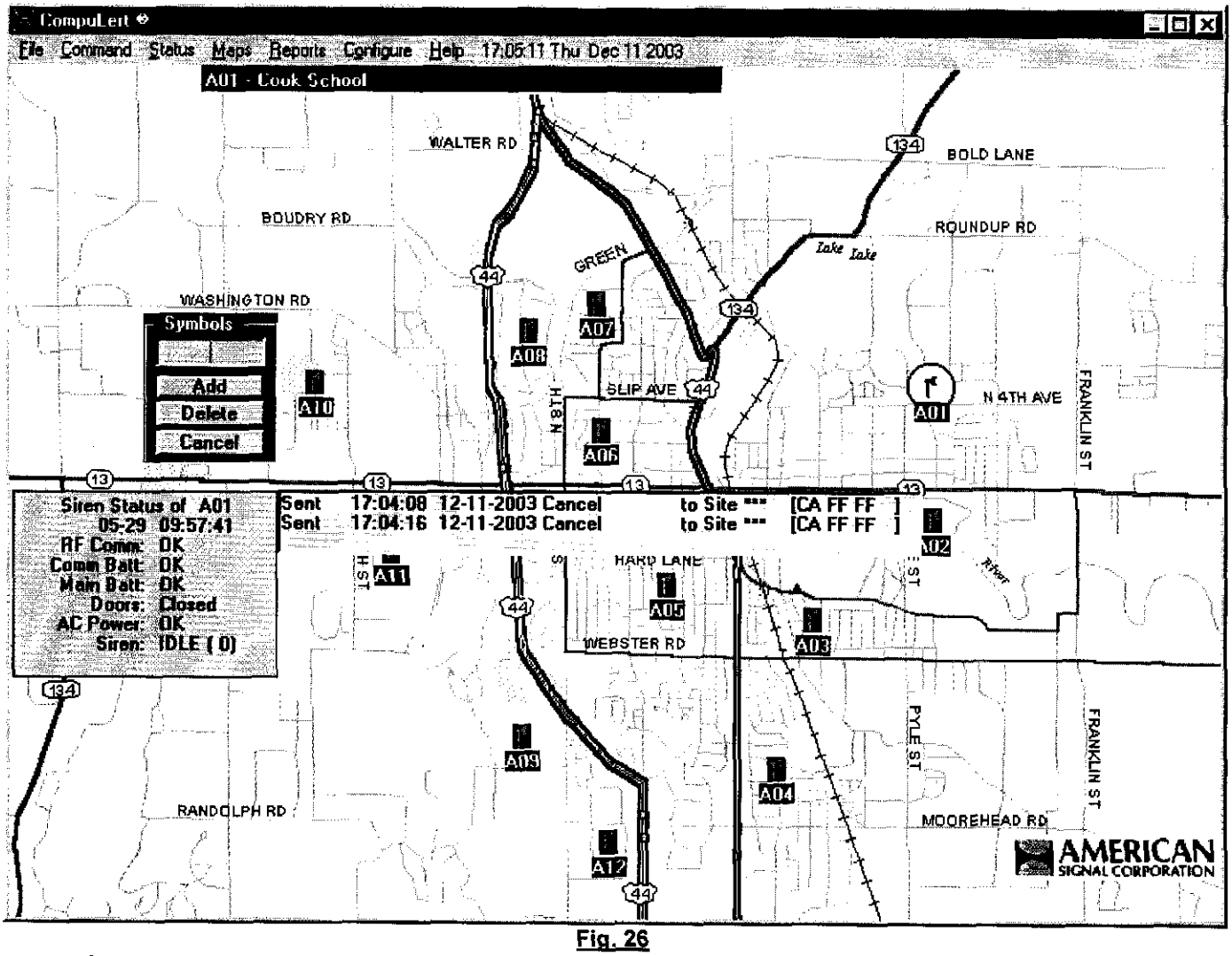


Fig. 26

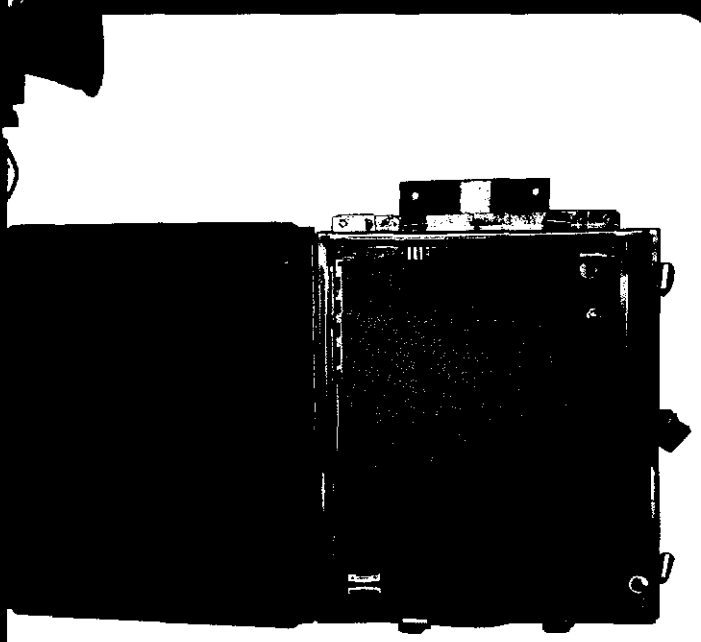
Symbols Box: The Symbols Box is where you can add or delete siren icons from the map. You can do so by simply typing the siren address from the siren list into the gray box at the top of the red symbols box and then clicking on either the Add or Delete button. This will only remove the siren icon from the map. If you want a

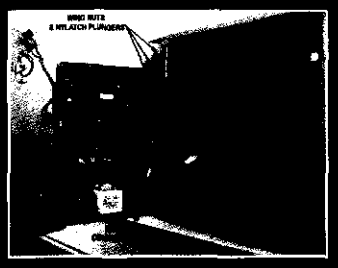
siren completely removed from the system, you must remove it from the siren list located under the Configure, Siren Menu.

Moving Map Items: Many map items such as the green journal box, the gray siren status box, as well as siren icons can be easily moved from one place to another. Simply left click on the item to be moved, move the item where you want to place it and let go.

Saving Map Items: After making any changes and you are satisfied, be sure to save the map. To save the map changes, click on the **Configure Menu** and then lick on the **Save Map**. If you do not want to save the map and want to go back to the last saved map, instead click on the **Configure Menu**, then click on **Edit Map**. This will cause the map to be restored to the last saved map.

UNIVERSAL-RTU





The **Universal Remote Terminal Unit (U-RTU)™** is a powerful and innovative siren controller capable of both control activation and data acquisition or local data processing only.

The results of over 25 years of experience satisfying our customers, the **U-RTU™** siren controller is designed to provide unparalleled flexibility, offering digital FSK, DTMF, and TTS tone and data decode compatibility, as well as radio communication bandwidth versatility. The **U-RTU™** is capable of being activated and tested from multiple encoder locations.

In Two-Way Control and Status system, siren activation and the monitoring of siren operation, or fault conditions, are accomplished in the **U-RTU's™** computer.

Combine our standard **U-RTU™** with our **CompuLert™ CSC-960™** central encoder for any electromechanical or electronic voice siren.

- Can be configured for one way or two way control & status monitoring.
- Communications interface include VHF, UHF, 800 and 900 Mhz conventional and trunking systems, as well as telephone dial-up or hardwire, wireless IP and satellite.
- RS-232 & RS-485 Communication ports standard.
- I/O 16 digital standard.
- Local test/activation buttons, and an optional external activitation kit for hardwired local control.
- Optional 8-channel analog cards available for interface to sensors such as meteorological stations, flood levels, nuclear ring, pumps, etc.
- Battery back up available when required.

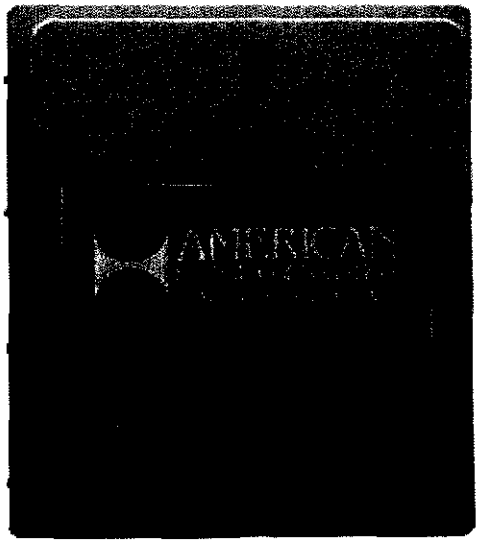
AMERICAN
SIGNAL CORPORATION

TOLL FREE 1 (800) 243-2911 • PHONE 1 (414) 358-8000 • FAX 1 (414) 358-8008 • EMAIL: contactus@americansignal.com

DOCUMENT # 010-0006G
ECO # REVISION A

RTU 2001-AC FSK Mechanical Siren Decoder

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL



AMERICAN SIGNAL CORPORATION

4801 West Woolworth Avenue
Milwaukee, WI. 53218
Phone (414) 358-8000 • Fax (414) 358-8008

Table of Contents

Description		Page
1. AMERICAN SIGNAL CORPORATION LIMITED WARRANTY		3
2. GENERAL INFORMATION		
A. *RTU 2001-AC Decoder Description*		4-5
B. RTU 2001-AC Specifications		5
C. RTU 2001-AC Components		6
3. INSTALLATION		
A. Site Selection And Type Of Mounting		7
B. Electrical Power Requirements		7
C. *Installation General Requirements*		7
D. Installation On Existing Siren And Control		7-9
4. PRE-OPERATION AND START-UP PROCEDURE		9-10
5. THEORY OF OPERATION		
A. General		11
B. RTU Power Supply Board		11
C. Compulert 3 Main Logic Board		11-12
D. FSK Format Daughter Board		12
E. Radio/ Landline Interface Board		12
6. MAINTENANCE		
A. Monthly Maintenance		13
B. Six Month Maintenance		13-14
7. TROUBLE SHOOTING GUIDE		
A. *Compulert 3 Diagnostic Codes*		15
B. Typical Problems-Solutions		15-16
C. FSK Alignment Procedure		17
D. Radio Adjustment Procedure		18
E. Current Sensor Installation & Operation Procedure		19-21
8. DRAWINGS:		
#80-0157A	RTU Power Supply PCB	22
#80-0105C	Compulert 3 Main Logic Board	23
#80-0113A	Compulert 3 Front Panel 2	24
#80-0106A	Compulert FSK Modem Board	25
#72-0378A	Radio Interface Drawing-CP3 to Radio	26-29
#80-0159A	Current Sensor Board Schematic	30
9. BILL OF MATERIALS		
A. RTU 2001-AC		31

1. AMERICAN SIGNAL CORPORATION LIMITED WARRANTY Rev. 11/99

AMERICAN SIGNAL CORPORATION warrants electromechanical siren head equipment, including the housing, motor, frame, and any gear or drive assemblies, to be free from defects in materials and workmanship for a period of five (5) years for parts from the date of shipment, provided such equipment is installed, operated, and maintained in accordance with the instructions, manuals and/or recommendations supplied by American Signal Corporation. AMERICAN SIGNAL CORPORATION warrants all other mechanical, electrical/electronic control equipment (except batteries) to be free from defects in materials and workmanship for a period of two (2) years for parts, two (2) year for in-house labor, from the date of shipment, provided such equipment is installed, operated, and maintained in accordance with the instructions, manuals, and/or recommendations supplied by American Signal Corporation. If within such period any such equipment shall be proved to American Signal Corporation's satisfaction to be defective, such equipment shall be repaired or replaced at American Signal Corporation's option. Notwithstanding the foregoing, American Signal Corporation makes no warranties on equipment manufactured by others and supplied by American Signal Corporation, but will extend to the purchaser any warranties associated with such equipment.

EXCLUSIVE WARRANTY/REMEDY

The foregoing is American Signal Corporation's sole obligation and the buyer's exclusive remedy hereunder and shall be conditioned upon American Signal Corporation's receiving written notice of any alleged defect within 30 days after its discovery and, at American Signal Corporation's option, return of such equipment to American Signal Corporation, f.o.b. its factory in Milwaukee, Wisconsin. **THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED; AND AMERICAN SIGNAL CORPORATION EXPRESSLY DISCLAIMS AND EXCLUDES ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.**

This warranty does not apply to any equipment which in American Signal Corporation's judgment has been subject to misuse, neglect or accident or damage due to local utility power surges, abuse, alteration, improper installation or application, or negligence in use, storage, transportation or handling, acts of god or nature, or repair by anyone other than American Signal Corporation and it's authorized service centers. This warranty does not cover any costs related to transportation for return of equipment or reshipment of any repaired or replaced equipment, or costs associated with installation, removal, or reinstallation of equipment.

LIMITATION OF LIABILITY

Except as otherwise agreed in writing, American Signal Corporation's liability with respect to the equipment and/or services sold hereunder shall be limited to the warranty provided above, and, with respect to other performance of the sales/service contract, shall be limited to the contract price. **AMERICAN SIGNAL CORPORATION SHALL NOT BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES, WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHER THEORIES OF LAW, WITH RESPECT TO EQUIPMENT SOLD OR SERVICES RENDERED BY AMERICAN SIGNAL CORPORATION, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO.** Without limiting the generality of the foregoing, American Signal Corporation specifically disclaims any liability for property or personal injury damages, penalties, special or punitive damages, damages for lost profits or revenues, loss of use of equipment or any associated equipment, cost of capital, cost of substitute equipment, facilities or services, down-time, shut-down or slow-down costs, or for any other types of economic loss, or for claims of buyer's customers or any third party for any such damages. **AMERICAN SIGNAL CORPORATION SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL AND CONTINGENT DAMAGES WHATSOEVER.**

2. GENERAL INFORMATION

American Signal Corporation's RTU 2001 series of siren decoders are AC operated with battery backup to control a variety of outdoor warning devices. The RTU 2001 decoder is capable of multiple warning signals both locally and via radio control. Applications include Civil Defense and weather warning, as well as nuclear and chemical accident warning to meet FEMA, NRC, and EPA requirements.

American Signal incorporates a number of innovative engineering advances in emergency warning technology. The siren control circuitry is designed to operate with a minimum power usage.

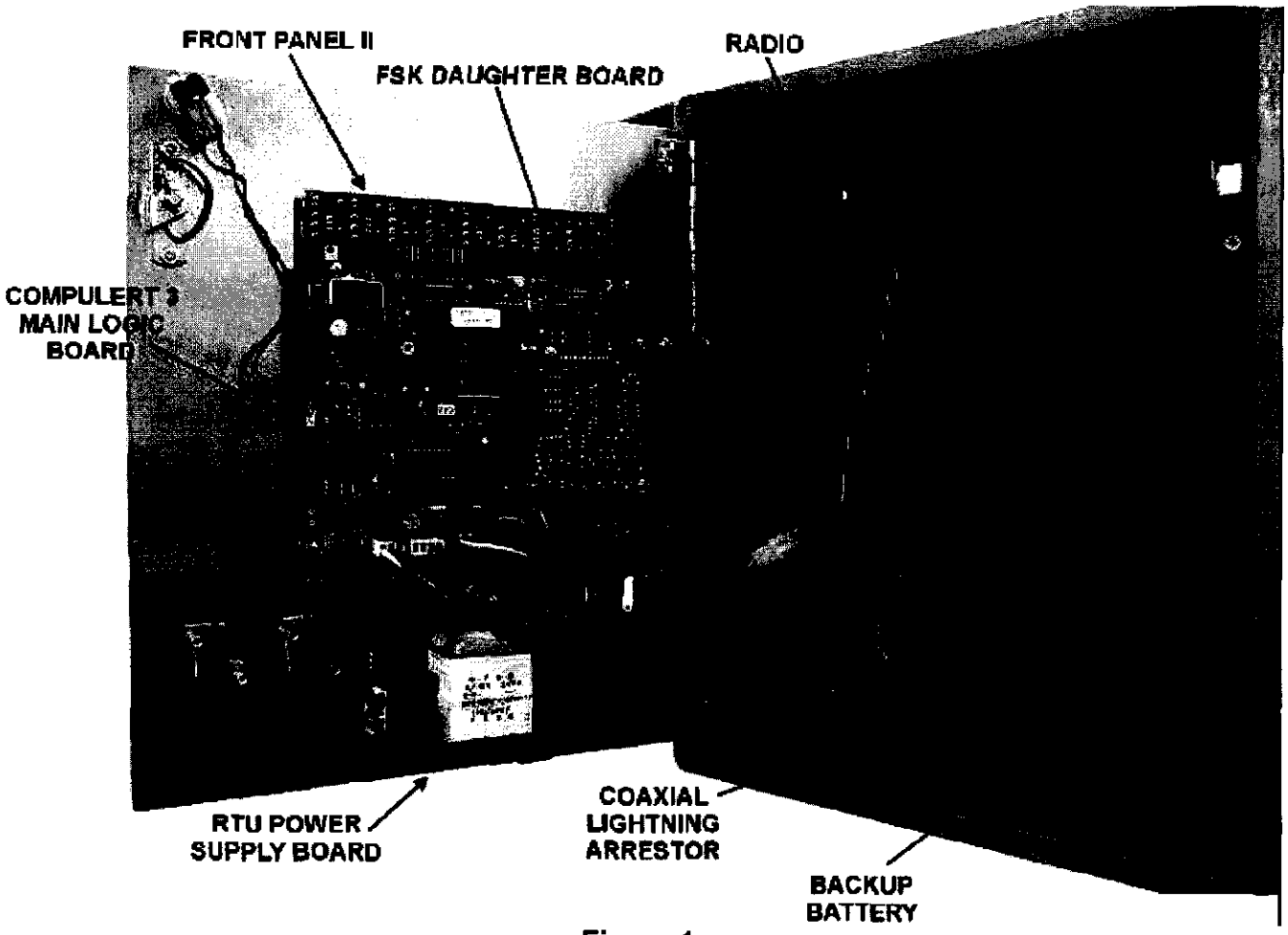


Figure 1

A. RTU 2001-AC DECODER DESCRIPTION

The RTU 2001-AC Decoders (See Figure 1) consist of five major components: (1) Compulert 3 Main Logic Board, (2) Compulert 3 Front Panel, (3) FSK Format Daughter Board, (4) RTU Power Supply Board, and (5) Radio/ Landline Interface Card. The RTU 2001-AC Decoder provides a standard set of six local buttons that can operate either the standard four mechanical siren signals (See Table 1) or any number of custom siren signals. There is also a local Cancel button present on all RTU units.

COMPULERT 3 STANDARD SIREN SIGNAL FORMATS		
Function	**Description**	**Sweep Rate**
ALERT	Steady Tone	3 Minutes
ATTACK	Fast Wailing Tone	6 sec. Up and 6 sec. Down for 3 Minutes
FIRE	Slow Wailing Tone	16 sec. Up and 8 sec. Down for 1.5 Minutes
TEST (GROWL)	Short Burst	1 Seconds

TABLE 1

CUSTOM SIGNALLING- Using the radio input and / or RS232 it is possible to program any number of customer desired signals with the siren controls. Contact American Signal with your signal requirements or application.

B. RTU 2001-AC SPECIFICATIONS

ENVIRONMENTAL PARAMETERS:

- **Operating Temp:** -40^{O} F to +140^{O}F/ -40^{O}C to +60^{O}C
- **Storage Temp:** -85^{O}F to +257^{O}F/ -65^{O}C to +125^{O}C
- **Humidity:** 0 to 100% non-condensing
- **Wind Speed:** 100+ mph

ELECTRICAL:

- **AC Input Voltage:** 120VAC/240 VAC +/- 10% at 5 Amps.
- **Battery Charge Voltage Output:** 14.2VDC +/- 10%
- **Battery Charging Current:** 0.250 Amp Max.

PHYSICAL CHARACTERISTICS:

- **Siren Control Cabinet (H x W x D):** 14 x 12 x 6 Inches/ 35.56 x 30.48 x 15.24 Centimeters
- **Siren Control Weight:** 38 Lbs./ 17.27 Kg.
  (w/ Backup Battery)

C. RTU 2001-AC COMPONENTS

SIREN ENCLOSURE:

The RTU 2001-AC siren decoder is a factory-assembled unit ready for installation at the siren site.

The cabinet contains the Compulert 3 Main Logic Board, RTU Power Supply Board, FSK Format Daughter Board, and Radio/ Landline Interface Card with its manual control panel and all terminations to the main siren control box. The cabinet is a NEMA 4 rated (12" H x 12" W x 8" D) enclosure for a fiberglass enclosure providing a weather resistant environment for the control.

The RTU Power Supply Board w/ battery backup provides the primary power in the operation of the siren decoder. ***THE RTU 2001-AC SIREN DECODER IS DESIGNED TO OPERATE IN THE EVENT OF AN AC POWER FAILURE*** for extended periods of time. If the battery equipment is properly maintained, the siren will remain ready for operation for up to eight hours without outside power to charge the battery.

The RTU 2001-AC decoder is furnished with a manual control panel for up to 6 siren functions plus a cancel button. It also has a Power, AC Fail, and a delayed Door Open indicator LED. The RTU 2001-AC also features LED's above each local button, which can be used to diagnose the current condition of the RTU.

OPTIONAL COMPONENTS:

The External Activation Kit (ASC Part # 095-0021) provides a connection point to tie in dry closures for any local buttons that may be needed (such as a button to activate the siren at the local fire hall). All local buttons can be accessed with the external activation kit.

3. INSTALLATION

A. SITE SELECTION AND TYPES OF MOUNTING

Careful consideration must be given in selecting a site for installation. Mounting the RTU enclosure near the main siren control box is generally preferred so as to keep any wiring and conduit runs to a minimum. Typical mounting height is 8-10 feet above ground so as to minimize any vandalism, theft, or tampering with the siren controls. Consideration should be given to accessibility of RTU enclosure when picking a spot for mounting. Consult the Federal Emergency Management Agency CPG1-I7 "Outdoor Warning Systems Guide" for additional setting and planning procedures.

B. ELECTRICAL POWER REQUIREMENTS

Adequate electrical power must be available at each siren site (see SPECIFICATIONS for requirements).

C. INSTALLATION GENERAL INFORMATION

The RTU 2001 decoders are designed to allow several methods of installation. The pole-mounting version of installation allows the most versatility in site selection. The pole mount is generally more cost effective by simplifying the wiring, at the site, to the pole itself. However, wall mounting is also a common alternative.

Pole mounting can be accomplished either by pre-assembly of the siren and equipment to the pole prior to raising and setting the pole or by assembly after the pole has been raised and set.

D. INSTALLATION ON EXISTING SIREN AND CONTROL

It is assumed there is an existing siren and associated siren control already installed an in place on an existing pole. It is also assumed that the siren and control are in proper working order and has been tested prior to performing the below installation. It is also assumed that any and all power to the existing siren control is turned off at this point.

Equipment Installation:

1. Determine an appropriate place to mount the RTU enclosure near the existing siren control box. Make sure the enclosure can be accessed with a ladder or bucket and that the enclosure door can be opened fully.

2. Attach the RTU 2001-AC enclosure to the pole using the provided RTU mounting bracket and mounting hardware.

3. Connect a # 6 Awg. braided copper ground wire from the RTU 2001-AC ground lug to the existing pole's earth ground wire. **Note:** If there is no ground wire from the siren head down to a ground rod sunk in the ground at the base of the pole, you should add this component to the pole. This is necessary to provide a path for lightning to seek out ground so as to minimize damage to the siren and associated equipment.

4. (Optional, If supplied) Attach antenna and associated mounting bracket to the siren pole. Make sure antenna is mounted on the side of the pole closest to the siren system transmitter.

Mount antenna bracket up as high as possible, making sure you avoid having the antenna whip touch any metal or near any high power lines.

5. Run coax down the pole, securing it to the pole. Attach the coax to the bottom of the RTU 2001-AC enclosure. Make sure to tape the antenna fittings on both ends of the coaxial cable.

6. (Optional, If supplied) Attach rotation sensor to siren head. Make sure sensor is properly adjusted. Run rotation sensor cable down the pole, securing it to the pole. Run cable in the bottom of the RTU2001-AC using a cord grip (if not in conduit).

7. Remove any existing decoder, associated wiring, and conduit that are not needed marking where the existing decoder's dry closure wires were terminated along with marking where the existing decoder's AC power leads were terminated.

8. Run a new piece of conduit from the existing siren control box to the RTU 2001-AC enclosure. Make sure the conduit comes in the RTU 2001-AC enclosure in the bottom left area near the J3/J4 terminal strip. This is where all connections will be made to the RTU 2001 control.

Wiring Installation:

9. Determine what type of AC power will be provided for the RTU 2001-AC. The RTU can accept either 120 VAC or 240 VAC. Before connecting the AC power leads to the RTU 2001-AC, make sure the AC selector switch on the RTU Power Supply board is properly set. **Note:** By default, the RTU 2001-AC is factory set for 240 VAC power.

10. Run a Black, White, and Green # 14 Awg. wires for AC power from the existing siren control to the RTU2001-AC. Terminate the Black wire (Hot AC lead) to J3-Pin 1 of the RTU Power Supply board. Terminate the White wire (Neutral AC lead) to J3-Pin 2 of the RTU Power Supply board. Terminate the Green wire (Ground lead) to the ground lug of the RTU Power Supply board.

11. Run an Orange, Red, and Yellow (for sirens with separate rotation motor contactors only) # 18 Awg. wires for dry closures from the existing siren control to the RTU2001-AC. Connect the Red wire to J3-Pin 6 of the RTU Power Supply board. Connect the Orange wire to J3-Pin 5 of the RTU Power Supply board. Connect the Yellow wire to J3-Pin 11 of the RTU Power Supply board.

12. (Optional, if supplied) Attach the current sensor to one of the main siren motor leads. Disconnect ***one*** of the siren motor leads from the output of the main contactor, run the motor lead through the opening of the current sensor, and re-attach the motor lead back to the output of the main contactor. Fish the current sensor cable through the conduit to the RTU 200-AC enclosure.

13. Connect the ***current sensor*** wires to the RTU Power supply board as shown below:
    -Red Wire: J3-Pin 12
    -Black Wire: J3-Pin 14
    -White Wire: J3-Pin 7

14. Connect the ***rotation sensor*** wires to the RTU Power supply board as shown below:
    -Red Wire: J3-Pin 12
    -Black Wire: J3-Pin 14

-Green Wire: J3-Pin 13

4. PRE-OPERATION AND START-UP PROCEDURE

Once installed, the siren and accessories should be inspected and tested in accordance with the following procedure:

1. Install the (12-VDC) twelve-volt DC battery provided into the RTU2001-AC enclosure at the bottom of the siren control enclosure. Position the battery to the right hand side of the enclosure. Connect the Red wire to the battery positive and the Black wire to the battery negative.

2. Inspect the incoming AC power connections to J3/J4 of the RTU Power Supply PCB. Ground should terminate to the ground lug located on the corner lug of the RTU Power Supply PCB. Line "HOT" should terminate to J3-Pin 1. Line "NEUTRAL" should terminate to J3-Pin 2.

3. Make sure the On/Off toggle switch (SW1) on the RTU Power Supply board is in the OFF position.

4. Install the appropriate fuses in the service disconnect and turn the disconnect switch to the on position. If circuit breakers are used turn the circuit breaker "ON".

5. Place the control power toggle switch on the RTU Power supply to the ON position.

6. The green power lamp of the RTU Logic board will light on this application of power to the siren control.

7. The siren is now ready for start up testing.

8. The green power LED of the Front Panel should be on. There should also be a red Door Open LED.

9. Momentarily press the Test (Growl) signal button. The siren control will operate for approx. 1 second and do a short burst.

10. Mechanical sirens of the rotational type should rotate during this signal operation.

11. Inspect the RTU Power Supply PCB and verify that the 'RUN' LED illuminates when the main siren contactor pulls in. and the 'ROTATE' LED blinks as the siren head rotates (If applicable).

    CAUTION: Use ear protection before proceeding to step 12. Failure to do so can cause hearing damage.

12. Depress one of the six siren signal buttons. The siren will now operate at full output. Verify that the 'RUN' LED illuminates when the main siren contactor pulls in. and the 'ROTATE' LED blinks as the siren head rotates (If applicable).

13. Call the appropriate agency where the CSC960 FSK Encoder is and have them 'Poll' the siren. Make sure the unit sends a status back to the encoder. Have them send a 'Test' command and verify the siren does operate. Have them 'Poll' the siren and verify the siren

status says 'Activate OK'. Close the RTU enclosure door and have them 'Poll' the siren again. Make sure the siren status says 'Door Closed' and 'AC Power OK'. If not, have them send a 'Reset Status', then 'Poll' siren again to verify everything is ok.

Note: Information on the installation and operation of any control devices or accessories is not within the scope of this manual. Refer to the manual provided by the manufacturer of the equipment.

5. THEORY OF OPERATION

A. GENERAL

The RTU 2001-AC Decoder is a self-contained unit that can be powered by either 120 or 240 VAC service with an additional backup battery source of power in case of loss of AC power. It houses an AC Power Supply Board, Compulert 3 Main Logic Board, FSK Format Card, and a Radio or Landline Interface Card in a stand-alone Fiberglass NEMA 4 enclosure. It also has a galvanized mounting bracket that moulds itself to any pole for stability in mounting. All RTU's that contain a radio feature antenna coaxial cable lightning protection. The RTU Power Supply Board features AC line surge suppression as well.

B. RTU POWER SUPPLY BOARD

The RTU Power supply provides step-down AC power of 18-20 VAC to the Compulert 3 Main Logic board. The 120 or 240 VAC input power to J3/J4 is fused on the power supply board (refer to drawing #080-0157A). It also supplies a connection point for all connections between the RTU and any external device or sensor.

All inputs to the RTU 2001-AC can be made via the 16-pin connector (J3/J4) located on the RTU power Supply board. It also has LED indicators for AC power in, Siren Run, and Rotation inputs.

The RTU Power supply has a built-in heater circuit with a thermostat to help reduce moisture and condensation. An enclosure heater circuit is employed in the design to stabilize humidity in the enclosure. The heaters are two (2) 25-watt resistor-type heaters connected at 120 VAC to provide a total of 50 watts of heating to the enclosure. A thermostat that is factory set at about 60 degrees Fahrenheit (15 degrees Celsius) controls the heaters. No maintenance is required of this feature.

C. COMPULERT 3 MAIN LOGIC BOARD

The Compulert 3 Main Logic board is a microprocessor controlled logic controller. It utilizes an EEPROM, which can be programmed via an on-board RS-485 jack with the optional ASC programming kit. This allows the RTU to be programmed for any number of options, buttons, functions, and tactical addresses.

The board also has an input/output section that can be used for any number of sensors, which include, siren motor current sensors, acoustic sensors, rotation sensors, proximity sensors, and intrusion sensors.

It has a battery charger circuit that charges the sealed lead-acid backup battery. It is a current limited charger circuit that limits the amount of charging current at 250 milliamps maximum.

The Compulert 3 Main Logic board has two switched relay closures. One to power the main contactor which in turn powers up the main siren contactor and a second to provide power to the rotation motor on the rotational sirens, or for the use of a strobe light.

It also has two 12-pin slots for format cards (like FSK) and a plug for the front local button panel.

When a local button is depressed, or a remote input closure occurs, the RTU board operates. The RTU board turns on, lighting the front panel indicator lights, and closing the appropriate output

relay(s). The logic board then looks for the appropriate inputs from any and all sensors configured on that siren.

Siren signals are operated via the local buttons or high going signals on the remote inputs of J102-1 through J102-Pin 8 (refer to drawing #080-0105C). J101-Pin 4 is a +12 Vdc connection. A closure of J101-Pin 4 to the appropriate pin of J102 will provide one of several signals. The operation of a signal initiates a dry closure of proper timing and duration to the signal selected.

The RTU Logic Board is modular in design and can be easily removed via two (2) Nylatch connectors and four (4) wing nuts, which fasten the faceplate to the siren control after removal of the board's connectors.

D. FSK FORMAT DAUGHTER BOARD

The FSK Format card provides a connector to interface to either a Landline Interface card or two-way radio. All signals such as PTT, Transmit audio, Receive audio, Squelch, and ground from radio or landline card go through this connector. The FSK Format card has three potentiometers for fine-tuning audio adjustments for virtually any type of radio interface.

E. RADIO/LANDLINE INTERFACE BOARD

Virtually any type of radio can be interfaced to the FSK Format card via a radio interface cable. See the Drawings section of this manual for a complete list and wiring details for all types of radios that have currently been interfaced to the FSK Format Card.

For siren systems that do not have a radio frequency to use or a short distance to cover, American Signal has developed an alternative. This is the Landline Interface Card. It acts like a radio and would take the place of a radio in those systems. It has adjustments on the Landline Card to adjust and compensate for loss and for length of run from the CSC-960 Encoder. All that is needed to use this type of system is a pair of Landline Cards (One at the CSC-960/ siren and one for each RTU-2001-AC) and a direct pair of wires from each siren decoder back to the CSC-960 Encoder.

6. MAINTENANCE

The RTU2001-AC Siren Decoder is designed to provide error free operation and ease in scheduled maintenance. Should repair become necessary, all components can be replaced in a modular fashion to eliminate costly labor.

Scheduled maintenance is limited to FSK and radio alignment, inspection and tightening electrical connections, normal battery maintenance, and periodic testing of the siren system to assure system readiness at all times.

Diagnostic options greatly enhance the maintenance of the system and further reduce labor requirements to service the system.

The following is a recommended guideline to maintain siren readiness, which has been broken into categories. Each category describes the service to be performed and the procedure of that service.

A. MONTHLY MAINTENANCE

On a monthly basis, American Signal recommends that the siren be tested at least once.

If the siren is equipped with FSK two-way option, the site should be visited to check the status indicators. If the siren is not equipped with the American Signal FSK two-way option, spotters should be employed to verify operation on the day(s) of testing.

B. SIX-MONTH MAINTENANCE

It is recommended that the siren site be inspected every six months to determine the condition of the siren and accessories. The inspection should include the following:

1. Siren Control Enclosure Appearance (inside and out)
2. Battery Connections and Condition
3. Check Fuses and Connectors
4. Perform an Operational Test of All Functions

1. Siren Control Enclosure Appearance

The siren control enclosure should be inspected for vandalism and/or damage. The doors of the battery enclosure and siren control enclosure should be inspected for water leakage into the enclosures. Talcum powder should be applied to the door gaskets, as needed, to keep them soft and operable. Any source of water leakage should be found and eliminated. Remove any debris, which has accumulated.

2. Battery Connections and Condition

The batteries should be inspected for corrosion or leakage. Care should be taken in maintaining tight connections to the battery terminals. The terminals of the batteries cable connector should be cleaned and re-tightened to assure a good connection. Battery should be tested under load to assure good condition.

3. Check Fuse and Connectors

Inspect the siren control for loose connections and tighten as required. Inspect the fuses of the AC power, RTU Power Supply Board, Compulert 3 battery charger, and RTU control box.

4. Perform an Operational Test of All Functions

To test the operation of the siren system, refer to preoperational and start-up procedure. Any optional accessories to the siren will have their own testing procedure and will be found in the option supplements to this manual.

7. TROUBLESHOOTING GUIDE

A. COMPULERT 3 DIAGNOSTIC LED CODES

The following are the typical error codes as seen on the Compulert front panel LED's of the RTU 2001-AC. If you do not see these lights, try pressing and holding the Cancel Button for 3 to 4 seconds, and reset RTU by turning off and on RTU. IF the Flashing Cancel LED does not resume, there is a problem with the Compulert 3 Main Logic Board, microprocessor, and/or EEPROM.

LED's	Meaning
Flashing #6 LED	Bad 40-pin microprocessor chip (U8)
Flashing #5 LED	Blank or Bad EEPROM chip (U12)
Flashing #5 & #6 LED's	No EEPROM in socket (U12)
Flashing #3 or #4 LED	Computer crash due to lightning or surge
Flashing #2 LED	Transmit timing error, due to radio interference
Flashing Cancel LED	Normal Idle operating RTU

B. TYPICAL PROBLEMS-SOLUTIONS:

Symptom: No Power LED on RTU.

Cause/Remedy: No AC power and/ or no DC power. Check fuse (2 amp) on Power Supply Board, Check incoming AC power. Check power connections on J106 of Compulert 3 Main Board.

Symptom: Flashing # 5 LED.

Cause/Remedy: Bad or surged EEPROM-press and hold Cancel button and reset board, or replace EEPROM. Bad Compulert 3 Main Logic Board-replace.

Symptom: Flashing # 6 LED

Cause/Remedy: Bad or surged microprocessor-replace. Bad Compulert 3 Main Logic Board-replace.

Symptom: Door Open Condition all the time.

Cause/Remedy: Faulty door switch or wiring. Check and replace as necessary.

Symptom: Siren does not operate and no LED or local button operation.

Cause/Remedy: Improper AC power-check AC voltage. Bad Compulert 3 Main board or bad from panel board-replace as necessary.

Symptom:	Siren does not operate but LED's and local button turns on.
Cause/Remedy:	Bad wiring or contactor problem-repair as necessary. Bad Compulert 3 Main board or bad Power Supply board-replace as necessary.
Symptom:	No rotation LED.
Cause/Remedy:	Bad wiring or no 12 VDC to sensor-check and repair as necessary. Bad sensor-replace.
Symptom:	No RUN LED.
Cause/Remedy:	Bad wiring or bad current sensor-repair or replace as necessary.
Symptom:	No activation via radio.
Cause/Remedy:	Radio power off, radio interface cable problem, or FSK daughter board problem-repair or replace as necessary.
Symptom:	No response to 'POLL'
Cause/Remedy:	Radio power off, radio interface cable problem, bad battery under load, or FSK daughter board problem-repair or replace as necessary.

C. FSK ALIGNMENT PROCEDURE

The following procedure is to be used on Compulert 3 FSK Boards (ASC Part # 080-0106) with a 'FSK014' version IC chip or newer. It is to be performed with the ASC Alignment Tool (ASC Part # 080-0145). The following procedure should be done anytime a FSK Daughter board is replaced.

1- Disconnect FSK audio cable from radio interface cable. Plug into FSK Alignment Tool.
2- Make sure that the Compulert main PCB is powered up and that there is a flashing 'Cancel' LED.
3- Plug FSK Alignment Tool into J111 of the Compulert Main PCB (The empty 12-Pin slot next to the FSK Daughter Board). **Note:** FSK alignment tool can be plugged in either direction since there are diodes for protection on the FSK alignment tool.
4- Make sure that P3 (Receive Potentiometer) is turned up fully clockwise. See Figure 2 below.
5- Plug an AC voltmeter from ground (Compulert chassis) to the single black fly wire on the FSK Daughter board. Measure AC Voltage and adjust P1 for 300 mV AC. (Clockwise makes the voltage increase). This will set the radio's transmit level and will give proper FSK audio deviation for most radios.
6- With 300 mV AC audio present on black fly wire and the FSK Alignment Tool plugged into both the FSK Board and Compulert Main board, Adjust P2 up until the 'PT' LED on the FSK board barely turns on and fades out. **Note:** What you are doing when making this adjustment is adjusting the DC Bias voltage present at Pin 11 of U2 of the FSK Daughter board when the audio tone of 1680 Hz is also present. It should be approximately 1.7 Vdc. The FSK Alignment Tool aids in this adjustment and no DC voltmeter or measuring are necessary.
7- Unplug FSK alignment tool and plug back in the radio interface cable.

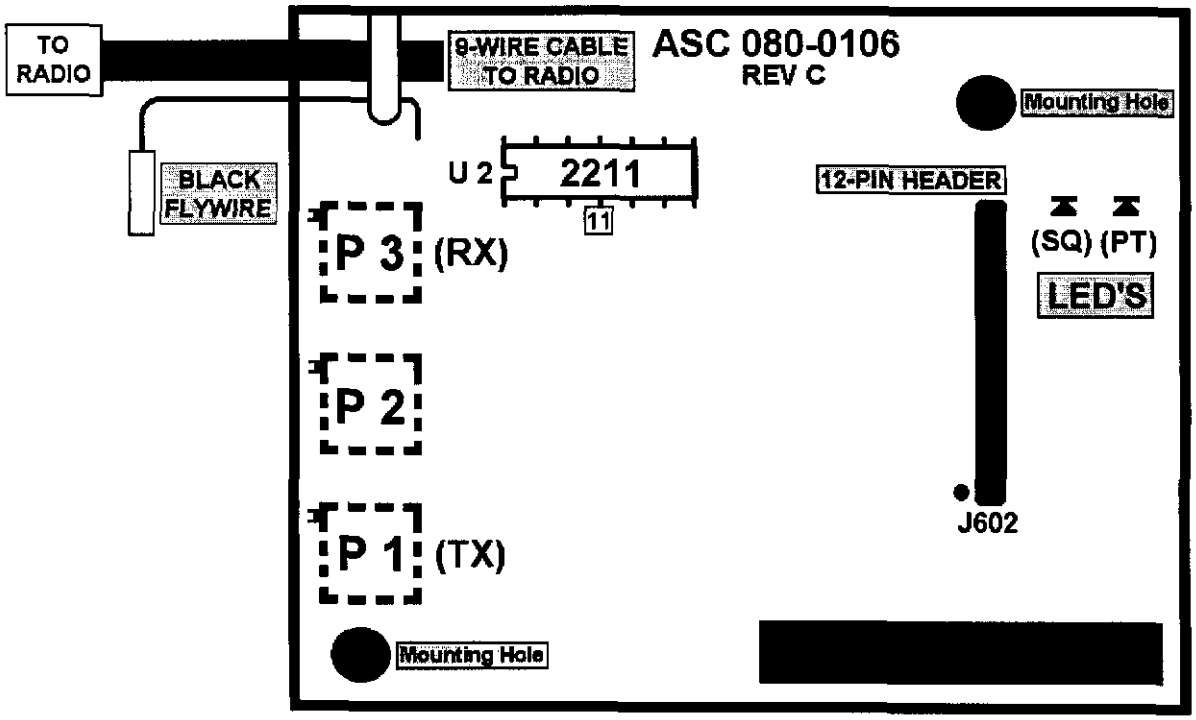


Figure 2

A. RADIO ADJUSTMENT PROCEDURE

1- Make sure the squelch jumpers are set properly for the appropriate radio. See ASC Drawing # 072-0378B for details. Make sure both the Radio and the Compulert board are powered up, and that the radio interface cable is plugged in both the FSK daughter board and Radio. While the Radio is **not** receiving any radio traffic, the squelch LED on the FSK Daughter board should **not** be lit.
2- Now generate with a Service Monitor a constant 1KHz audio tone on the proper Radio Frequency. Also generate a Private Line (PL) if necessary.
3- Adjust the 1 KHz audio tone for 3 to 3.5 KHz deviation and adjust the PL for 1 KHz deviation. The total deviation should be 4 to 4.5 KHz.
4- Make sure you can hear the radio receiving the audio tone. Check the Squelch LED on the solder side of the FSK Daughter board. It now should be lit. Temporarily stop generating with the service monitor and check the Squelch LED again. It now should be off. **Note:** If the Squelch LED operates backwards, then you should power down the Compulert Board, remove the mounting screws of the FSK Daughter board and move the Squelch jumpers (See Figure B below) to the opposite position and perform the above test again.
5- Generate the above signal again and connect an AC Voltmeter from ground (Compulert chassis) to the single black fly wire on the FSK Daughter board. Measure AC Voltage and adjust P3 for 300 mV AC. **Note:** On some Radios, the volume control of the radio (Kenwood) also controls the audio level found on the black fly wire. In this case, you should whenever possible, turn the radio to the default volume first and then adjust P3 for 300 mV AC.

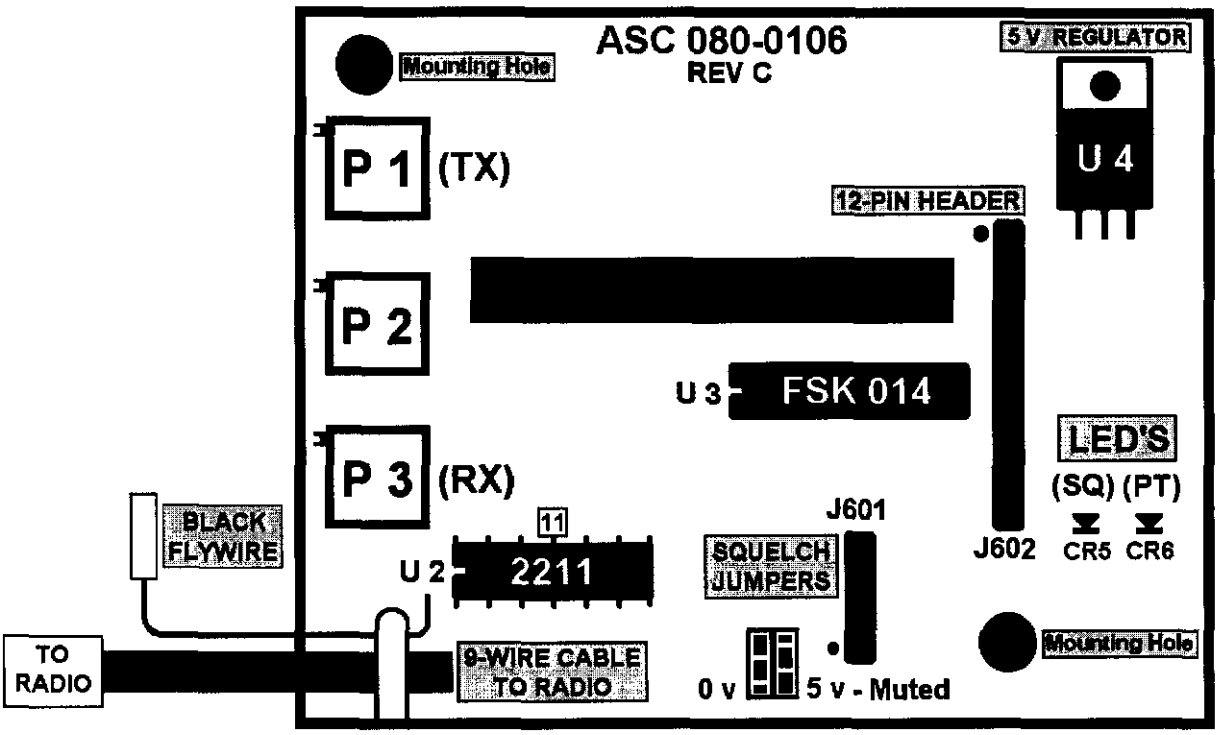


Figure 3

A. CURRENT SENSOR INSTALLATION & OPERATION PROCEDURE

This document is an installation/operation procedure for adding a current sensor board to an existing siren motor control. This can be done for any Tempest Model siren using a DC siren control or AC/DC siren control. (**Note**: The current model Tempest controls have the current sensor board factory pre-installed on FSK model siren controls.) This can also be done using an RTU 2000.

The current sensor board is a simple design board. It is used in conjunction with American Signal Corporation's Compulert FSK system. This aids in determining remotely whether the siren is drawing current while running. It can be used in conjunction with an optional rotation sensor. Both of these sensors are only used if the siren controls are operated by FSK two-way telemetry. These sensors can aid in determining whether the siren is operating properly without having to visit the siren location.

Mounting

The current sensor board consists of a circuit board with an inductor coil (sensor) and three leads for connecting to the siren control panel. See Figure 4 and 5. Since it is used in conjunction with the Compulert FSK system, it is preferable to terminate and mount the sensor in the appropriate cabinet. This would be the siren control box where the siren's main contactor and motor leads are located. If there is a DC only siren control or an AC/DC siren control, the sensor should be mounted in the siren's DC control box. It is preferable to mount the sensor board near the main contactor for ease of installation. You should also secure the sensor so it does not touch or short out the back of the sensor against the main control fuse or any metal in the control.

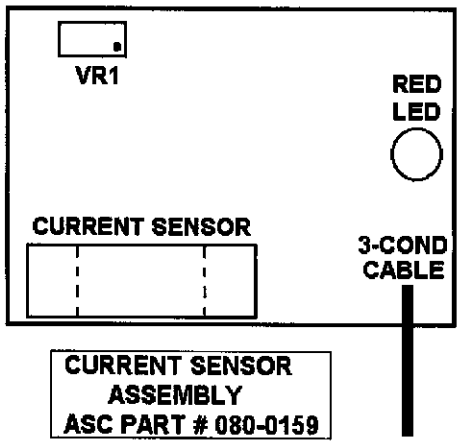


Figure 4

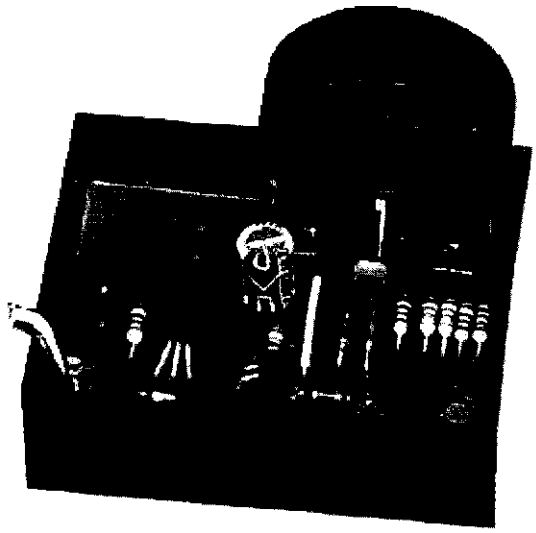


Figure 5

Wiring

Connection into the circuit is simple. There are three wire connections to be made using the supplied 3-conductor cable. The current sensor needs 12 volts DC to power the sensor board. Typically this is a Red wire. The board also needs a ground connection. Typically this is a Black wire. There is also a sensor output wire. Typically this is a White (or Green) wire. (**Note:** The wire colors may change depending upon the version of current sensor and type of conductor cable. See the appropriate siren control drawing for details. The standard drawing is ASC drawing # 080-0157B. A typical interface from the RTU 2000 to a typical 240 3-phase siren control drawing is provided. See Figure 6 for details. If the colors of your current sensor board differ from this, consult the American Signal Service department for assistance.) You will also need to install **one** of the main **siren motor's** wires through the sensor. There is a hole through the sensor. This hole will fit up to a #2 AWG wire through it. (**Note:** It is very important to run the siren motor leads through the sensor hole and **not** the battery lead. Otherwise the sensor will not operate properly and you may see an 'Overrun' or 'Local Activation' condition when polling the siren decoder.)

The current sensor board wire connections in detail. All connections are to be made inside the RTU 2000 control cabinet:

-12 VDC Power In Wire (Red Wire)- This should be connected to the J3/J4 connector on the RTU's Power Supply PCB. Connect to J3/J4-Pin 12. This pin will provide 12 VDC all the time.

-Ground Wire (Black Wire)- This should be connected to the J3/J4 connector on the RTU's Power Supply PCB. Connect to J3/J4-Pin 14. This pin will provide Ground all the time.

-Sensor Output Wire (White/ or Green Wire)- This should be connected to the J3/J4 connector on the RTU's Power Supply PCB. Connect to J3/J4-Pin 7. This pin is the Siren-Run Feedback Input. There is a RED LED on the Power Supply PCB for a visual indication of a proper Siren-Run Feedback. This LED should only be lit while the siren is running. However, It is advisable to measure the DC voltage input while running. To get a valid feedback, the DC voltage must be above 8 VDC. Nominally this should be 12 VDC.

Operation

The current sensor operates only while the main siren motor is drawing current while running. Power is applied to the sensor all the time, but there is very little current draw by the current sensor board when the siren is idle. Ground is applied all the time. When the siren is activated either locally or remotely and if the motor is drawing current and the sensor is operating properly, the sensor will output will be approximately 12 VDC. This can be measured with a DC voltmeter. It can be measured from ground to the sensor output wire (White/or Green wire). You can disconnect this wire when measuring this voltage. This may aid you in troubleshooting the siren control system when there is a 'No Power' condition reported when the siren decoder is interrogated after activating the siren. Be sure to reconnect the sensor output wire to the siren control when done. If the voltage output is low from the sensor, there is a variable potentiometer to adjust the output. Re-adjust the output while the siren is running. There also should be an illuminated LED on the current sensor PCB. This should be bright while the siren is operating.

If you are unsure about the connections to your control or have any questions, do not connect the sensor to the panel. Call the American Signal Service Department instead. You can reach them by dialing 1-800-243-2911. Any damage incurred by incorrectly installing this sensor will not be covered under warranty and may be expensive to repair. Have the model number of the siren control, siren head, customer name, and the American Signal Sales Order available before calling. You can obtain all this information from the Invoice or Packing slip you received with your equipment.

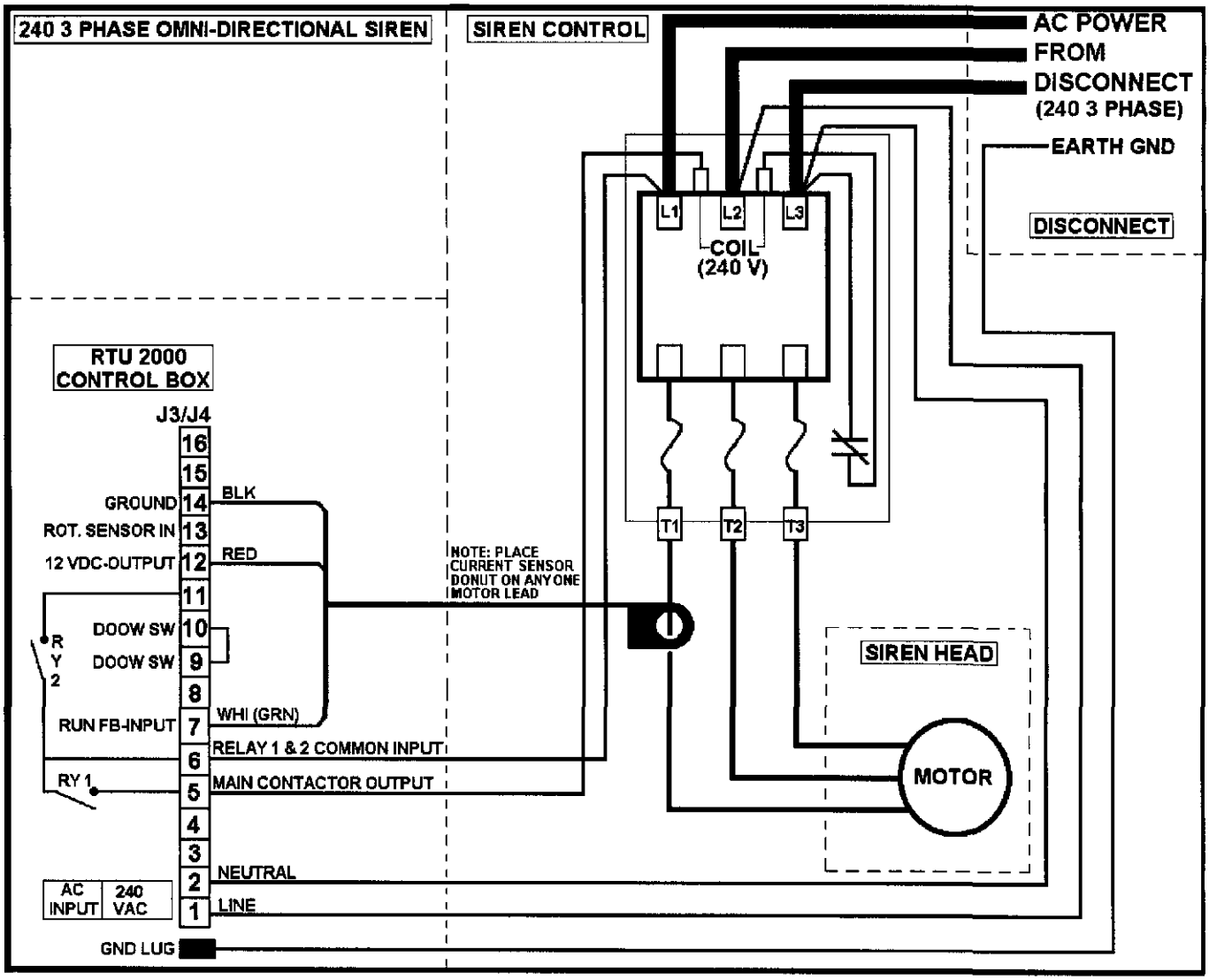
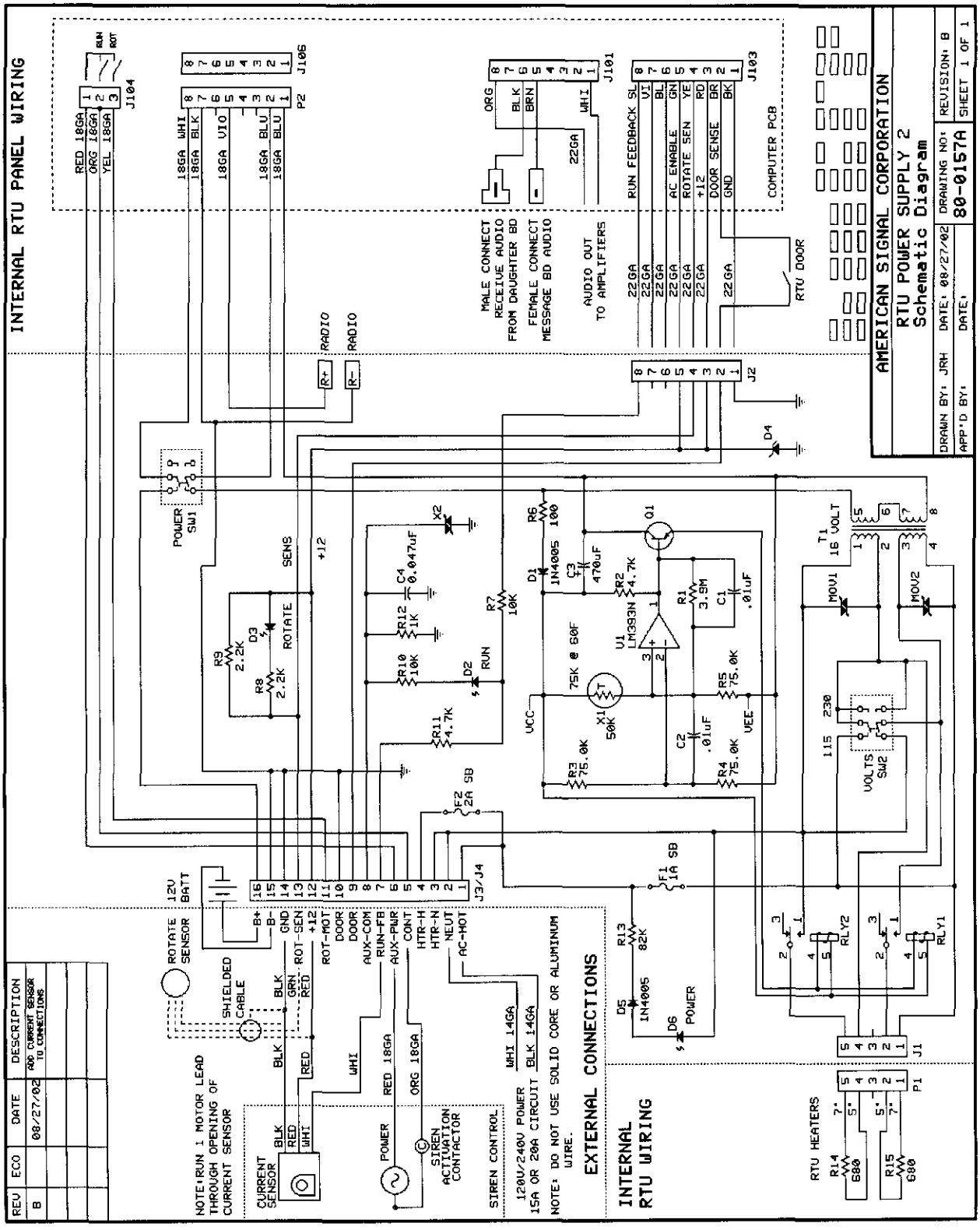
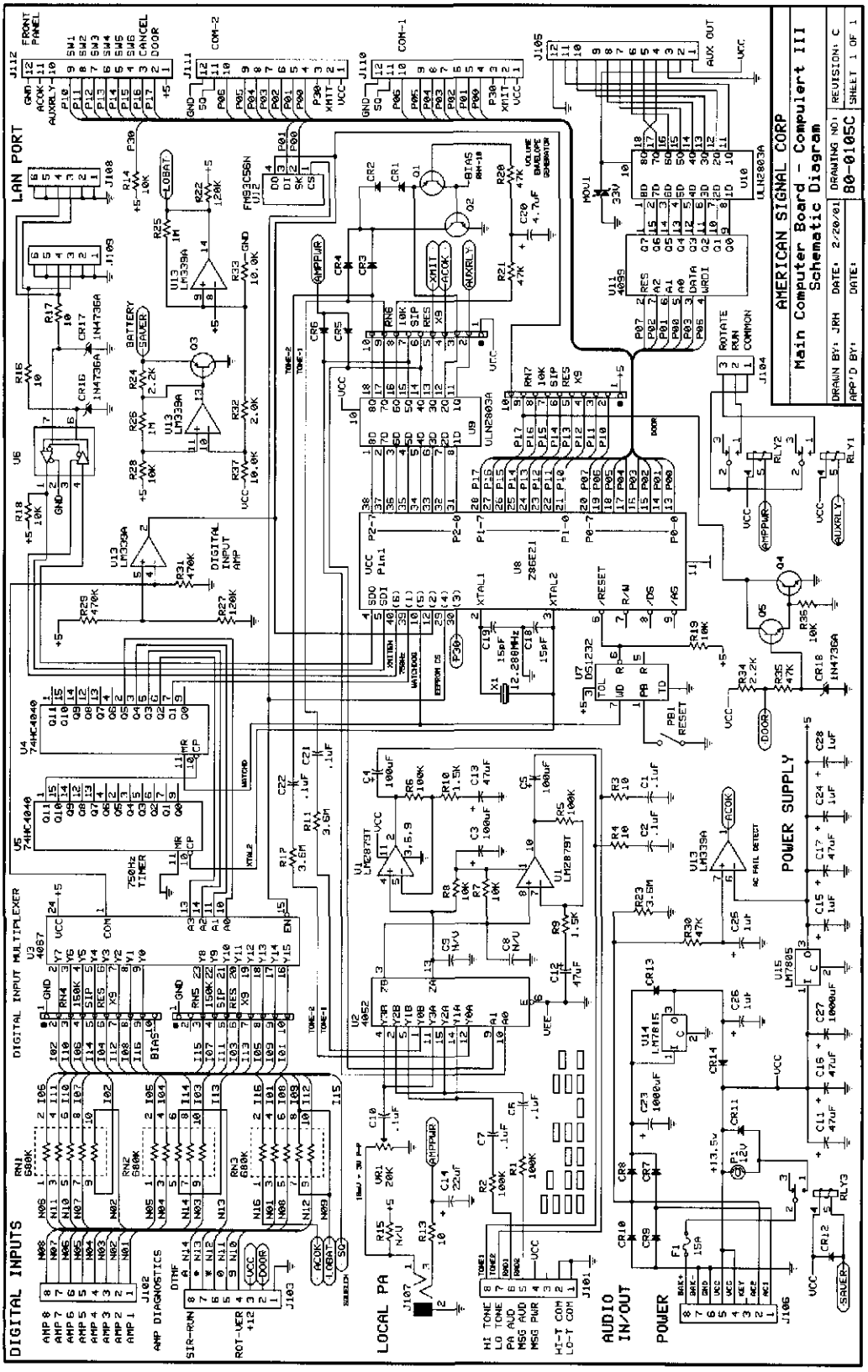


Figure 6

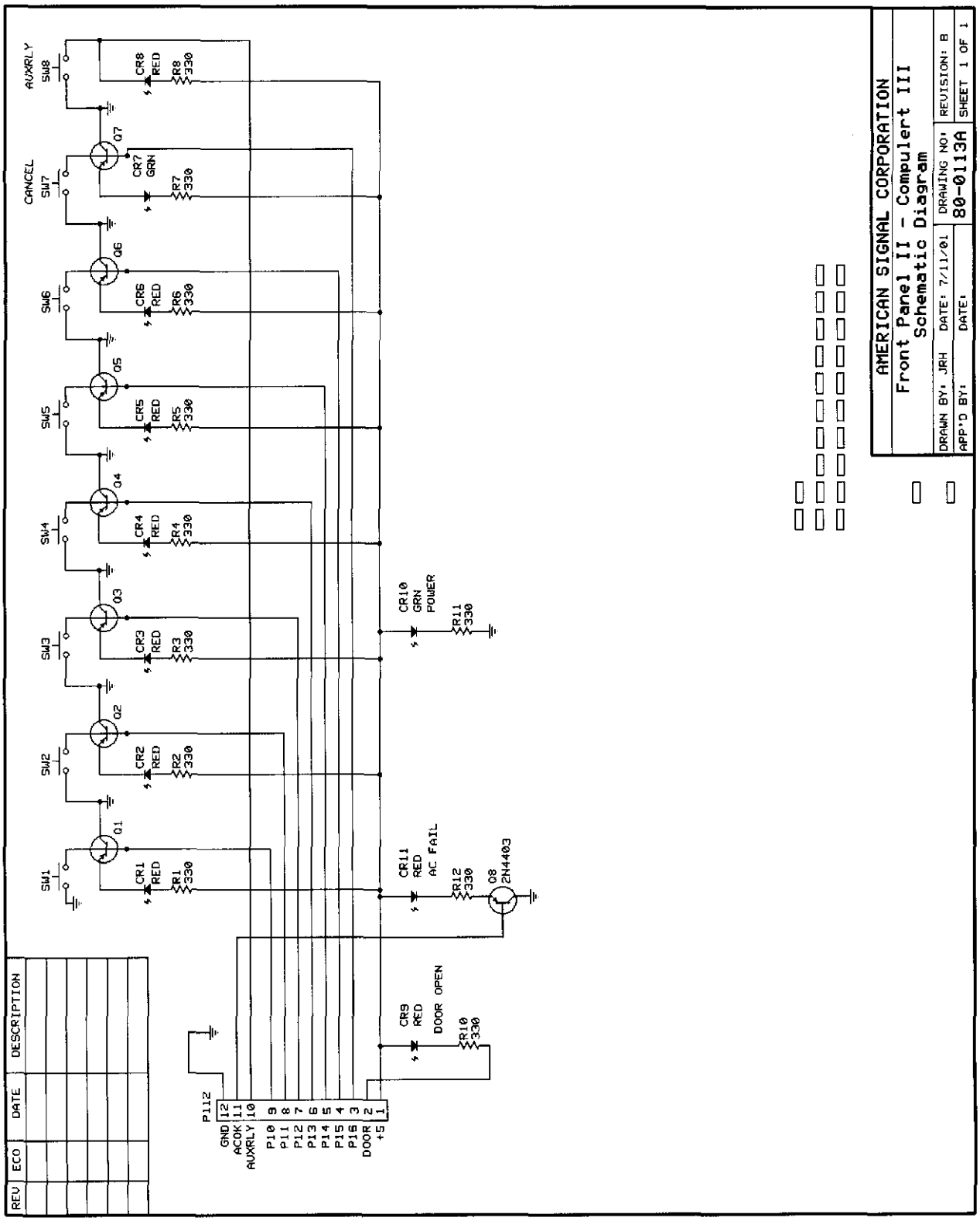
8. DRAWINGS



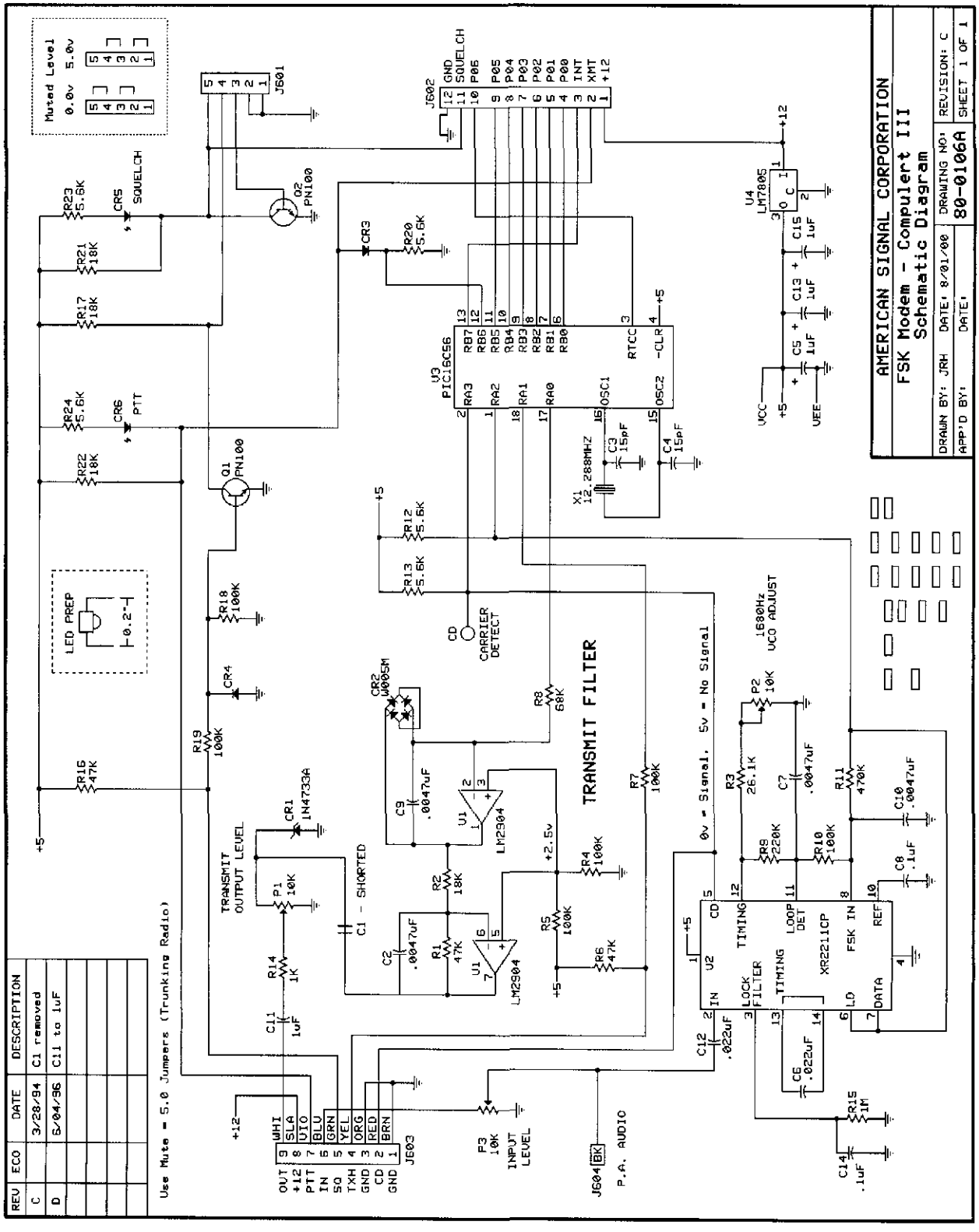
RTU POWER SUPPLY PCB



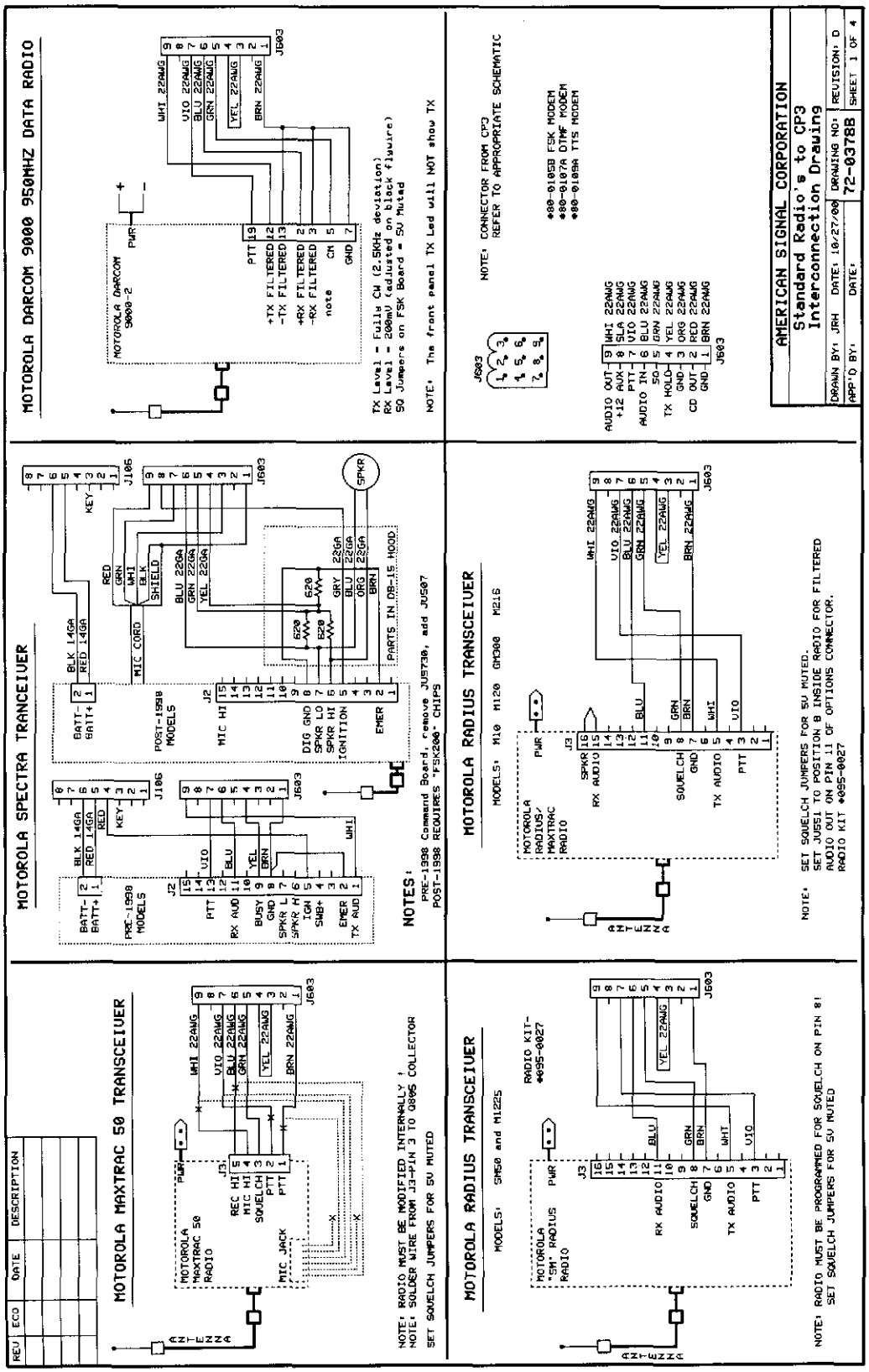
COMPLERT 3 MAIN LOGIC BOARD



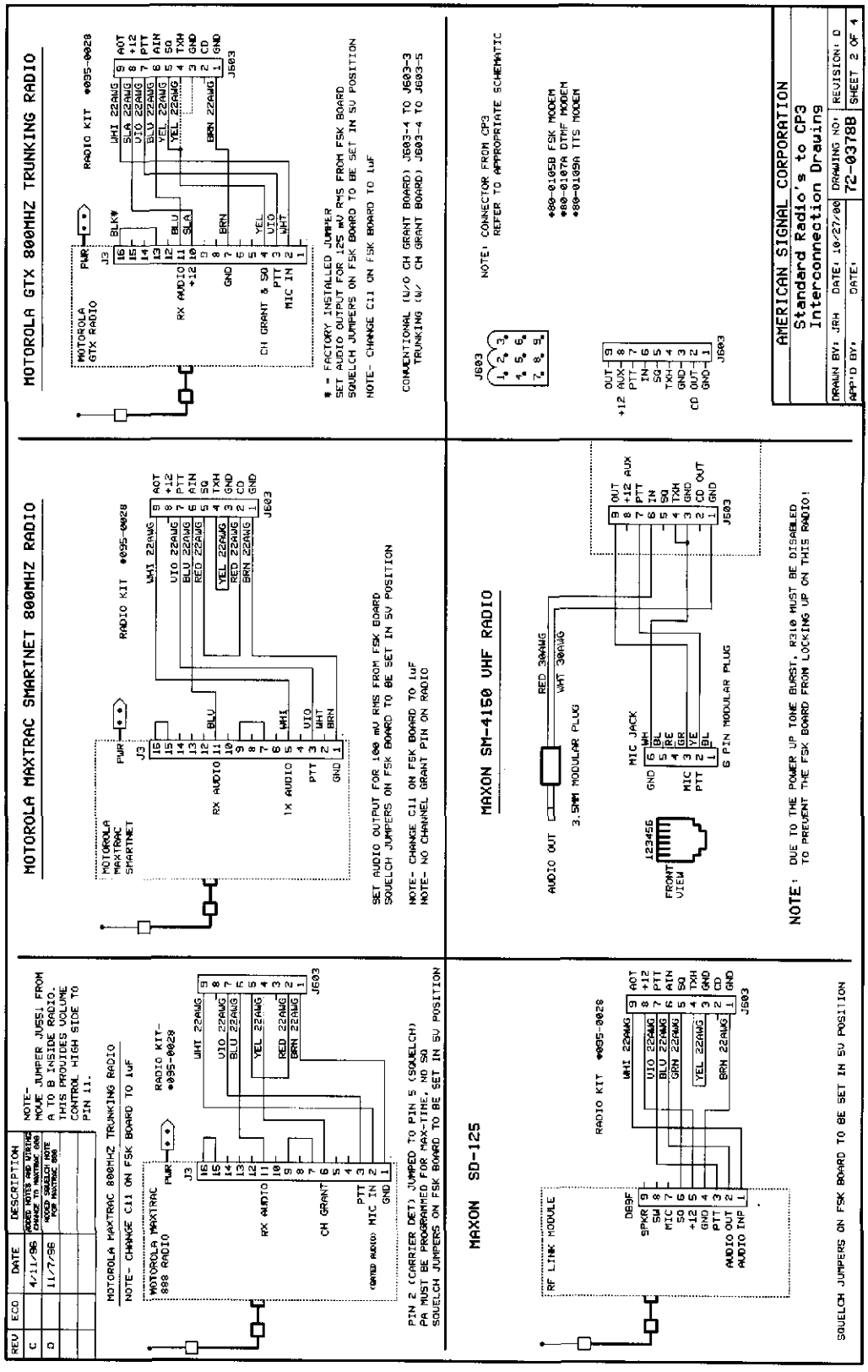
COMPULERT FRONT PANEL II



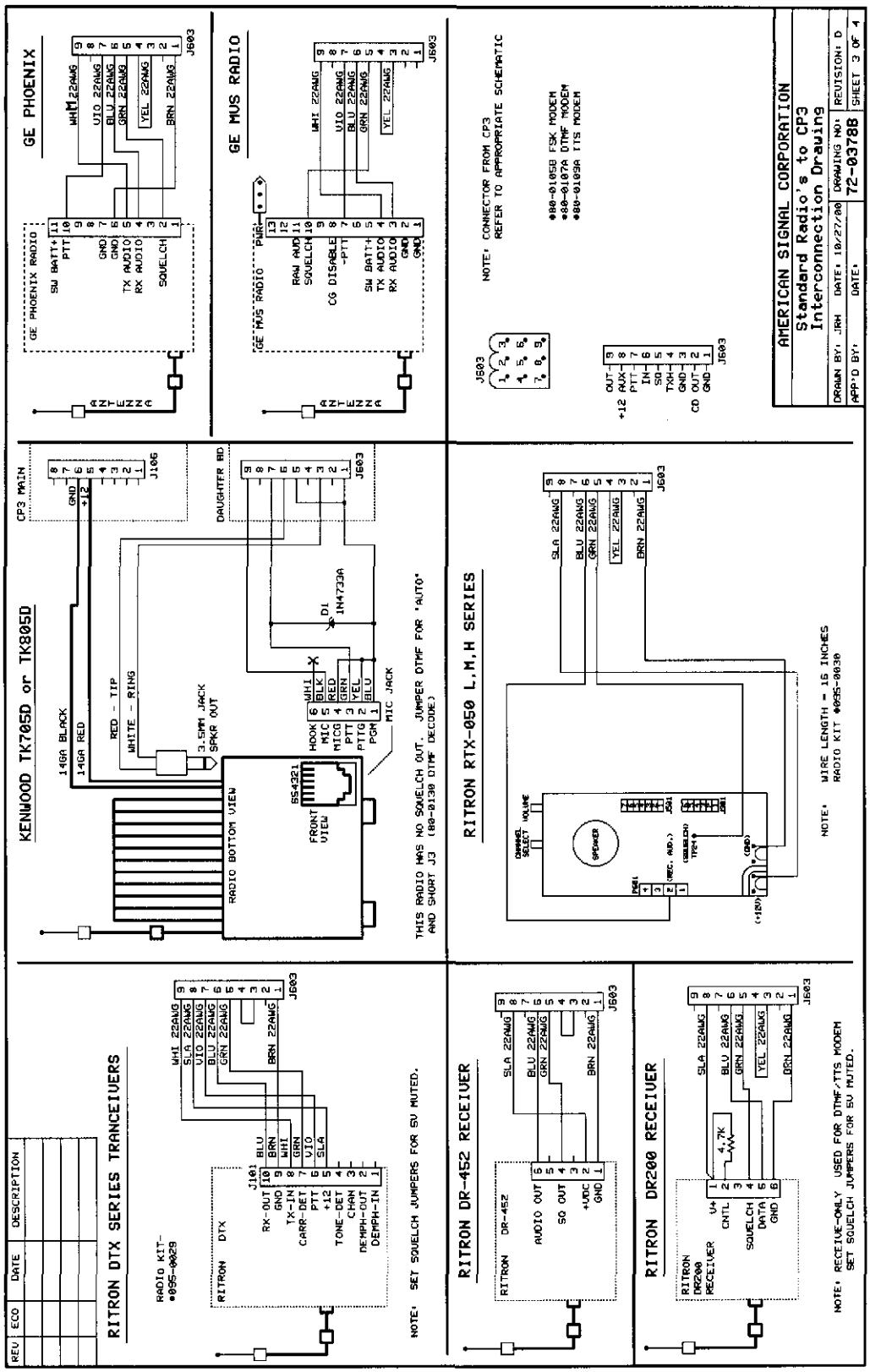
COMPULERT 3 FSK MODEM SCHEMATIC



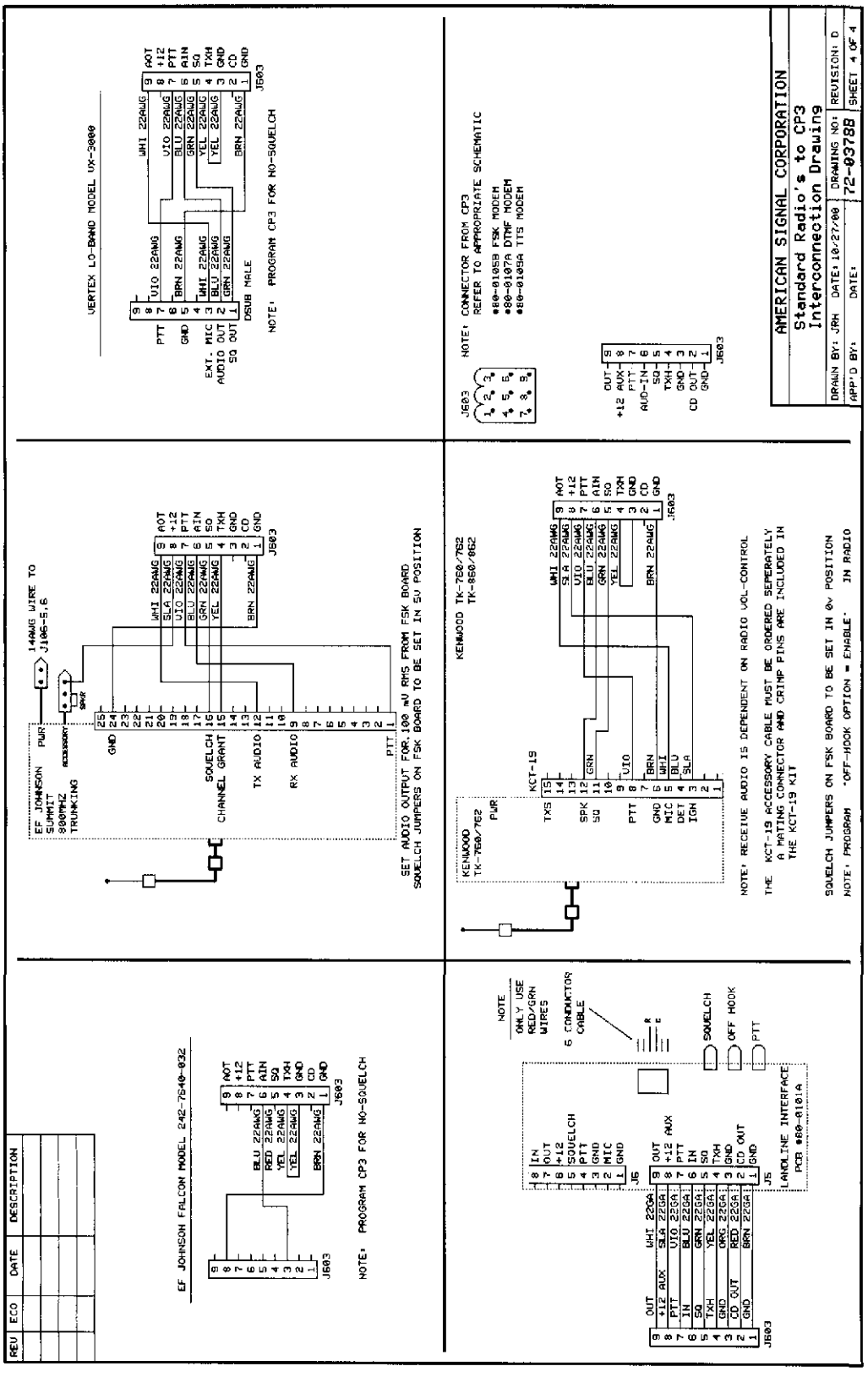
RADIO INTERFACE DRAWING-CP3 TO RADIO



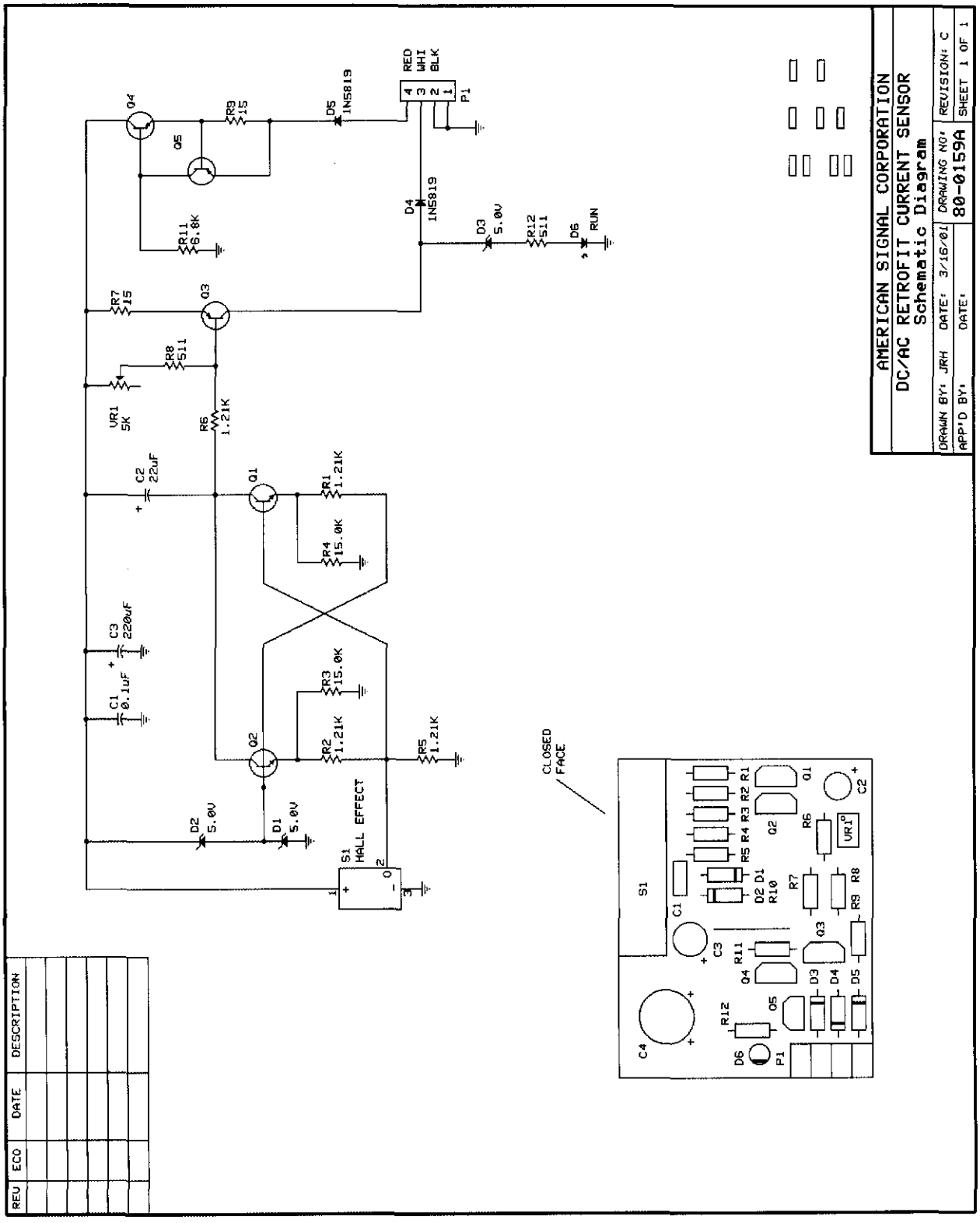
RADIO INTERFACE DRAWING-CP3 TO RADIO (CONT.)



RADIO INTERFACE DRAWING-CP3 TO RADIO (CONT.)



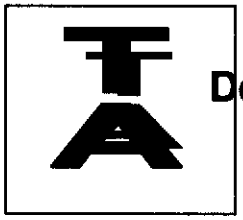
RADIO INTERFACE DRAWING-CP3 TO RADIO (CONT.)



CURRENT SENSOR BOARD SCHEMATIC

9. BILL OF MATERIALS

Parent Part: 083-0564			RTU-2001-AC VER 2.0
Qty	UM	Part#	Description
2	EA	042-0557	BRACKET, MOUNTING RTU 2000, HOT DIP GALV.
2	EA	042-0605	BRACKET, RADIO MOUNTING
1	EA	042-0606	PANEL, MAIN FRONT RTU
2	EA	042-0607	RTU Hinge 5", .050" x 1.75" Open x 5" Long
1	EA	042-0608	Latch Bracket RTU-2000 AC
1	EA	051-0049	CONNECTOR, PIGGY, 22-18 AWG
1	EA	051-0064	CONNECTOR, CRIMP, RG58A, PL-259
3	EA	051-0101	COUPLER, FEMALE, 16-14AWG, F-I
1	EA	051-0169	COPPER MECHANICAL LUG, CB70-14C
1	EA	051-0220	CONNECTOR, 12POS, SINGLE, IN-LINE WIRE WRAP
1	EA	051-0229	TERMINAL, RING, 16-14AWG, 3/16 HOLE #10 STUD
2	EA	051-0251	COUPLER, F, 16-14AWG, F-I
1	EA	052-0016	SWITCH, SPST, N.O., PLUNGER
1	EA	060-0026	LIGHTNING ARRESTOR, ANTENNA IN LINE - VHF/UHF
12	EA	063-0173	SPACER, HEX, 4-40 X 3/4" .187, F/F
1	EA	063-0179	TERMINAL, QUICK DISCONNECT 1/4", 45 DEG.
1	EA	065-0154	ENCLOSURE, NEMA4X 14" x 12" W/ FIBERGLASS "DEEP COVER"
1	FT	075-0025	CABLE, COAXIAL RG58AU, Belden 8259 or Equiv.
2.5	FT	075-0046	WIRE, 14 AWG BLACK
1.5	FT	075-0047	WIRE, 14 AWG RED
2	EA	079-0006	SCREW, #6/32 X 3/8 ROUND HEAD PHILLIPS - ZINC
8	EA	079-0021	SCREW, #4-40 X 1/4 BINDER HEAD, SLOTTED ZINC
4	EA	079-0032	BOLT, LAG 1/4 X 4 PLATED
1	EA	079-0036	WASHER, STAR #10 INT - ZINC
1	EA	079-0037	NUT, #10-32 HEX MACHINE
4	EA	079-0042	WASHER, STAR 1/4 INT/EXT Zinc
4	EA	079-0054	WASHER, FLAT 1/4" Zinc
1	EA	079-0067	SCREW, #10-32 X 1/2 PAN HEAD SLOTTED
4	EA	079-0127	NUT, 1/4-20 HEX S/S
4	EA	079-0128	WASHER, LOCK 1/4 STAINLESS STEEL
4	EA	079-0129	WASHER, FLAT 1/4 STAINLESS STEEL
4	EA	079-0131	BOLT, 1/4-20 X 1 STAINLESS STEEL
2	EA	079-0201	SCREW, #6/32 X 1/2 ROUND HEAD PHILLIPS - ZINC
2	EA	079-0285	NUT, KEPS #6-32 (W/ STAR) ZINC
1	EA	079-0302	NUT, 10-32 HEX S/S
1	EA	079-0312	SOTHCO COMPRESSION LATCH
4	EA	079-0313	NUT, WING #6-32 ZINC
1	EA	080-0105	COMPULERT III, MAIN BOARD
1	EA	080-0113	PCB ASSY., FRONT PANEL #2 FOR CP III RSC
1	EA	080-0157	BOARD, RTU 2000 AC POWER SUPPLY
1	EA	084-0086	DECAL, ASC LOGO
1	EA	084-0092	FILM, APPLIQUE DAFR8
1	EA	084-0095	DECAL, RTU-2001
1	EA	086-0005	BATTERY, 12V, 7AH FOR RTU
2	EA	088-0006	NYLATCH PLUNGER, MFG# HN5P-53-1-1
2	EA	088-0007	GROMMET, NYLATCH, MFG# HN5G-53-1



Dennis Tronca & Associates Incorporated

REPORT
ON
ACOUSTIC TESTING
OF

A.S.C. TEMPEST T-128
AC/DC MECHANICAL SIREN

For
American Signal Corporation
Jim Hannas Engineering Manager

By
Tronca & Associates, Inc.
Dennis Tronca, BSME
James E. Biersach, BSEE, P.E #
July 22, 2001

Table of Contents

		Page
I	Executive Summary	3
II	Introduction	4
III	Scope of Test	5
IV	Equipment	6
V	Procedure	8
VI	Conclusions	11

I Executive Summary

Acoustic testing of high powered siren in a single horn configuration with an (8) eight exponential projectors with a concentrically ported front facing air intakes was conducted to determine SPL (sound pressure level) ratings at 100 ft. on axis.

The C weighted average for the Tempest T-128 siren was 128.9dB (c) at 100ft. based on Federal Emergency Management Agency Guidelines outlined in CPG 1-17 and American Institute of Standards ANSI S12.14 1992. All tests were performed at a distance of 100 ft. from the center of the horn assembly. Sound peaks were observed to 130.3dB(c) (see Annex A chart recording.)

Several tests were conducted to measure the uniformity of signal while operating from a control utilizing a 48VDC-battery package as well as a 240VAC rectified option. The control package assemblies tested reflect (3) three configurations available by the manufacture for operation in either a 240VAC control (AC), a 48VDC battery operated system (DC), or a combination system configured for true battery backup (AC/DC)

Tested frequency was 498 Hz on all control configurations.

II INTRODUCTION

This test was conducted on a mechanical DC motor driven rotating directional siren developed by Excel Alerting Systems, Inc. for American Signal Corporation.

There are (8) eight exponential sound projectors, each of which is projecting sound from (8) eight sound ports mounted to an aluminum stationary (stator) casting. Each of these (8) eight sound projectors is coupled with individual air intake ports on the perimeter of one 48-inch external horn projector which is then rotated during normal operation.

The test unit was mounted on a pole tower near the southwest corner of the General Metalworks Corp. manufacturing facility giving it a mounting height of 42ft. above ground level so as to eliminate ground and building reflection and to provide free field measurements as outlined in the aforementioned guides and standards.

Sound level measurements were taken on axis with the horn assembly at a distance of 100 ft. Ambient noise levels were recorded.

III SCOPE OF TEST

Siren sound level (SPL) measurements were made at 42ft. above ground level using a large mobile platform hoist. This platform allowed test personnel to be in the horizontal plane if the siren to obtain acoustic measurements within the guidelines of ANSI S12.14 1992 and FEMA CPG 1-17.

The focus of this testing was to determine the 100ft. on axis Sound pressure level for the Tempest T-128 outdoor warning siren based on industry standards listed within this report.

Sound pressure levels were observed for the siren projector while stationary in one direction (rotation disabled) so that on axis reading could be measured.

IV Equipment

The test siren was controlled using an AC/DC control panel model T-48-MC-AC/DC for which the system was able to be tested utilizing commercial power 240volt AC through a rectification package as well as a 48-volt DC battery package.

The control panel was connected to the siren using (2) 2ga. Cables to supply 48 volts nominal to the siren unit. (4) four DELCO M24MF deep cycle marine batteries, which are specified provided Battery power, for end user operation or equivalent.

Sound pressure level (SPL) readings were taken with a Bruel & Kajar (B&K) model 2317 Type 2 sound level meter, serial number 1401943 which was calibrated before and after the test using a B&K model 4230 calibrator serial number 992539 at 94dB.

All testing was performed on C scale and documented on a logging chart recorder B&K model 6537 The chart recording speed was 1mm/sec. The B&K test equipment had been returned to the manufacture for a calibration certification using references traceable to the National Bureau of Standards.

V. Procedure

Tests were conducted at an elevation of 42 .0' above ground level on axis with the siren horn at a distance of 100'. The platform hoist was moved into position for each measurement and the siren was sounded for approximately 90 seconds.

Ambient sound level measurements and weather data were also recorded through out the tests.

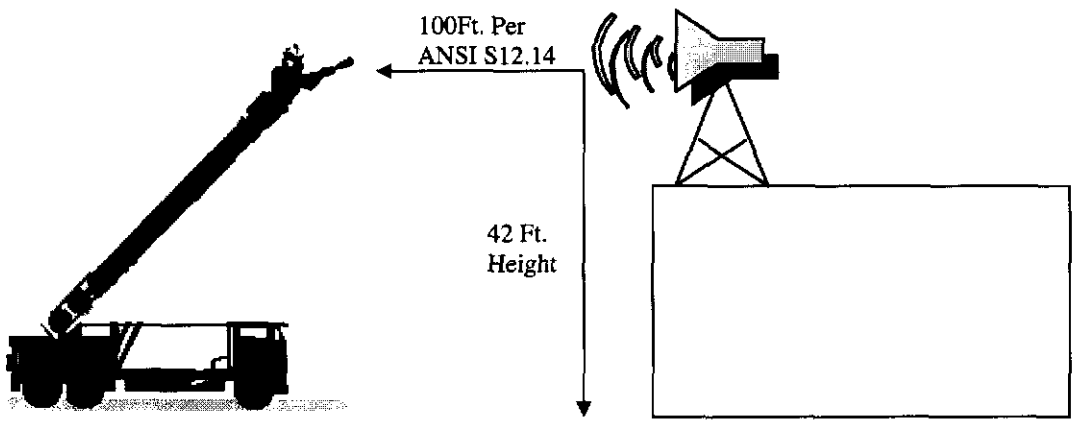


Table 2 contains the temperature wind, barometric pressure, and relative humidity as reported by the National Weather Service.

For reference Utility power supply, rectified power and battery conditions were monitored for consistency.

Testing was recorded by Dennis Tronca and Associates, Inc. engineer James E. Biersach with James Hannas, American Signal Corporation Engineering Dept.

TABLE 1

Siren Test Data

Eight Projector Assembly

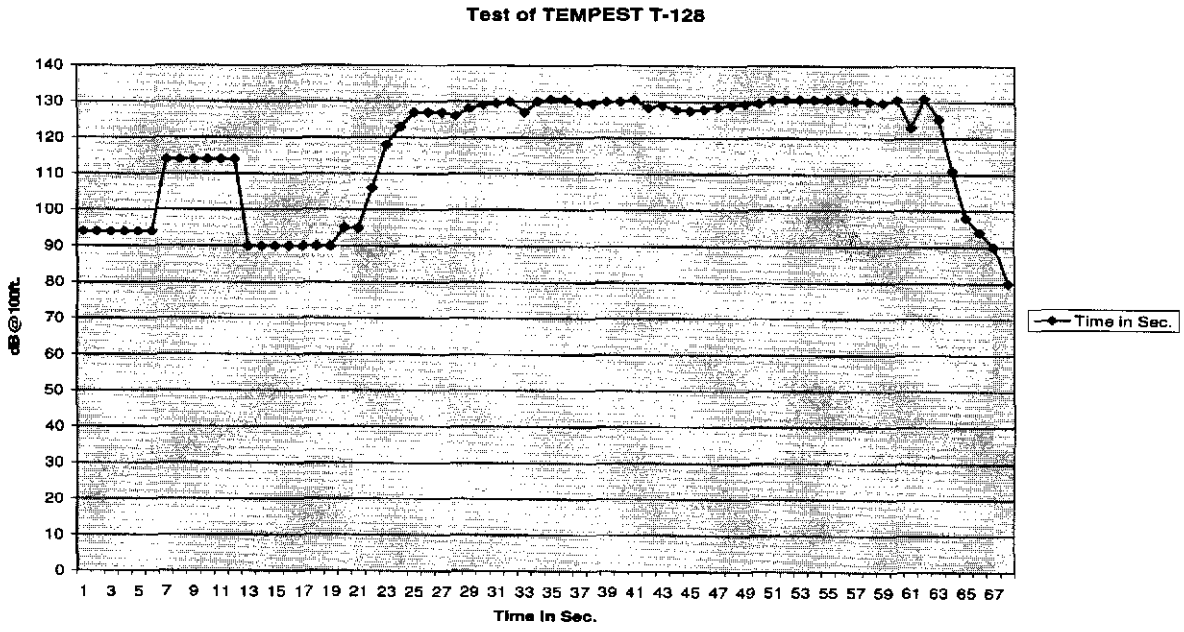


TABLE 2

WEATHER DATA

July 22, 2001

TIME	TEMPERATURE (Degrees F)	WIND SPEED	WIND DIRECTION	BAROMETRIC PRESSURE	RELATIVE HUMIDITY
10:00am	78°	10-12	S/E	30.43	76°
11:00am	83°	10-12	S/E	30.43	65°
12:00 Noon	85°	10-12	S/E	30.43	55°

- National Weather Service- Sullivan Wisconsin

IV CONCLUSIONS

The AC/DC motor siren assembly was tested under verying temperature and wind conditions, including light rain, and high temperatures.

No effort has been made to assess the reduction this has with regard to temperature inversions or the effect of ground reflection. The system has been tested based on free field measurement and is repeatable.

Tests were run on the (8) eight in one horn configuration siren; Table 1 contains the results of these test measurements. The C scale weighted average sound pressure level recorded was 128.9dB (c)

The maximum sound pressure level recorded on the C weighted scale average was 130.3dB (c) Uniformity of sound pressure level was constant. The C scale weighted average ranged from a low of 127.8dB (c) to a high of 130.3dB(c) for the eight horn assembly.

Ground level measurements were taken within 100 ft. of the siren installation which showed that ground level SPL did not exceed 118dB, which is below the maximum level of 123dB set by the EPA, OSHA, and ANSI.