Prince George's County
Amateur Radio Emergency Service

Second Quarter
Emergency Preparedness Coalition Drill
April 2, 2013

Final Report

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Executive Summary

This Quarterly Hospital Drill was an attempt to call out the ARES operators with very little notice as to what was expected. Thirty-two radio operators from Calvert, Charles, Frederick, Prince George's and Talbot joined together showing strong partnership support in making it a grand success. For the first time, three subnets were established to observe the effect on the Incident Commander's work load. Eight injects were inserted into the drill and all were accomplished some with very minor issues that are addressed in the report. Injects were not disclosed in advance to the players in this drill as done previously. This was done in order to simulate real time, unknown, impromptu tasks actually portrayed by a served agency Incident Commander in a real life incident. The concept of a "document vault" was used to ensure all operators had the correct forms and documents from which to call from in order to fulfill the mission. This new concept will need some refinement. Cost avoidance to federal, state and local government by providing backup emergency communications via the Amateur radio volunteer community versus the commercial sector is on the order of $149,540.

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Amateur Radio Emergency Service
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Purpose

The purpose of this drill was two fold: (1) to assess the feasibility of managing and conducting multiple subnets during the course of an actual event, and (2) initiate simultaneous tasks across three operating subnets.

Assumptions

The following assumptions and conditions were active for the drill:

1. No RMS Packet Nodes available.
2. Local Internet services have been severed.
3. Repeaters were fully functional including Autopatch if applicable.
4. All other commercial commodities were operational and available to the radio operators.

Objective

The objective of the drill was to find out if subnet operations would either reduce the net control confusion factor without degrading the support to the served agencies or make it worst.

Background

During the most recent ***Super Drill*** in January and the ***ARESMAT*** drill last September, it came to our attention that the consensus of opinion of the participants that Net Control Station (NCS) was very overwhelmed with questions, corrections, comments and TMI (Too Much Information). This hampered NCS' ability to stay focus on the important issues demanding strict attention to details.

A solution offered after the last drill's after action meeting was to break up the effort into subnets in a more manageable systematic fashion.

Participants

All six county hospitals, the county health department and the county EOC were active in the drill. Prince George's County ARES® invited Charles, Calvert, Frederick and Talbot radio operators to play in the drill.

Procedures

The ARES Training Net started at its normal time and place, 1930L on 146.61MHz (-), no pl. There were 30 check ins in the initial start up. At about 2000, KA3AHI assumed the role as The Incident Commander (IC) for the drill. The IC used the 440 Linking System as the ICS net. The hospitals

and health department, all having 144 and 440 radios, were able to hear any and all directives emanating from the IC. Simultaneous tasks were performed by various groups in the drill coordinated by three subnet Net Control Stations on three different repeaters. The three subnet control sections were designated as ***North Comms***, ***Central Comms*** and ***South Comms***. Facilities under the control of these subnets may be found in Table 1. All facilities assigned to a subnet were ordered to stay on that subnet frequency throughout the duration of drill. The NCS was the only authorized station to move off their subnet repeater frequency to call the NCS of another subnet.

Injects

There were eight (8) injects introduced into the drill. Injects were made known to the subnet's NCS on their assigned repeater. They were not known to the players in advance. Injects were provided by the IC. In previous drill, inject were known to the players in advance in a very detailed operations plan. This was not be the case in this drill in order to simulate real time, unknown, impromptu tasks actually portrayed by an Incident Commander in a real life incident. It is time we get use to showing up for the drills and look forward to "expecting the unexpected."

Winlink Support

Winlink 2000 is the ***EmComm*** digital mode of choice for all Prince George's County ARES deployments, drills and exercises. This digital mode has been proven to be the efficient solution for backup email requirements of our served agencies.

HF and VHF components of Winlink 2000 System were used in the drill. Inbound email traffic was delegated to 80 and 40m as the drill was conducted in the evening hours.

W3CB	provided WinMOR HF & VHF P2P capability for the drill.	
W3CB	HF P2P	3570KHz dial
NX3SS	HF P2P	7070KHz dial secondary

Facility Assignments

PRGE ARES Players				
Section	Facilities	Operators	Repeater	NCS
North Comms	BHC	W9WNH, N3WYG, KB3YQK	146.61(-) no pl	N3XKJ
	LRH	WI3N, KJ4ACS		
	PGHC	AB3NA, N3ADF		
Central Comms	ARES EOC	WB3KAS, KA3AHI	145.23(-) 110.9	KB3IIE
	DCH	KD3JA, WA3YTK, K3IVR		
	PGCHD	N3CK, N3XL		
	PGC EOC	KB3IIE, KZ3H, KB3PEX		
South Comms	FWMC	AA3WS, W1BJC	147.15(+) 114.8	NX3SS
	SMHC	WB2IFS		

Table 1: Prince George's County Subnet Facilities

Supporting Counties			
County	Operator(s)	Objective	Method/Mode
CALV	N3QHC, N3XMZ, N3IDX, K3UGA	Relay repeater message from TALB to ICS	WL2K HF P2P to W3CB
CHAS	KB3KOW, KB3QIN, KB3UYZ	Provide files to PRGE ops when requested	WL2K VHF P2P path to requestor
FRED	N3TCJ	Provide status of 440 Linking system in FRED area.	Any WL2K method available.
TALB	W3GAC	Access selected PRGE repeaters and report results to ICS	Access K3CAL repeater with info.

Table 2: Counties Playing in the Drill

Supporting Counties

Selected neighboring counties were invited to join us in the drill with the end objective to have all or most of the Section ARES supported counties 'wired' up in time for the 2013 SET in October. Tasks requested and performed by these counties in no way interfered with the intent of the PRGE ARES Training objectives. It was just an opportunity for them to join in if so desired. Counties involved and their assignments my be seen in Table 2. It is hopeful that more counties will join in on the drills in the future.

Frequencies Used in the Drill

A wide range of frequencies were used in this drill. Appendix E shows a list of frequency channels available to the radio operators. It is a derivative of an ICS-205 Incident Radio Communications Plan. It contains all the information necessary to perform any task requested by the Incident Commander.

The EmComm Picture

Figure 1 is a graphical representation of the subnets and their relationship to the objectives of the drill. Tactical call signs, North Comms, Central Comms and South Comms were used throughout the drill. The three counties joining in the drill, noted in green, were Frederick, Calvert, Charles and Talbot.

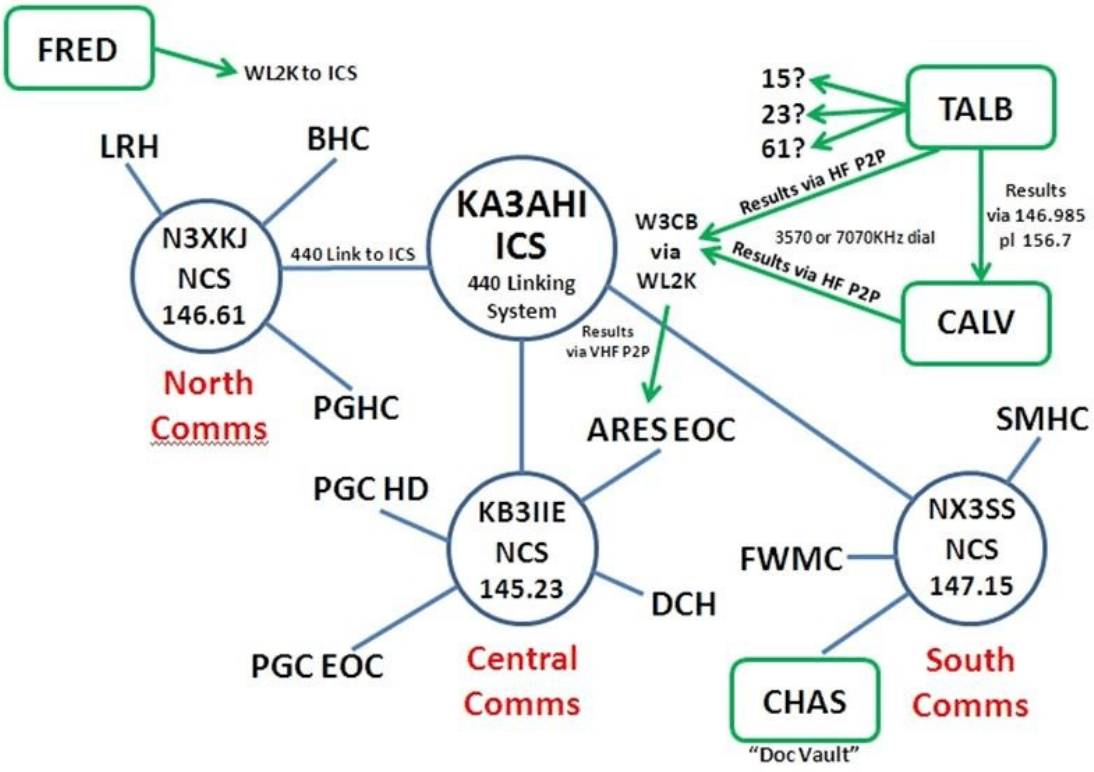

Figure 1: Drill EmComm Picture

Drill Results

Thirty radio operators checked into the pre-drill net from 1930 -2000 hours.

Thirty-two radio operators played in the drill from 2000 - 2120 hours.

Five Counties, PRGE, CALV, CHAS, FRED and TALB had representation in the drill.

Nine repeaters were tested for use in the drill

Local Internet was down. RMS Packet Nodes were down. This impacted the radio operator's ability to send emails on behalf of their served agencies. Radio operators used RMS P2Peer operations to transport important and priority email messages from the hospitals into the Health Department. These messages were then sent outside these facilities to "ground stations" radio operators who used HF radios to accomplish “the last mile” communication link and get the messages outside the affected areas.

Both 80 and 40 meter HF radios were available to represent “the last mile” getting communications outside an affected area to request for help. Forty meters was used between Mt. Hope Community Center, Prince Frederick, MD and College Park, MD to provide communications between CALV and the ARES EOC, Collington Retirement Community, Mitchellville, MD for situational awareness reports.

FRED used Winlink 2000 to send an email over radio frequency advising that the 440 Frederick link of the Central Maryland Link System was down.

A radio radio operator in Easton (Talbot County) Maryland tested four repeaters located in Cheverly, Prince Frederick, Brandywine, and Lanham, MD. They documented that, if needed, they could access these four repeaters to request help in a mutual aide situation. The communication link between WDC and Talbot County was proven.

During the drill telephone service was interrupted. Auto patch via a local repeater provided the outside link for telephone service so that hospitals and the health department could communicate.

A staff member of the Prince George's County Health Department, Program Chief, Emergency Preparedness and Response, supported the drill. A third party traffic conversation was held between him and the acting IC located at Collington Retirement Community, Mitchellville, MD.

Recommendations

The Drill after action meeting, held April 15 at the Fire Services Building in Landover Hills, MD, produced a healthy discussion on items needing improvements.

1. This is a Drill Announcement

It was noticed that several operators, "over stated" the "This a drill" announcment. The basic rule is to make this announcement once at the beginning of the transmission and at the end. If, however, the discussion becomes lengthy, it was suggested that it be announced sometime in the middle of the transmission to prevent anyone who just might have turned on the radio, heard the cry for help not knowing this was a drill and took unnecessary action.

2. Voice and Digital on the Same Band

At issue was condition where voice and digital was required on the 2m radio. The 440 linking system was used to communicate with all operators in all the facilities. Each subnet was allocated a 2m repeater for its internal operations. When the inject required a digital peer-to-peer action on the part of a facility, voice comms to NCS was no longer available.

However, since all stations were also listening on 440, they still could have called out to NCS on 440 if necessary. Nothing lost.

An alternative approach could have been for the two parties to do their digital inject on 220 or the on the second 440 radios provided, while maintaining contact with NCS on the 2m radio. Nothing lost here either.

It was recommended that tactical maneuver procedures to cover specific situation like this be implemented and exercised in the next drill.

3. Three Subnet Operations

The Incident Commander was highly pleased at the way the three subnet idea reduced the confusion and offered better control of the incident. It was agreed that the the three subnet approach would be a standard operating procedure in future drills and exercies.

4. Drill Lull and Downtimes

There were times during the drill when not much was happening on a particular subnet. Some of the operators exercised a local RMS Node to see if their radio system was set up correctly. While the use of Nodes was not allowed, there was nothing in the plan that prevented anyone from doing any operational testing within the rules set forth in the plan. One operator, in a lull condition, decided to see how many Nodes he could access. Doing things to keep active in a lull state, while not jeopardizing the intent of the drill, is certainly permissible.

5. Activity Log Standardization

During Prince George's County ARES drills, it is a stern requirement that activity logs (e.g., ICS-214 Form) be kept for the duration. One could come up with a lengthy list why it is necessary. The main reason is ***accountability***. In an actual incident, a cross check of logs could resolve important message delivery issues, such as "I did not receive your message. When did you send it and who sent it?" Detail logs can resolve these kinds of issues. It is very important to be as detailed as you have time for.

Standardization of logs, while on the surface appears to be a minor point to a few, is very helpful when putting together the final report such as the one you are reading today. Logs received by the operators have arrived in the form of txt files, pdf files, doc files, rtf files, even scanned written pdf files have shown up in the past. This places a heavy burden on the author to 'standardize' the format for use in the report.

It was agreed in the meeting that a '214' form in excel would be the best choice in future drills. A compiled set of logs could be placed in the file as 'books' and the entire drill logs contained in one standard file. An action item was issued to devise a '214' acceptable to all operators in the drill and be ready for the next scheduled drill.

Appendixes

Appendix A: Drill Participants

The following 32 radio operators supported the drill in some form or another. The following list provides their FCC call sign and their assigned location during the drill.

AA3WS	FWMC	N3IDX	CALV
AB3NA	PGCHC	N3QHC	CALV
K3IVR	DCH	N3TJC	FRED
K3UGA	CALV	N3WYG	BHC
KA3AHI	ARES EOC - IC	N3XKJ	LRH - NCS
KB3IIE	PGC EOC	N3XL	PGC Health Dept
KB3KOW	CHAS Health Dept	N3XMZ	CALV
KB3PEX	PGC EOC	NX3SS	Home - NCS
KB3QIN	CHAS Health Dept	W1BJC	FWMC
KB3UYZ	CALV Relay station	W3CB	Home - WL2K Op
KB3YQK	BHC Guest	W3GAC	TALBOT
KD3JA	DCH	W9WNH	BHC - NCS
KJ4ACS	LRH	WA3YTK	DCH
KZ3H	PGC EOC - NCS	WB2IFS	MSMHC
N3ADF	PGCHC	WB3KAS	ARES EOC - EC
N3CK	PGC Health Dept	WI3N	LRH

Appendix B: Repeaters Used in the Drill

There were nine repeaters used in the drill, as best as we could tell.

Call Sign	Frequency	Location
K3CAL	146.985 (-) pl 156.7	Sunderland, MD
K3ERA	145.230 (-) pl 110.9	Lanham, MD
K3GMR	146.610 no pl	Bladensburg, MD
KA3GRW	443.700 (-) pl 179.9	LaPlata, MD
N3ARN*	447.075 (-) pl 167.9	Orme (Baden), MD
N3ST*	448.925 (-) pl 167.9	Suitland, MD
W3SMR	147.150 (+) pl 114.8	Brandywine, MD
WA3GPC*	444.700 (-) pl 167.9	Laurel, MD
WB3GXW	147.225 (+) pl 156.7	Silver Spring, MD

Notes:

N3ARN, N3ST and WA3GPC repeaters are part of Central Maryland Repeater Group

WB3GXW and K3ERA repeaters provided Autopatch capability for the drill

Appendix C: Injects Inserted in the Drill

INJECT 1:

North Comms: Exercise Doc Vault

Request SNS from Doc Vault and have it delivered to AB3NA at PGHC.
AB3NA advise IC upon receipt of SNS from the Doc Vault
AB3NA at PGHC forward SNS to PGCHD for "processing."
PGCHD via North Comms NCS advise IC of receipt of SNS

RESULTS: Doc Vault keeper, KB3KOW located at the CHAS HD, experienced antenna failure, essentially taking HD off the air. The only communications with CHAS HD was via Relay Station KB3UYZ through the 147.15 repeater. This situation prevented KB3KOW from participating in the Drill as the Doc Vault Keeper and the backup Doc Vault Keeper, WB3KAS was called into action for the release of documents.

Inject accomplished.

LESSON LEARNED: In a real incident where radio operators may find themselves without certain documents, ICS forms, medical forms, logs, instructions and other supporting documents, the Doc Vault is a handy repository. We saw the need to have several Doc Vaults available, not just one, for radio operators to access.

INJECT 2:

Central Comms: Exercise Auto Patch 145.230

KD3JA at DCH call N3CK at HD using the K3ERA Auto Patch.

RESULTS: The test of this inject was to obtain the telephone numbers and test the 145.230 repeater Auto Patch. KB3IIE, KD3JA, and N3XL used WL2K, Peer to Peer to obtain telephone numbers. Auto Patch was initiated with HD on K3ERA Auto Patch. Message was left on the answering machine.

Inject accomplished.

INJECT 3:

North Comms: Exercise Auto Patch

WI3N at LRH call W9WNH at BHC using the WB3GXW Auto Patch.

RESULTS: LRC did not have WL2K capabilities, only voice operations. The absent digital capability forced WI3N and W9WNH to complete the inject using WB3GXW Auto Patch via voice communications. W9WNH at BHS received autopatch call from WI3N at 8:20pm.

Inject accomplished.

INJECT 4:

South Comms: Exercise Doc Vault

Instruct CHAS KB3KOW to provide a catalog list of available documents supporting this Drill. Provide list to ARES EOC via WL2K Peer to Peer.

RESULTS: KB3KOW and KB3QIN made several attempts to fix the antenna at CHAS HD. At one point they resorted to mobile operations on site. After several attempts the situation could not be fixed and the Doc Vault, Waldorf could not be accessed.

Inject incomplete based on antenna malfunction.

LESSONS LEARNED: Implement backup Doc Vaults throughout the region.

INJECT 5:

Central Comms: Exercise 3rd Party Traffic

Provide confirmation that Mr. Goddard is on site at the HD.
Please initiate 3rd Party traffic between Mr. Goddard and IC.

RESULTS: Via N3CK, NCS KZ3H arranged for IC KA3AHI and Mr. Richard Goddard to have a radio conversation during the Drill. Mr. Goddard is the Program Chief, for Emergency Preparedness and Response, Prince George's County Public Health Department, Largo, Maryland. Mr. Goddard was on site with the Health Department radio operators from 6:00 pm to 9:20 pm.

Inject accomplished.

INJECT 6:

South Comms: Exercise Status Information

Provide confirmation that Mr. Butler is on site at MSMHC.
Please initiate 3rd Party Traffic with Mr. Butler and IC.

RESULTS: Via WB2IFS, NCS NX3SS, confirmed that Mr. Butler was not on site at MSMHC.

Inject cancelled to be exercised in a future drill.

INJECT 7:

Incident Commander: Exercise Backup Doc Vault:

IC KA3AHI activated WB3KAS as backup Doc Vault Keeper, at ARES EOC, Collington. Via WL2K Peer to Peer provide the SNS to AB3NA.

IC, from ARES EOC, Collington, track transport and receipt of SNS between WB3KAS and AB3NA PGHC. Track transport of SNS from AB3NA PGHC to its final destination to the HD via N3XL.

RESULTS: SNS was obtained from backup Doc Vault and delivered to the HD.

Inject accomplished.

INJECT: 8:

Talbot (TALB) County: Test Repeater connectivities from TALB to the 146.61, 145.23, 147.15. Send test results to CALV 146.985

RESULTS: W3GAC of TALB conducted the survey and found 146.61 very weak but 145.230, 147.15, 146.985 were full scale on the S Meter.

Appendix D: Facilities in the Drill

Operators from various locations and facilities in Maryland played a viable role in the Prince George's County Emergency Preparedness Coalition - ARES Drill:

ARES EOC	Collington Retirement Community, Mitchellville, MD
BHC	Bowie Health Center, Bowie, MD
CALV Calvert County	Calvert CountyMt. Hope Community Center, Sunderland, MD
CHAS Charles County	Charles County Public Health Department, White Plains, MD
DCH	Doctor's Community Hospital, Lanham, MD
FRED Frederick County	Frederick Memorial Hospital, Frederick, MD
FWMC	Fort Washington Medical Center, Fort Washington, MD
LRH	Laurel Regional Hospital, Laurel, MD
MSMHC	MedStar Southern Maryland Hospital Center, Clinton, MD
PGCHC	Prince Georges CountyHospital Center, Cheverly, MD
PGCHD	Prince Georges CountyHealth Center, Largo, MD
TALB Talbot County	Easton Shore, Whitman, MD

Appendix E:
Prince George's County ARES®
Incident Radio Communications Plan (ICS 205)

1. Incident Name:			**2. Date/Time Prepared/Revised:** March 31, 2013-R		**3. Operational Period:** From: To:	
4. Basic Radio Use:						
Function	Channel Name	Assignment	Rec Freq MHz	Split & Tone	Mode	Notes
VHF Net	PGV-01	NCS	145.230	(-) 110.9	FM Analog	K3ERA
VHF Net	PGV-02	Resource	146.610	(-) no pl	FM Analog	K3GMR
VHF Net	PGV-03	Backup	147.150	(+) 114.8	FM Analog	W3SMR
Auto Patch	AP-01	North, Central	147.225	(+) 156.7	FM Analog	WB3GXW[(a)]
Auto Patch	AP-02	Central, South	145.230	(-) 110.9	FM Analog	K3ERA[(b)]
UHF Linking	PGU-01	North	444.700	(+) 167.9	FM Analog	WA3GPC
UHF Linking	PGU-02	Central	448.925	(-) 167.9	FM Analog	N3ST
UHF Linking	PGU-03	South	447.075	(-) 167.9	FM Analog	N3ARN
Digital WL2K	WL-01	North	145.75	n/a	FM Digital	W3LRC-10
Digital WL2K	WL-02	Central	145.75	n/a	FM Digital	W3PGC-10
Digital WL2K	WL-04	Central	145.75	n/a	FM Digital	W3CB-10
Digital WL2K	WL-05	South	145.75	n/a	FM Digital	WB3KAS-10
Digital WL2K	WL-06	South	145.75	n/a	FM Digital	WB2IFS-10
Digital WL2K	WL-07	Central	445.975	n/a	FM Digital	W3CB-10
Digital WL2K	WL-08	Central	Op's Choice	n/a	HF USB	W3CB, K3CCR
Digital P2P	P2P-01	ARES® EOC	144.910	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-02	BHC	144.930	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-03	DCH	144.950	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-04	FWMC	144.970	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-05	LRH	145.010	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-06	PGC EOC	145.030	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-07	PGHC	145.050	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-08	PG Health	145.070	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-09	SMHC	145.090	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-10	Anyone	223.550	n/a	FM Digital	Listening Freq, Digital
Digital P2P	P2P-11	Anyone	445.550	n/a	FM Digital	Listening Freq, Digital
Notes : (a) *44 up / #1 down; (b) Not functional yet;						
Prepared By: Jim Montgomery, WB3KAS PRGE ARES® EC			Incident Location: Various Prince George's County, MD			

Appendix F: Monetary Considerations

Monetary Value of Service Provided by ARES® To Served Agencies and Local Government

The national rate for "volunteer" hours is estimated to be $20.00 per hour. Estimated costs of the equipment used (personal radios, computers, repeaters, etc.) will vary with each exercise, length of exercise and location. For this drill the monetary value of the service of trained radio operators and the equipment they provide is on the order of **$149, 540.00.** The equipment used, operator hours spent and travel to and from the facilities is provided gratis to the county Emergency Preparedness Coalition by the Prince George's County Amateur Radio Emergency Service®. If this gratis service were not available, and assuming that the county, state or federal government could even duplicate it with private contractors, it is likely that the cost would be greatly in excess of the estimate provided.

Each hospital's radio system is about $2500.00 each
Each repeater is about $10,000.00 ea
Each personal radio is about $300.00 ea
Each personal computer is about $1000.00
Each RMS Packet Node is about $1000.00
Each personal HF radio system will average about $3500 ea

Item	Each Cost	Number	Total Costs
Hospital & Health Equipment (medical carts)	2500	7	17500
County & ARES EOC radios used	500	4	2000
Repeaters used	10000	9	90000
Personal VHF/UHF radios used (base, mobile, HTs)	300	47	14100
Personal Computers (Airmail)	1000	12	12000
RMS Packet Nodes (all that were used)	1000	0	0
Planning writing, emails, etc, @ $20/hr	20	76	1520
Personal HF Radio System	3500	3	10500
Drill hours (travel & set up) @ $20/hr	20	96	1920
Total			149540

Appendix G: Abbreviations

ARES	Amateur Radio Emergency Service
ARESMAT	ARES Mutual Aid Team
BHC	Bowie Health Center
CALV	Calvert County
DCH	Doctors Community Hospital
EC	Emergency Coordinator
EmComm	Emergency Communications
EOC	Emergency Operations Center
FCC	Federal Communications Commission
FRED	Frederick County
FWMC	Fort Washington Medical Center
HD	Health Department
HF	High Frequency
IC	Incident Commander
ICS	Incident Command System
KHz	Kilo Hertz
LRH	Laurel Regional Hospital
MSMHC	MedStar Southern Maryland Hospital
NCS	Net Control Station
P2P	Peer-to-Peer
PGC	Prince George's County
PGCHD	Prince George's County Health Department
PGHC	Prince George's County Hospital Center
PRGE	Prince George's County
RMS	Radio Messaging System
SET	Simulated Emergency Test
SNS	Strategic National Stockpile
TALB	Talbot County
UHF	Ultra High Frequency
VHF	Very high Frequency
WDC	Washington, DC
WinMOR	Winlink Messaging Over Radio
WL2K	Winlink 2000