AN OFF-SITE EMERGENCY PLAN
PROMPT ALERT AND NOTIFICATON SYSTEM
ADDENDUM FOR THE
COOPER NUCLEAR STATION

Prepared in Response to FEMA-43
Documentation Criteria Requirements
Dated September, 1983

Submitted by:

Nebraska Public Power District
1414 15th Street
Columbus, NE 68601

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1.0 INTRODUCTION

This addendum was prepared to assist the Federal Emergency Management Agency (FEMA) in evaluating the "Alert and Notification System" requirements of 44 CFR 350. This report is part of an ongoing process by which FEMA evaluates and approves both state and local emergency plans and preparations to deal with a radiological emergency at Nebraska Public Power District's Cooper Nuclear Station (CNS).

There are sixteen planning standards identified in 44 CFR 350.5 which are to be used in evaluating, assessing, reviewing, and approving state emergency plans. Of these sixteen planning standards, three apply to alert and notification:

Section E, Notification Methods and Procedures
Section F, Emergency Communications, and
Section N, Exercises and Drills.

Currently, the Nebraska Radiological Emergency Response Plan (NE RERP) and the Missouri Nuclear Accident Plan (MO NAP) for the CNS have received Conditional 44 CFR 350 Approval. This report represents a comprehensive addendum to the previously approved sections of the NE RERP and MO NAP. It is anticipated that once the information presented in this report has been reviewed and approved by FEMA, all the Planning Standards from NUREG-0654/FEMA-REP 1, Rev. 1 will have been satisfactorily addressed; and, therefore, Final 350 Approval will be issued.

This report has been structured to provide all of the necessary and pertinent information related to the three primary planning standards (E, F, and N) for alert and notification systems requested by FEMA in the "Standard Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," FEMA-43, dated September, 1983. In addition, this addendum report utilizes the "Recommended Format for Submittals Describing Alert and Notification Systems," FEMA-43, Appendix 1.

The CNS Prompt Alert and Notification System uses a combination of fixed sirens and tone activated radios for alert and notification of personnel in the CNS 10-mile EPZ. Special alerting of state parks and wild life areas is achieved through mobile sirens and P.A. systems.

It should be noted that one section in FEMA-43 is not applicable to this submittal. Section E.6.2.2 (Mobile Siren Vehicles) is not addressed since this notification method is not utilized as a primary means of notification in the Prompt Alert and Notification System (PANS) for the CNS.

2.5 Mobile Siren Vehicle (FEMA-43 Ref. E.6.2.2) (Not Applicable)

It should be noted that the use of Mobile Siren Vehicles (as described in FEMA-43, Section E.6.2.2) has not been employed as a primary element of the CNS Prompt Alert and Notification System. Therefore, this section of FEMA-43 is not applicable for this submittal.

2.6 Tone Activated Radios (FEMA-43 Ref. E.6.2.3)

2.6.1 Tone Activated Radio Coverage

All areas of the EPZ except those populated areas covered by sirens are alerted by tone activated radios. The map presented in Appendix C shows those areas of the Cooper Nuclear Station EPZ where tone activated radios are not distributed except upon request. (This map also presents the siren contours described in Section 2.4.1 of this document.) The map is a composite of individual U.S. Geological Survey quadrangle maps with latitude and longitude indicators and reproduced to a scale of 1:31680.

2.6.2 Tone Activated Radio Description

The tone activated radios utilized in the CNS PANS are Redi-Alert emergency warning monitors. Each is housed in a durable case and designed for unattended attention. The radios operate on 110V A.C. with battery backup. The radios are permanently tuned to the appropriate EBS station (KFAB-AM [1110 kHz] for Nebraska residents and KFEQ-AM [680 kHz] for Missouri residents). Each receiver is activated by the EBS Attention Tone and broadcasts the subsequent message about the particular emergency.

2.6.3 Tone Activated Radio Location and Distribution

The distribution of the over 700 tone activated radios in the CNS EPZ is based primarily on the siren coverage. The sirens are located in or near the various population centers. Due to the rural character of the EPZ (very low average population density of 17.9 persons per square mile) tone activated radios have been hand-distributed to those homes and businesses throughout the EPZ that are not adequately covered by sirens. (Initial operating instructions have been given in both oral and written form.) Appendix G includes a register documenting the distribution of tone activated radios in the CNS EPZ.

2.6.4 Tone Activated Radio Testing and Maintenance Program

Tone Activated Radio Testing

Once per week the primary EBS stations (KFAB-1110 kHz and KFEQ-680 kHZ) test their EBS system which activates the tone activated radios and proceeds with the message. Thus individuals with EBS tone activated radios will have their radios automatically tested once per week. A test button is provided on each radio to verify operability. In addition, the tone activated radios have a battery test button and indicator light to check the battery backup power source.

Maintenance

Should the EBS activated radio fail any of the above tests, malfunction, or need maintenance or repair, a telephone number is posted on the radio for the individual to call to initiate corrective actions. Notices to check batteries are issued quarterly through local newspaper and radio media. Appendix F contains the brochure issued with each unit which describes the use of the unit and what to do in the unlikely event it should fail to operate.

2.7 Special Alerting (FEMA-43 Ref. E.6.2.4)

2.7.1 Mobile Alert and Notification Network

The special alerting components of the CNS Prompt Alert and Notification System are used for those areas of the CNS Emergency Planning Zone not covered by fixed sirens or tone alert radios. These areas consist of the Indian Cave State Park in Nebraska and the Brickyard Hill State Wildlife Area in Missouri. Appendix C delineates those areas of the CNS Emergency Planning Zone which are to be covered by mobile routes.

Resources, manpower, and vehicles for the CNS PANS will be supplied from existing resources and will be supplemented by mutual aid agreements that are on record for the appropriate state, county, and local government emergency response organizations. Appendix H of this report presents maps of the Mobile Alert and Notification Routes and the route activation procedures applicable for each park.

2.7.2 Alerting Method Rationale

As indicated in Appendix 3 of NUREG-0654/FEMA-REP-1 (Rev. 1), it may be more cost effective in sparsely populated areas to use special alerting methods other than sirens. FEMA-43 also indicates that seasonal and diurnal population variations may also be a factor in selecting alternative means of notification. It is most cost effective for the States of Missouri and Nebraska to make optimum use of existing available resources. Therefore, the respective MO NAP and NE RERP plans for special alerting of the Brickyard Hill State Wildlife Area and the Indian Cave State Park via Mobile Alert and Notification Routes include the use of onsite Department of Conservation and Park Ranger vehicles with sirens and public address systems. Route dispatching will be accomplished in Missouri by the Conservation Department and in Nebraska by the Nemaha County Sheriff.

The primary purpose of the Mobile Alert and Notification System is to direct the individuals in the parks indoors. The public will be alerted by the broadcasting of either a steady siren blast or a simple message over the mobile public address systems. Signs are posted at park entrances informing visitors what to do if they hear an alert signal. This message will inform the park visitors of an incident, and will advise them to tune their radios to KFEQ-AM and KFAB-AM, in Missouri and Nebraska respectively, for further instructions.

2.7.3 Participating Organizations

The primary and backup responders for each area requiring mobile alert and notification are shown below.

	Primary	Backup
Brickyard Hill	Atchison County Conservation Agent	Atchison County Sheriff
	Cox Aviation	Other pilots (3)
Indian Cave	Park Ranger	Assistant Park Ranger

It should be noted that in both park areas the Conservation Agent and Park Ranger are on the premises. They can commence notification as soon as they are notified. Additionally, the Cox Aviation aircraft used at Brickyard Hill are located approximately 10 miles from the park. Also, another aircraft is located 1 mile west of Weston, about 5 miles from the park. (The use of Cox Aviation aircraft is documented in a Letter of Agreement with the SEMA.) An analysis of the equipment and routes is presented in Appendix H.

2.7.4 Equipment Testing and Maintenance Program

The CNS Prompt Alert and Notification System design basis requires that special alerting in both parks shall be by park vehicles, and also by aircraft in Brickyard Hill. Routine use of these vehicles, independent of their utilization as a part of the CNS Prompt Alert and Notification System, demonstrates those capabilities required for their performance as a part of the Alert and Notification System. Many tests are accomplished through daily usage.

Mechanical Tests

Standard procedure for vehicle maintenance is usually based upon manufacturer specifications. Most governmental departments and agencies have additional requirements for their vehicles and thus schedule service on all vehicles to ensure optimum reliability. Additionally, aviation companies must perform regular maintenance to ensure the aircraft operability.

Electronic Tests

Routine use of the radio communications attests to their reliability. The siren and public address systems are tested at least monthly as a part of the monthly siren activation. This establishes that they are adequately tested and maintained.

APPENDIX H

SPECIAL ALERTING ROUTES AND PROCEDURES AND SUMMARY OF PROCEDURES

APPENDIX H

SPECIAL ALERTING ROUTES AND PROCEDURE SUMMARIES

The special alerting components of the CNS Alert and Notification System are used for those areas of the CNS Emergency Planning Zone not covered by fixed sirens or tone alert radios. These areas consist of the Brickyard Hill State Wildlife Area in Missouri and the Indian Cave State Park in Nebraska. Appendix C delineates these areas of the CNS Emergency Planning Zone which are to be covered by mobile routes.

Resources, manpower, and vehicles for the CNS Alert and Notification System will be supplied from existing resources and will be supplemented by mutual aid agreements that are on record for appropriate state, county, and local government emergency response organizatons.

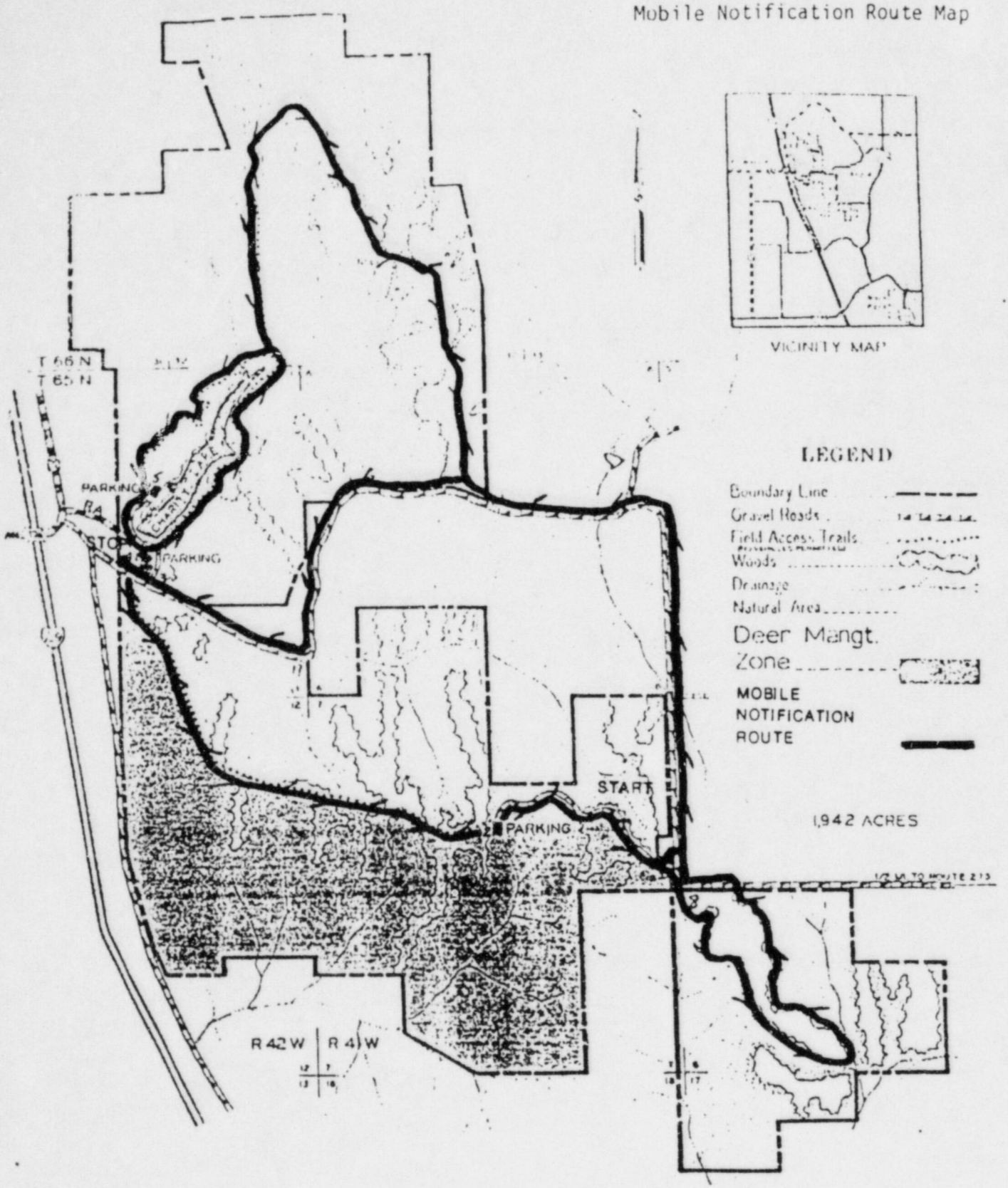
This appendix presents maps of the two alerting routes and summaries of the procedures to be used to activate these routes. The route maps and procedure summaries for Brickyard Hill and Indian Cave are included as Attachments H.1 and H.2, respectively.

ATTACHMENT H.1

ATTACHMENT H.1

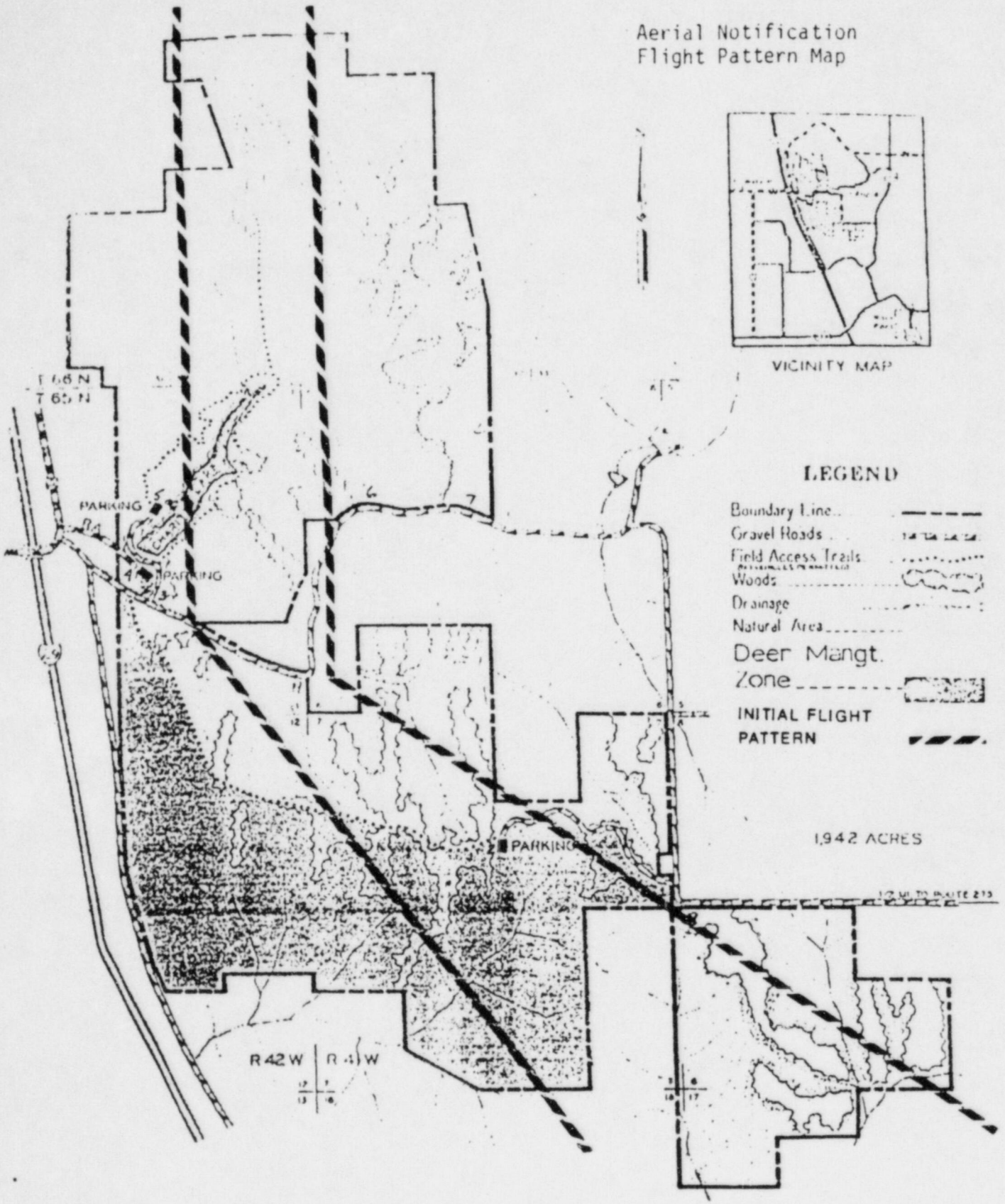
This attachment to Appendix H contains the mobile notification route map, aerial notification flight pattern map, and corresponding procedure summary for the Brickyard Hill State Wildlife Area. An analysis of the equipment and routes is also presented in this attachment.

Mobile Notification Route Map



BRICKYARD HILL WILDLIFE AREA
ATCHISON COUNTY

Missouri Department of Conservation



BRICKYARD HILL WILDLIFE AREA

ATCHISON COUNTY

Missouri Department of Conservation

Brickyard Hill Special Alerting Procedure Summary

In the event of an emergency at CNS where notification of visitors to the Brickyard Hill State Wildlife Area is deemed necessary, the following alerting procedures will be followed:

Primary:

1. State Emergency Management Agency (SEMA) will contact the Conservation Department.

2. Conservation Department will notify the Atchison County Conservation Agent.

3. The Conservation Agent will drive through the park with his siren on a steady blast. Signs at all parking areas and all access and egress points inform visitors what to do when this signal is given.

4. SEMA will notify Cox Aviation of Tarkio to fly over Brickyard Hill using the siren on a steady blast.

Secondary:

5. The Conservation Agent and the pilot will maintain communications on the Sheriff's frequency.

6. The Conservation Agent and the pilot will have public address capability to notify transients of evacuation information.

Special Alerting Analysis

An analysis of the notification equipment and time frames for both vehicle and airacraft is presented below. Note that the route is for one vehicle and the flight lines are for one aircraft.

Vehicle

- Siren model: Trippe ES-4
- Rating at 100 ft: 87 dB(C) (based on the unit size of 25 watts)
- Fundamental frequency: no data available
- Range to 70 dB(C): 330 ft
- Vehicle velocity and observer distance from road to ensure a 70 dB(C) signal is heard for 15 seconds: 18.5 mph, 260 ft
- Route length: 13.5 miles
- Time to traverse route: 44 minutes
- The total elapsed time to perform the vehicle notification is 45 minutes, since the conservation agent and vehicle are on the park premises.

Aircraft

- Siren model: Whelen 370 (2 sirens)
- Amplifier: WS-295
- Rating at 100 ft: 112 dB(C) (manufacturer's rating)
- Range to 70 dB(C): 1890 ft
- Flight altitude: 500 ft
- Flight Speed: 70 mph
- Effective 70 dB(C) signal duration time: 35 sec
- Length of flight lines over park: 7.5 mi
- Time to cover flight lines: 6.4 minutes
- Pilot notification time: 2-5 minutes
- Pilot transit time to aircraft: 5-15 minutes
- Aircraft preparation time: 2-5 minutes
- Aircraft takeoff time: 2-5 minutes
- Flight time to Brickyard Hill: 5 minutes
- Total elapsed notification time: 22.4-41.4 minutes

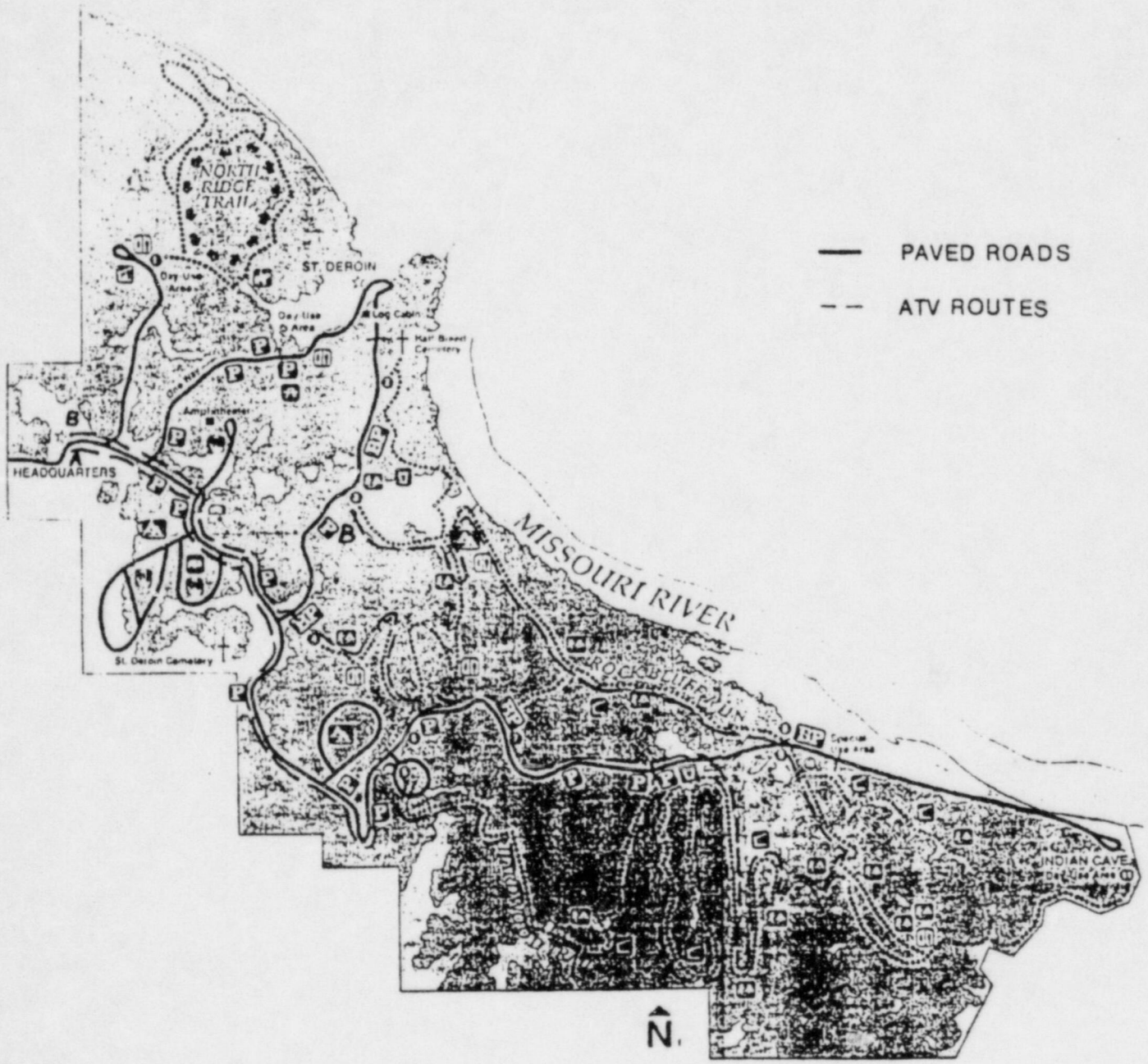
(Note, all aircraft pilots can respond within these time frames. Also, a faster flight speed is possible, but with a reduction in effective signal duration length.

ATTACHMENT H.2

ATTACHMENT H.2

This attachment to Appendix H contains the route map and corresponding procedure summary for the Indian Cave State Park in Nebraska. An analysis of the mobile routes is also presented in this attachment.

INDIAN CAVE STATE PARK MOBILE ROUTES



Procedure Summary

In the event of an emergency at CNS where notification of visitors to the Indian Cave State Park is deemed necessary, the following procedures will be followed:

1. Nemaha County Sheriff will contact Park Rangers by telephone or radio to inform them of the emergency situation.

2. Park Rangers will drive through the park with mobile sirens and use their PA systems to instruct visitors to take appropriate emergency actions.

3. Park Rangers will confirm completion of notification and status of emergency actions by radio to the Nemaha County Sheriff.

Special Alerting Route Analysis

Route:	Paved Road	A	B
Length (miles):	16.5	5	6.5
Average speed[a] (mph):	25	8.6	10.4
Notification time (minutes):	40	35	37
Activation time (minutes):	5	5	5
Elapsed time (minutes):	45	40	42

[a]Average speed on paved road based on posted speed limit. Average speed on the ATV routes (A & B) based on preliminary route testing.

Federal Emergency Management Agency

Region VII **911 Walnut Street** **Kansas City, Missouri 64106**

(25)

JUN 9 1986

25.

MEMORANDUM FOR: R.D. Ross, Director
Missouri State Emergency Management Agency

FROM: Frank Eagle, Division Chief
Natural & Technological Hazards Division

SUBJECT: ANS Submission - Brickyard Hill Deficiency

We received the facsimile transmission of the above referenced material on Friday, June 6, 1986.

A thorough review yields the following conclusions:

1. The State and local plan changes are acceptable and capable of being tested in a remedial exercise.

2. The Design Report Amendments appear to support the plan changes. However, full acceptance is contingent upon approval by FEMA Headquarters. The amendments will be forwarded immediately.

3. Removal of the deficiency at Brickyard Hill incurred at the exercise of October 16, 1985, can be accomplished through a successful demonstration of timely alert and notification at a remedial exercise. This exercise is currently planned to begin at 11:00 a.m. on June 16, 1986. FEMA will have two evaluators at Brickyard Hill (one to ride in the vehicle with the park ranger), one evaluator at the Atchison County EOC, and one evaluator at the airfield at Tarkio, Missouri.

   For this exercise, there should be no prepositioning of the pilot, nor any prior installment of the sound systems on the aircraft.

Any questions should be directed to Dick Sumpter at (FTS) 758-2161 or (816) 374-2161.

cc: copy faxed to addressee on above date

Fran Laden, NE CDA
Charles Hackney, NRC IV
Megs Hepler, FEMA HQ
Ken Green, FEMA HQ
Michelle Buteau, IEAL

(26)

Federal Emergency Management Agency

Region VII 911 Walnut Street Kansas City, Missouri 64106

JUN 11 1986

26.

MEMORANDUM FOR: Megs Hepler, Emergency Management Specialist
Field Operations Branch, SL-NT-TH-FO

FROM: Dick Sumpter, Emergency Management Specialist
Natural & Technological Hazards Division

SUBJECT: Amendments to Cooper ANS (FEMA-43)

To satisfy a deficiency from the last exercise, NPPD has the attached generated amendments to the ANS. Please attach these pages to the document, currently under review by your office.

Please note that we are particularly interested in your evaluation of the data on page H.1-5 regarding the capability of the equipment described to generate an adequate alert signal.

We will test the audibility of the equipment at a remedial exercise on June 16, 1986.

Attachment

N&TH:Sumpter/csw 6/11/86 Carroll Leonard Begley Sumpter

Federal Emergency Management Agency

Region VII **911 Walnut Street** **Kansas City, Missouri 64106**

(27)

JUN 19 ..

Sam -

MEMORANDUM FOR: Samuel Speck, Associate Director
State & Local Programs & Support Directorate

ATTENTION: Robert Wilkerson, Chief
Technological Hazards Division, SL-NT-TH

27.

FROM: John P. Coleman, Acting Regional Director, FEMA Region VII

SUBJECT: Cooper Nuclear Station Deficiency - Brickyard Hill

Attached is a report of the Remedial Exercise of June 16, 1986, conducted to remedy the deficiency involving Alert and Notification capability at the Brickyard Hill State Wildlife Area in Atchison County, Missouri.

As you can see the amendments to the State and local plan and the ANS were successfully exercised, and demonstrated the capability to accomplish timely alerting of transients in the Brickyard Hill State Wildlife Area.

The deficiency is therefore satisfied.

Attachment

cc: Charles Hackney, NRC IV
Clem Morgan, NPPD
R.D. Ross, MO SEMA
Fran Laden, NE CD
Ken Green, FEMA HQ
Craig Wingo, FEMA HQ

REMEDIAL EXERCISE

OF THE PRIMARY ALERT SYSTEM

FOR BRICKYARD HILL STATE WILDLIFE AREA

Brownville, Nebraska

June 16, 1986

At the exercise held October 16, 1986 at the Cooper Nuclear Station, the following deficiency was cited for the Missouri portion of the operation:

> "Neither the State nor Atchison County Plan provide for alert and notification of the transients within the Brickyard Hill State Wildlife area. Plans must be revised to reflect the applicable provisions of NUREG-0654 and [FEMA] REP-10."

On June 16, 1986 the above cited plan revisions and an amended ANS design report for primary alerting were tested in a remedial exercise. The objectives of the exercise were twofold: (a) to test the timeliness of the airborne siren alert methodology and the truck mounted route alert siren; (b) to determine the audibility of the siren mounted on the aircraft.

Four FEMA evaluators were utilized: one was stationed at the Atchison County Sheriff's Office, one at the airfield at Tarkio, Missouri, one in the field at Brickyard Hill and one riding in the truck for route alerting in Brickyard Hill.

At 11:15 AM the licensee (CNS) notified the Missouri State Emergency Management Agency (SEMA) of the simulated "Alert" status. CNS also notified the Atchison County Sheriff at 11:16. The Sheriff verified the call and then at 11:17 notified Cox Aviation service to fly the "Alert" route over Brickyard Hill. SEMA also called Cox Aviation at 11:17:30.

By 11:26 the sound system was installed on the aircraft. The plane was airborne at 11:29. The alerting was accomplished and the plane returned to the field at 11:47.

In the meantime, the Sheriff notified the Conservation Agent at Brickyard Hill at 11:19. He immediately began the route alerting and drove the appointed route, finishing at 11:44.

The field based evaluator determined that the siren sounded by the aircraft flying at 500 feet above the ground was audible. Final determination of adequacy is contingent upon a technical review of the amended design report.

While weather might be a constraining factor in getting the plane aloft, the truck mounted system affords a degree of redundancy. Weather minimums at that field are: ceiling - 400 ft. and visibility - 1 mile.

Based on the above observations, it can be concluded that both the previously stated exercise objectives were successfully demonstrated, thus remedying the deficiency.

(28)

Nebraska Public Power District

GENERAL OFFICE
P.O. BOX 499, COLUMBUS, NEBRASKA 68601-0499
TELEPHONE (402) 564-8561

August 15, 1986

Mr. Fran Laden
Nebraska Civil Defense Agency
1300 Military Road
Lincoln, NE 68508

Dear Mr. Laden:

28.

Subject: Transient Notification along the Missouri River

Reference: Memorandum from F. Bagley dated June 6, 1986

Nebraska Public Power District has reviewed the Federal Emergency Management Agency's (FEMA) memorandum dated June 6, 1986. In their memo FEMA requested that additional information be provided. The additional information requested is provided herein.

The FEMA-43/REP-10 Design Report addendum, Revision 3, is enclosed. Note it is a draft, the final is due from our contractor on August 18, 1986. The revision contains information pertaining to the special alerting as it pertains to the Missouri River. There is also an analysis of two additional fixed sirens. The draft copy enclosed does not include a map of the contour lines for these sirens, the final version will, however.

The informational signsto be posted along the Missouri River will not be installed in time for the September 24, 1986 Cooper Nuclear Station emergency exercise. These signs will be installed in mid-October. The size of the signs located at the entrance of the 10 mile EPZ are 48" x 48", they have a white background and chocolate brown lettering.

The size of the signs located at the public access points is 24" x 24", with chocolate brown lettering on a white background.

The text of these signs is as follows:

ATTENTION

IF SIRENS SOUND, TUNE TO
1110 AM OR 680 AM
FOR EMERGENCY INFORMATION

Nebraska Public Power District is currently negotiating with the property owners to obtain right of way for the sign installation.

The installation of the two fixed sirens as discussed in the design report, will be installed in mid-October. Reference a telecon from Ed Bussie to Dennis Yates, on July 17, 1986.

The letter of agreement (LOA) between the Nebraska Civil Air Patrol (CAP), Nebraska Public Power District (NPPD), and the Nebraska State Civil Defense Agency (NSCDA) is enclosed. The LOA is in draft form pending approval by all parties. The final LOA should be approved soon.

In summary the schedule is:

August 18, 1986 Design Report, Revision 3 final.
Mid-October, 1986 Installation of signs.
Mid-October, 1986 Installation of two fixed sirens.
ASAP final approval version of Letters of Agreement.

Sincerely,

J. M. Pilant
Technical Staff Manager

JMP/dkh

cc: K. C. Walden
K. M. Krumland
P. R. Windham
C. A. Hackney, NRC Region IV

Attachments