

2016 Maryland – DC Section  
Simulated Emergency Test



**Maryland - District of Columbia**

ARES® Simulated Emergency Test  
Exercise Plan ver 2.0  
October 1-2, 2016

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## Preface

The Maryland - DC Section Simulated Emergency Test Sequel continues. The 2016 SET will be very much different than in past years. It will be more on the lines of an educational training exercise as oppose to simulating an actual disaster. Near Vertical Incident Skywave will be front in center. What is NVIS? How does it work? How do you build it and how do you use it? Those questions and more will be the focus for this year's 2016 MDC Section SET.

## Errata Sheet

### Changes to 1.0

| Page  | Ref Para No                   | Change   |
|-------|-------------------------------|--|
| Cover | email address<br>bottom right | Corrected @arrl.org to @arrl.net<br>pages renumbered   |
| 3     | 2.0                           | Added: “nvis@yahoo.com”<br>QST September 2016 edition, page 76, “2016<br>Simulated Emergency Test”                                 |
| 3     | 4.0                           | Changed SET start time from 1800L to 0000Z.<br>Changed Friday September30 to October 1<br>Changed SET end time from 1500L to 1600Z |
| 5     | Old 8.0, new 9.0              | Paragraph number is a duplicate of the one on the<br>previous page. Renumbered as 9.0. All others<br>renumbered as well            |
| 5     | Old 9.2, new 10.2             | Changed “does” to “do”   |
| 7     | Old 10.4                      | Delete section   |
| 7     | Old 10.5                      | Delete section   |
| 7     | Old 10.6, new<br>11.4         | Added “Place call sign in front of the Log file. . .”  |
| 8     | Old 11.0 new<br>12.0          | Corrected “interesst” to “interest”<br>Updated Figure 3  |
| 9     | Ref Table                     | Added entry for MDC ASEC, N7NMS<br>Added HARF EC, W3YR<br>Corrected “WA3EOP” to “WA3EOQ”   |

## **Maryland - DC Section 2016 Simulated Emergency Test Exercise Plan**

**1.0 TEST EXERCISE PLAN IDENTIFIER                      2016 MDC–SETEP**

**2.0 REFERENCES**

- a. *QST* September 2016 edition, page 76, “2016 Simulated Emergency Test”
- b. [nvis@yahoo.com](mailto:nvis@yahoo.com)

**3.0 INTRODUCTION**

This is the master plan for the 2016 ARRL Simulated Emergency Test (SET) Exercise for the Maryland–DC (MDC) Section. It will address all aspects of the Exercise within the confines of the MDC Section.

**4.0 SET Date and Time**

The SET will commence at 1800L on Friday September 30, 2016 and will end at approximately 1500L on Sunday October 2, 2016.

**5.0 Purpose**

This SET exercise plan is based on the premise that periodic emergency drills enhances the ability of emergency communicator’s skills to perform in actual emergencies and, as such, improves and promotes problem solving. The challenge this year is to learn about Near Vertical Incident Skywave (NVIS) systems and how it can be useful in Section wide emergency disasters.

**6.0 Objectives**

- A. To learn the inner workings of an NVIS system.
- B. To design, build and test an NVIS system of your choice (there are several designs available) and report the results. (You may already have one in place).
- C. To collect user data into a central repository for an overall Section analysis of available continuous HF connectivity during an actual Section wide disaster.
- D. Publish and distribute such a document to Section ECs for their use in a disaster.

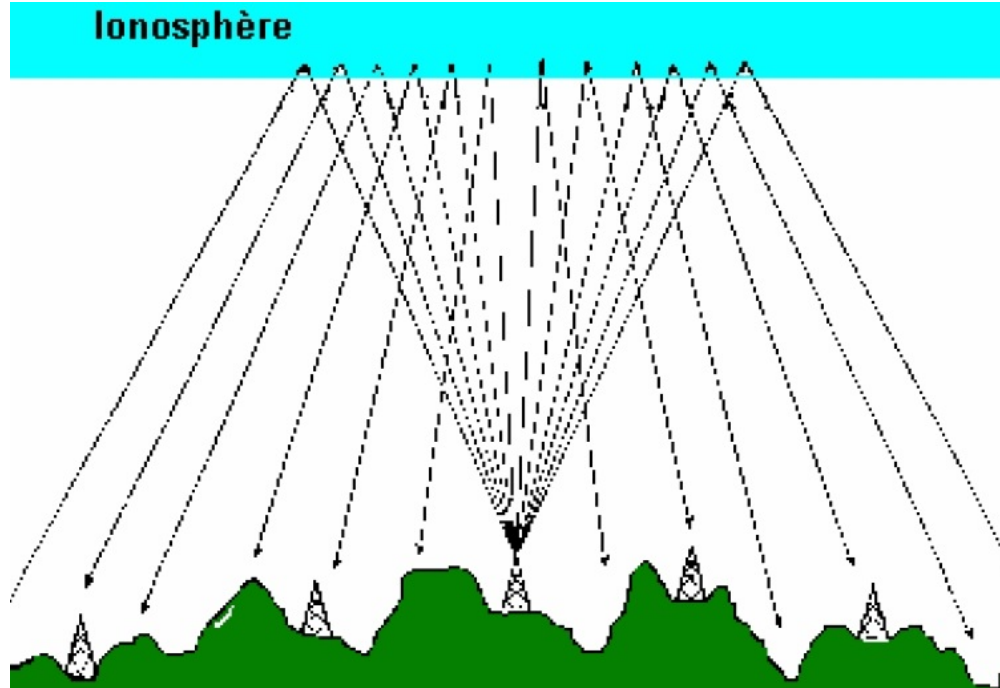
**7.0 Participants**

Any and all ARES/RACES Groups, ACS Groups, MARS and Amateur Radio Clubs in the Section are most welcome to join in and participate in the State wide exercise.

## 8.0 Brief NVIS Tutorial

First and foremost, **NVIS is NOT an antenna** as is often misquoted. NVIS refers to a radio propagation mode which involves the use of antennas with a very high radiation angle, approaching or reaching 90 degrees (straight up), along with a selection of an appropriate frequency below the critical frequency, to establish reliable communications over a radius of 0-200 miles or so, give or take 100 miles. If you squirt a garden hose straight up at the ceiling you can blanket a large area with water very effectively. This is similar to what happens to your signal when it is directed at the ionosphere. See Figure 1.

Although not all radio amateurs have heard the term NVIS, many have used that mode when making nearby contacts on 160 meters or 80 meters at night, or 80 meters or 40 meters during the day. They may have thought of these nearby contacts as necessarily involving the use of groundwave propagation, but many such contacts involve no groundwave signal at all, or, if the groundwave signal is involved, it may hinder, instead of help. Deliberate exploitation of NVIS is best achieved using antenna installations which achieve some balance between minimizing groundwave (low takeoff angle) radiation, and maximizing near vertical incidence skywave (very high takeoff angle) radiation. NVIS fills the gap between line-of-sight ground wave and long-distance "skip" sky wave communications.



**Figure 1**

## **ARRL Simulated Emergency Test Exercise Plan – 2016**

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### **Maryland – DC Section**

#### **9.0 Scenario Preamble**

Our Assistant Section Manager for the MDC Section Health Care EmComm Program has informed us through her involvement and association with the Regional V Hospital Coalition Group (CALV, CHAR, MONT, PRGE and STMA) that a Spring 2017 Mass Casualty Hospital Evacuation Exercise is actively in the planning stage. Not knowing the particulars, it could mean a major effort to seek ARESMAT support from surrounding counties and perhaps the entire MDC Section, worst case. We need to be on top of our game and be ready to support this exercise.

#### **9.1 Scenario Synopsis**

Off the coast of Delaware sits Hurricane *Delmarva*. . .been sitting there for days waiting for further direction. The local radio and tv outlets are having fits as to what to do next. The National Weather Service (NWS) has not and cannot offer any informative updates to the people along the northeast Atlantic coast because. . .they just don't know, do they.

The Maryland State government has determined to move forward and make a decision. The Maryland Emergency Management Agency (MEMA) has been tasked by the Governor to see that county Emergency Operations Centers (EOC) throughout the State are still able to communicate with MEMA after the storm has passed. MEMA issues a request to the ARRL appointed Section Emergency Coordinator to come up with a method to canvass the Maryland volunteer radio operators to be on station and able to continuously be in contact with MEMA and other counties.

#### **9.2 Scenario Timeline**

- 27 September: Maryland Government has convened a joint session in Annapolis on the Hurricane issue. The Governor instructs MEMA to release a request to the Section SEC for help.
- 28 September: MDC Section SEC receives ICS-213 from MEMA Rep soliciting assistance to find all available volunteer radio operators throughout the state willing to be the county focal point during the storm.
- 29 September: MDC Section ECs notified of the State's need for assistance and request all available Winlink radio operators be in P2P mode on 3575kHz OR 7075 but not both from 8pm Friday 30 September. Once started on one channel, stay on that channel throughout the storm.



## **10.0 NVIS System Designs**

Reliable NVIS communications between stations are based on three major factors:

Power Level, Frequency and Antenna Height.

### **10.1 Power Levels**

NVIS works well with low power. 20 – 30 watts portable stations have a very high reliability factor making them very favorable for emergency operations. Low power stations have the advantage of being able to run 100% duty cycle.

### **10.2 Frequency**

Typical frequency ranges used for NVIS are usually between 2.0 and 10 MHz. 40m band (7.0Mhz.) for daytime and 80m band (4.0Mhz.) for nighttime communications. The 30m band is considered the limit for NVIS operations. Frequencies higher than 10 MHz does not support the NVIS environment.

### **10.3 Antenna Height**

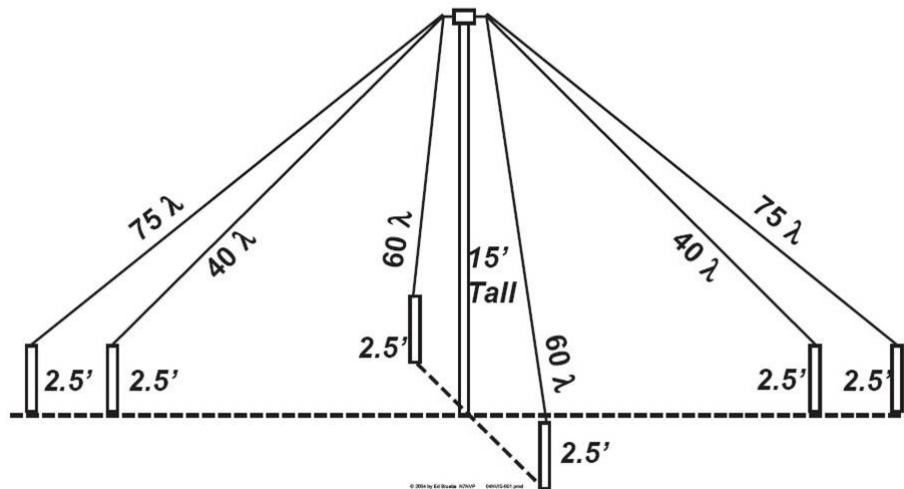
One of the most effective antennas for an NVIS system is a dipole positioned from 0.1 to 0.25 wavelengths (or lower) above ground. Heights of 5 to 10 feet above ground are not unusual for NVIS setups. The inverted vee is another good NVIS antenna so long as the apex angle is kept gentle--about 120 degrees or greater.

### **10.4 NVIS Antenna Configurations**

There are a multitude of NVIS configurations available to suite just about any real estate limitations. The most common and perhaps the most simple configuration is the flat half wave dipole. If antenna leg supports are a challenge to support, the inverted vee is the next best design and will be the selection of choice for the for the SET. See Figure 2 below.

Antenna supports must non-conductive for best results. Use good heavy wire size such as #12 or 14. Place antenna at heights up to  $1/8 \lambda$ . For 80m, 30 feet or less and for 40m, 15 feet or less.

**NVIS Tri-Band Antenna for 75, 60, & 40 Meters.  
Side View**



**Figure 2: Typical NVIS Tri-Band Antenna**

## 11.0 Operations

The SET will be an exercise to see how well we can sustain operations across the entire Section. Winlink 2000, using the Winlink Express, formerly known as RMS Express, will be used for the following reasons:

- A. No need to continuously monitor the radio for connections. Every so often walk by and see if anyone has connected to your station.
- B. One common mode from which to review and compare date points.

## 11.1 Setup Locations

Stations will set up their NVIS configuration any time, anywhere prior to the test. It can be at an EOC, local shelter, hospital parking lot, your back yard, anywhere on a non-interference basis with the host. If possible, allow the station to be accessible around the clock to collect data from various times of the day. This may not be possible, but do try to accommodate this requirement. There are no hard restrictions as to locations or configurations.

## ***ARRL Simulated Emergency Test Exercise Plan – 2016***

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Maryland – DC Section

### **11.2 Winlink 2000**

The mode selected for this test is Winlink Express, formerly RMS Express, operating in Winmor Peer-to-Peer (P2P). Stations will set their radios to 3.575 and/or 7.075MHz in the USB mode depending on the time of day and wait for a connection to and from other participants.

### **11.3 Making Contacts**

A list of Winlink operators will be made available to all individuals or groups who sign up for the Test either through a Plan update/revision or individual emails. These stations will agree to set up their radios in accordance with paragraph 10.1 above. You do not have to sit at the radio all the time to participate. Whenever the frequency is NOT busy, try connecting to a station on the list. If successful, or not successful, capture it in the log and move on to the next station on the list and so on. It is equally important that we know and understand those you cannot connect as well.

### **11.4 Winlink Express Logs**

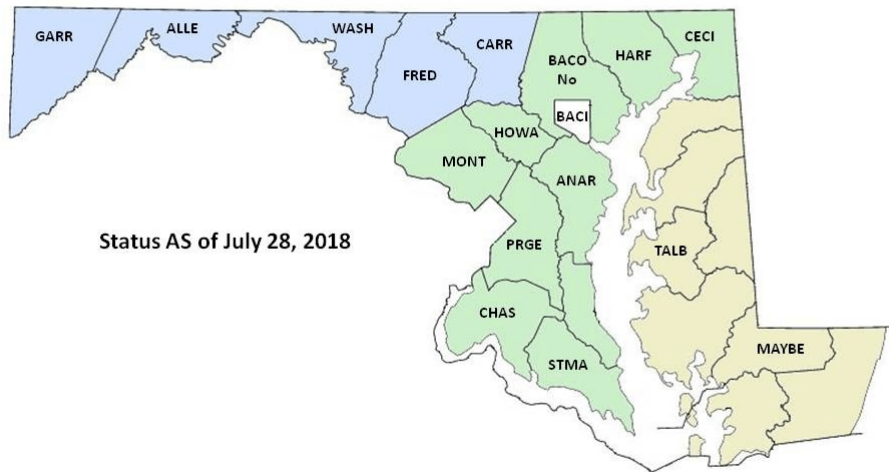
All Winlink operators are requested to send in their Winlink Express Logs along with the SET Operating Logs. These logs may be found under “Logs” from the main drop down menu on the right side of the top Window. There several Log types, and one to send in is the “RMS Express” log in the form of “RMS Express 2016mmdd.log. When selecting the log, be mindful of the fact that the day rolls over at 8pm EDT.

These logs will be useful in conducting connectivity and path analysis of those who participated. It is hopeful that charts and maps can be produced and uploaded to better prepare us for real disasters. It is extremely important that all Winmor logs be sent. We will pair up all the connection with their counterparts to study and review the sent and return paths. This why it is important.

**12.0 Known SET County Participants**

Known counties have voiced an interest in supporting the SET. Eight counties are now in the mix of players. See Figure 3 below and page 11 for the list.

**2016 MDC Section  
Known Counties Playing**



1

**Figure 3**

**ARRL Simulated Emergency Test Exercise Plan – 2016**

Maryland – DC Section

2016 MDC Section SET  
Confirmed Counties Players  
As of: September 16, 2016 (7:48am)

|    | <b>County</b> | <b>Playing</b> | <b>WL2K Callsign(s)</b> | <b>Comments</b> |
|----|---------------|----------------|-------------------------|-----------------|
| 1  | ALLE          | Yes            | KB3FN                   |                 |
| 2  | ANAR          | Yes            |                         |                 |
| 3  | BACI          | Yes            |                         |                 |
| 4  | BACO          | No             |                         |                 |
| 5  | CALV          |                |                         | No response     |
| 6  | CARO          |                |                         | No assigned EC  |
| 7  | CARR          | Yes            |                         |                 |
| 8  | CECI          | Yes            |                         |                 |
| 9  | CHAS          | Yes            | KB3KOW                  |                 |
| 10 | DICO          |                |                         | No response     |
| 11 | DORC          |                |                         | No assigned EC  |
| 12 | FRED          | Yes            |                         |                 |
| 13 | GARR          | Yes            |                         | No response     |
| 14 | HARF          | Yes            | KA3YJM                  |                 |
| 15 | HOWA          | Yes            |                         |                 |
| 16 | KENT          |                |                         | No response     |
| 17 | MONT          | Yes            |                         |                 |
| 18 | PRGE          | Yes            | WB3KAS, N3XKJ           |                 |
| 19 | QUAN          |                |                         | No assigned EC  |
| 20 | SOME          |                |                         | No assigned EC  |
| 21 | STMA          | Yes            |                         |                 |
| 22 | TALB          | Yes            |                         |                 |
| 23 | WASH          | Yes            |                         |                 |
| 24 | WICO          | Maybe          |                         |                 |
| 25 | WORC          |                |                         | No assigned EC  |
|    | <b>Total</b>  | <b>15</b>      | <b>5</b>                |                 |

## References:

### Maryland - DC Emergency Coordinator List and Contact Information

| County                 | 4-Ltr Cnty Code | EC Name             | Call   | Email                   | Notes             |
|------------------------|-----------------|---------------------|--------|-------------------------|-------------------|
| Section Manager        | MDC SM          | Marty Pittinger     | KB3MXM | kb3mxm@arrl.org         |                   |
| Section EC             | MDCSEC          | Jim Montgomery      | WB3KAS | wb3kas@qrrl.com         |                   |
| Assist SEC             | MDCASEC         | Mike Liller         | N7NMS  | n7nms@yahoo.com         |                   |
| Western Region         | WDEC            | Lynn DeHart         | KB3FN  | lwdehart@atlanticbb.net |                   |
| Central Region         | CDEC            |                     |        |                         | vacant            |
| Eastern Region         | EDEC            | Bob Luff            | W3GAC  | luff.bob@gmail.com      |                   |
| Allegany               | ALLE            | Lynn DeHart         | KB3FN  | lwdehart@atlanticbb.net | acting during SET |
| Anne Arundel           | ANAR            | Frank Winner        | N3SEO  | n3seo@arrl.net          |                   |
| Baltimore City         | BACI            | Don Gerkin          | W3DVG  | w3dvg@arrl.net          |                   |
| Baltimore County       | BACO            | Joseph Krystoforski | AJ3X   | aj3x@arrl.net           |                   |
| Calvert                | CALV            | Eric Christensen    | WG3K   | wg3k@arrl.net           |                   |
| Caroline               | CARO            |                     |        |                         | vacant            |
| Carroll                | CARR            | Steve Beckman       | N3SB   | n3sb@arrl.net           |                   |
| Cecil                  | CECI            | George Remhof       | KB3LJB | gremhof@yahoo.com       |                   |
| Charles                | CHAS            | Bob Davidson        | KB3KOW | kb3kow@yahoo.com        |                   |
| Dist of Columbia       | DICO            | Jack Gunther        | KB3KKY | kb3kky@arrl.net         |                   |
| Dorchester             | DORC            |                     |        |                         | vacant            |
| Frederick              | FRED            | Jeff Fishman        | KB3FIO | ljfish1@comcast.net     |                   |
| Garrett                | GARR            | Howard Reynolds     | WA3EOQ | wa3eoQ@gmail.com        |                   |
| Harford                | HARF            | Ted Wieworka        | W3YR   | dtwieworka@gmail.com    |                   |
| Howard                 | HOWA            | Richard Firestone   | WR3F   | wr3f@arrl.net           |                   |
| Kent                   | KENT            |                     |        |                         | vacant?           |
| Montgomery             | MONT            | Fred Bader          | K3CSX  | k3csx@arrl.net          |                   |
| Prince George's        | PRGE            | Jim Montgomery      | WB3KAS | wb3kas@arrl.net         |                   |
| Queen Anne's           | QUAN            |                     |        |                         | vacant            |
| Sommerset              | SOME            |                     |        |                         | vacant            |
| St. Mary's             | STMA            | Ray Brown           | KB3FWW | arby1@gmail.com         |                   |
| Talbot                 | TALB            | Bob Luff            | W3GAC  | luff.bob@gmail.com      |                   |
| Washington             | WASH            | Maurice Eigenbrode  | NI2W   | ni2w@arrl.net           |                   |
| Wicomico               | WICO            | John Taylor         | W3JCT  | jctsby@aol.com          |                   |
| Worcester              | WORC            |                     |        |                         | vacant            |
| Notes:                 |                 |                     |        |                         |                   |
| Updated: July 28, 2016 |                 |                     |        |                         |                   |