Winnipeg Amateur Radio Emergency Service in conjunction with Winnipeg Amateur Radio Club



MANITOBA MARATHON 19 JUNE 2011 AMATEUR RADIO REPORT PSE-122

> Jeff Dovyak VE4MBQ JUN 2011

This report covers the Amateur Radio component of 2011 Manitoba Marathon. Amateur Radio volunteers were asked for feedback and it has been integrated into the report. In the draft stage this report was circulated to the Amateur Radio Deputy Coordinator for review and comment.

The Disaster Management cycle or continuum is generally acknowledged to have four major stages¹:

- Mitigation
- Preparedness
- Response
- Recovery.

From an Amateur Radio point of view, a mass public event with many stakeholder groups is an excellent Disaster Management exercise opportunity.

This report has four main sections:

- Planning/Preparation
- Operation
- Recovery
- Mitigation.

2011 PLANNING/PREPARATION

Winnipeg Amateur Radio Emergency Service (WPGARES) and Winnipeg Amateur Radio Club (WARC) have formally collaborated on a joint Marathon operation since approximately 2001. As previously reported², WARC is the umbrella or general interest Amateur radio club in Winnipeg that previously organized Marathon communications 1980-2001. WPGARES is concerned with provision of emergency Amateur communications for the civil authorities in time of disaster or communications emergency.

The Marathon Radio Group (MRG) is currently chaired by WPGARES Emergency Coordinator Jeff Dovyak VE4MBQ, deputy is Robert Stegmaier VE4RST. Technical advisors are:

Don Gerrard VE4DWG Norman Coull VE4EH Derek Hay VE4HAY Mark Blumm VE4MAB Mark Havens KB7REU Ellis Seddon VE4AJO Kelly Taylor VE4XT.

Recruiting for the 2011 Amateur Radio component began in earnest in JAN 2011, with notices in the monthly WARC publication "*The Newscaster*", verbal reports at WPGARES and WARC meetings e-mails to some of last year's volunteers as well as general e-mails to Winnipeg ARES members.

The detailed agenda for the Amateur Radio briefing was reviewed by MRG members before being finalized. MRG deliberations and discussions were carried out by e-mail and discussions during other meetings and the regular Saturday morning coffee sessions at *The Arches* (McDonalds Restaurant at St James & Ellice).

Volunteer Amateur Radio Operators were asked to notify the ARES Coordinator in advance if they were unable to attend the Amateur Briefing so arrangements could be made for their volunteer t-shirts, "loaner" identification vests and race day documentation. All but four Amateurs who were unable to attend made advance arrangements and greatly decreased the work for Coordinators. The four who missed the briefing and made no advance arrangements caused extra work.

During the Amateur Radio Briefing 14 JUN, participants received three Marathongenerated booklets:

- 2011 Manitoba Marathon Amateur Radio Guide (content by Marathon Radio Group and Marathon technical staff)
- 2011 Course Station Maps
- 2011 Manitoba Marathon Participant's Handbook

As well as three or four loose single sheet documents:

- 2011 Amateur Radio Briefing Agenda
- 2011 Amateur Radio Roster
- "Marathon Alert Form"
- Half-Marathon "Runner Report" Form (to those along Half-Marathon Course".

Once again, Amateur Radio traffic vests jointly owned by WPGARES and WARC were loaned to non-ARES Hospitality Net and Medical Net participants so that they would be easily identified by various Marathon stakeholders. Photo included in 2009 & 2010 reports.

Main changes for 2011 compared to previous years included:

- One Major Infrastructure change
 - o "Care Centre" relocation
- Four course changes (Stadium area, Course Split, Harrow to Guelph, & St Vital Park)
- One Station location change (Relay 1)
- Amateur Radio-specific changes included:
 - Operators from Lead Vehicles may be required relieve in Care Centre or Comm Centre when lead vehicles have come in off the course
 - "Shadow" for Care Centre Charge Nurse ("Shawna's Shadow") with specific info updates to Chief Dispatcher at Comm Centre, template report form produced
 - o Form for Reporting Lead Runners & Vehicles
 - o Form for operators at Hospitality Stations to document Runner Alerts, Medical & Therapy situations.

Innovative changes from past few years that are still maintained:

- Staff VE4WWO in the Prairie & Arctic Storm Prediction Centre approximately 0600-1130h
- One EMT in each Medical supply Vehicle so as to allow Medical Supply Vehicles to transport sick & injured runners that can sit up back to care Centre with some level of medical supervision not requiring RN/MD or ICP/ACP levels of supervision
- Distribution of medical ice on course by medical Supply & Sweep Vehicles
- Goldeyes Baseball Club Paramedic on a motorbike operated by an experienced ARES member (a former paramedic who maintains his skills)
- Interoperability for field medical operations achieved by the Amateur Coordinator carrying a "loaner" portable radio from the Goldeyes Baseball Club Paramedic group.

The Marathon Radio Group was represented at every Marathon Technical Committee and Medical Committee meeting that we were invited to.

Some time before race day, the Marathon Technical Coordinator provided a list of specific vehicles that would be available from the provincial Vehicle and Equipment

Management Agency (VEMA). The ARES Coordinator was able to advise on who would pick up which vehicle.

One of the operators assigned to the Recovery area was designated to relieve the Amateurs working in the Care Centre.

Just prior to the final Tech Team Meeting, concern was expressed that the Course Closing Vehicle seems to miss some road marshal locations and does not pick up all hand-held Stop Signs & Marshal Vests. Subsequently Darren Anderson provided a spreadsheet showing marshal locations and people assigned.

All Amateur Radio operators operating on the Medical Net were invited to the Medical Team briefing SAT 18 JUN – the majority attended.

2011 OPERATION

The 2011 operation ran from approximately 0530-1330h. Eight-five (85) volunteers (final roster at end of this section) covering eighty-nine positions were assigned to each Hospitality Station, Relay Exchange Zones, Super Run Hospitality Station, 10K Hospitality Station, five Course Vehicles (Lead Full, Lead Half, Course Closing, 2 Sweep Vans), Start Line, Medical Vehicles (4 ACLS, 2 Therapy, 2 Medical Supply and Paramedic motorcycle "Bike 9"), Hospitality Net Control, Medical Net Control and Care Centre.

As previously reported³, equipment carried on "Bike 9" includes items for assessment, D-size oxygen cylinder, defibrillator, airway management kit, IV kit, cardiac medications, wound treatment kit, etc.

The operation was carried out on three closed, directed Amateur radio nets using tactical calls-signs. The Hospitality Net, based at Winnipeg Senior Citizens Radio Club controlled Hospitality Stations, course vehicles (lead vehicles and sweep vans) and start line. The Medical Net based at the new Comm Centre controlled medical vehicles on the course and the operators in the Recovery area. A sub-net on a different frequency addressed communications for ARES "shadows" at the Care Centre. A primary and back-up repeater were identified for each net as well as a simplex frequency. A repeated UHF frequency was tested and used to link the two Net Control stations. The back-up Medical Repeater was out of service race day and not available for use.

Amateurs were assigned to positions in the same manner as previous years. Many returning volunteers ask for the same station year after year. This year of three reserve or back-op operators identified, only two had no other responsibility other than being a back-up monitoring the Hospitality Net in case of any sudden volunteer availability problems on the course (preference would be pairs of operators for each course sector). The race course is best sectored geographically into three areas:

- South of the Assiniboine River
- North of the Assiniboine River
- East of the Red River.

Ultimately, all back-up or reserve operators were pressed into service this year as well as three additional operators who were identified after 13 JUN (after some scheduled Amateurs had to withdraw on short-notice).

A Hospitality Test Net was arranged for 2030h THURS 16 JUN to allow newer Amateurs and Amateurs whose assigned locations had changed to visit or reconnoiter their location **and** ensure that their personal radios were properly programmed. A minority of Amateur Radio volunteers appeared to avail themselves of the opportunity offered.

The actual Amateur operation unfolded almost as expected.

2011 Final Amateur Radio Roster

Net	Assignment	Secondary Assignment	Call Sign	First Name	Last Name		
Hospitality	Mile 2	Mile 25	VE4VZ	Bandlow			
Hospitality	Mile 2	Mile 25	VE4DJS	Dave	Stimpson		
Hospitality	Walk		VE4CAT	Catherine	Suarez		
Hospitality	Walk		VA4DON	Don	Suarez		
Hospitality	Mile 4		VE4BOY	Juanito	Alambra		
Hospitality	Mile 4		VE4DAE	Ernelyn	Hingada		
Hospitality	Mile 6		VE4WKP	Kumara	Perera		
Hospitality	Mile 6		VE4WSP	Supun	Perera		
Hospitality	Mile 8		VE4WMK	Aruni	Perera		
Hospitality	Mile 8		VE4WPL	Piyumi	Perera		
Hospitality	Mile 10		VE4MHZ	Paula	Ehn		
Hospitality	Mile 10		VE4GLS	Gord	Snarr		
Hospitality	Mile 12		VE4WJE	Willard	Elliott		
Hospitality	Mile 12		VE4EA	Cary	Rubenfeld		
Hospitality	Mile 14		VE4SBS	Sunday	Satiada		
Hospitality	Mile 14		VE4LYN	Linda	Satiada		
Hospitality	Mile 16		VE4PPG	Primen	Garcia		
Hospitality	Mile 16		VE4CEU	Fely	Garcia		
Hospitality	Mile 18		VE4JLO	E4JLO Lorenza Schultz			
Hospitality	Mile 18		VE4JBL Jojo Lagm		Lagman		
Hospitality	Mile 20		VE4GKS Gerald She		Sherman		
Hospitality	Mile 20		VE4PGL	Pawel	Glowacki		
Hospitality	Mile 22		VE4MMG	Mariska	Maguire		
Hospitality	Mile 22		VE4UG	Irv	Cosgrove		
Hospitality	Mile 24		VE4ANF	Bing	Fernandez		
Hospitality	Mile 24		VE4LIT	Lito	Guevara		
Hospitality	Mile 25	[from Mile 2]	VE4VZ	Rolf	Bandlow		
Hospitality	Mile 25	[from Mile 2]	VE4DJS	Dave	Stimpson		
Hospitality	Half Marathon		VE4EIH	Ed	Horton		
Hospitality	Half Marathon		VE4APJ	Andrew	Johnson		
Hospitality	Super Run		VE4QB	Phil	Barton		
Hospitality	Super Run		VE4DLA	David	Latour		
Hospitality	Relay 1		VE4NQ	Brian	Pettapiece		
Hospitality	Relay 1		xxxxxx	Betty	Pettapiece		
Hospitality	Relay 1		VE4HQ	Tom	Blatch		
Hospitality	Relay 2		VE4AFL	Ken	Laidlaw		
Hospitality	Relay 2		VE4JS	Jan	Schippers		

Hospitality	Relay 3		VE4GWN	Glen	Napady	
		+				
Hospitality	Relay 3		VE4YYL	Rosi	Napady	
Hospitality	Relay 4		VE4SYM	Susan	Collings	
Hospitality	Relay 4	<u> </u>	VE4TRO	Fred	Collings	
Hospitality	NCS		VE4HAY	Derek	Hay	
Hospitality	NCS		VE4AJO	Ellis	Seddon	
Hospitality	Lead Vehicle Half	"Stadium" Relief	VE4HK	Dick	Maguire	
Hospitality	Lead Vehicle Full	"Stadium" Relief	VE4BN	Ed	Bethune	
Hospitality						
	Closing Vehicle Driver		VE4GZ	Jim	Griffiths	
Hospitality	Closing Vehicle Operator		VE4SCH	Dario	Schor	
Hospitality	Sweep 5 Asst Radio Ope	erator	XXXXXX	Ryan	Havens	
Hospitality	Sweep 5 DRIVER		KB7REU	Mark	Havens	
Hospitality	Sweep 7		VE4OK	Gordon	Jewsbury	
Hospitality	Sweep 7		VA4IAM	Ian	Brownlee	
Hospitality	Start Line	Dr Pilat's Shadow	VE4RST	Rob	Stegmaier	
LINK	WSCRC Host	Liasion Op	VE4AND	Bert	Andrews	
LINK	WSCRC Host	Liaison Op	VE4RCJ	E4RCJ Bob Jacobs		
LINK	Liaison Op at Comm Cer	ntre	VE4CZK	Jeff	Cieszecki	
LINK/Sx3	Liaison Op at Comm Cer	ntre	VE4HAZ	Harm	Hazeu	
Medical	Medical NCS		VE4EH	Norman	Coull	
Medical	Medical NCS					
Medical	Relief NCS		VE4BN	Ed	Bethune	
Medical	Recovery-1	Start-Line MED	VE4RAI	Rob	Iwacha	
Medical	Recovery-2		VE4STS	Bob	Myatt	
Medical	Cora Lee's Shadow		VE4ESX	Richard	Sheridan	
Medical	Intake/Triage Area		VE4ACX	Yori	Tsuji	
Medical	Intake/Triage Area-2		VE4FHS	Frank	Serafin	
Medical	Shawna's Shadow		VE4CDM	Craig	Martin	
Medical	Dr Pilat's Shadow	Start Line	VE4RST	Robert	Stegmaier	
Medical	Med 1 - driver	1	VE4JNF	John	Foster	
Medical	Med 1 - radio	1	VE4NCH	Pat	Verbaaschott	
Medical	Med 2 - driver		VE4MAQ	Bob	Poole	
Medical	Med 2 - radio		VE4EAR	Edward	Richardson	
Medical	Med 3 - driver		VE4JHJ	Gord	Casewell	
Medical	Med 3 - radio op	1	VE4TG	Doug	Henry	
Medical	Med 4 - driver		VE4QV	John	Pura	
Medical	Med 4 - radio op		VE4LDI	Diane	Perry	
Medical	Therapy 5 - driver	1	VE4MBQ	Jeff	Dovyak	

Medical	Therapy 5 - radio	VE4WTF	Luke	Dovyak	
Medical	Therapy 6 - driver	VE4MAB	Mark	Blumm	
Medical	Therapy 6 - radio	VE4BAW	Geoff	Bawden	
Medical	Supply 7 - driver	VE4SE	Tom	Mills	
Medical	Supply 7 - radio	VE4XYL	Ruth	Mills	
Medical	Supply 8 - radio	VE4JAH	John	Howells	
Medical	Supply 8 - Driver	VE4GWB	Garth	Blumm	
Medical	Paramedic Bike 9	VE4DWG	Don	Gerrard	
Medical	VE4WWO	VE4KEH	Kent	Haase	
Medical	Ski Patrol Monitor	VE4RDO	Andy	Fenstad	
Medical	Ski Patrol Monitor	VE4TNT	Rob	Harwood	
MRG	Desk Top Publishing	VE4MAB	Mark	Blumm	
MRG	DB Development	VE4DWG	Don	Gerrard	
MRG	Deputy Coordinator	VE4RST	Rob	Stegmaier	
MRG	Coordinator	VE4MBQ	Jeff	Dovyak	
Spare3	East of the Red	Cover from	Mile 20		
Spare2	North of the Assiniboine	VE4WJE	Willard	Elliott	
Spare1	South of the Assiniboine	VE4DAR	David	Rosner	

One operator in a lead vehicle did not transmit any position reports and an inquiry has been made as to why. A newer Amateur left his assigned area prematurely but returned later on and received some coaching from his replacement.

Apparently at some point a request was made from someone in the Comm Centre with regard to progress of Relay Team lead runners - Amateurs assigned to the course are not briefed on doing that.

For reasons unknown to Marathon Radio Group Coordinators, the Medical Committee seems to insist on using obsolete unit identifiers for labeling supply kits & coolers (e.g. Med 1-4, Therapy 1 & 2 and Supply 1 & 2 – that nomenclature has not been used for years by the Marathon Radio Group). That was mitigated somewhat this year when the ARES Coordinator hand-corrected the labeling on some medical kits that had been set out for pick-up by Amateurs operating on-course medical vehicles.

One Medical Net Controller had to bow out the night before due to a family illness. The Amateur Operator from the Full Marathon Lead Vehicle was brought in as relief for the Comm Centre when his primary duty was complete (potential for doing so was planned but not expected).

There appeared to be some confusion at the "corral" near the Recovery Area in terms of coolers with medical ice for on-course Medical Vehicles, likely stemming from non-standardized nomenclature for majority of on-course medical units - for some time now we ensure that unique numbers are utilized in tactical call-signs (e.g. Med Units 1-4, Therapy 5 & 6, Medical Supply 7 & 8 vs Med 1-4, Therapy 1 & 2 and Supply 1 & 2). By using unique identifiers (not using same "number" for more than one unit) if there is a broken transmission from an on-course medical vehicle and only their "number" comes through it is immediately apparent which unit was making a call vs polling three separate units asking who was calling (e.g. Med 1, Therapy 1 & Supply 1). ARES Coordinator and one of the Stadium Operations Coordinators discussed briefly on Race Day – ARES Coordinator to furnish current vehicle call-sign list.

For some years now, Medical Supply 7 & 8 along with Sweep 5 & 7 vehicles (sweep vans are on a different net) pick up all of the medical ice intended for delivery to oncourse Hospitality Stations – this year the ice pick-up location was inside a cordon which only medical vehicles were allowed access to – time was wasted in running a "medical" sign between Therapy 5 and Sweep 5 then Sweep 7 to allow them to get inside the cordon to get to the "reefer".

Medical Vehicles completing a "drop-off" at the Triage Area near the Care Centre were required to drive into a dead-end area and then have to travel in reverse for some distance to get out. This is a major safety concern for any non-vehicle traffic (same path used to move participants from Triage to Care Centre) as well as potentially leading to congestion among medical vehicles dropping off injured and/or sick runners at Triage.

For many years, in addition to vehicle medical passes that are changed annually a set of magnetic signs existed for the front and back of each marathon medical vehicle (see photo). There is no longer a complete set and the remaining signs are showing their age (torn, stained, no longer magnetic, etc).



The relocation of the Care Centre to the lower level of the Winnipeg Soccer Complex presented a communication challenge since testing in mid-APR suggested that operators in the lower level of the Soccer Complex would be unable to access any Amateur Radio repeater (VHF or UHF). An informal test by the Marathon Radio Group Coordinators appeared to indicate that simplex or non-repeated VHF communications between the Care Centre and Comm Centre would work just fine. On Race Day it became quickly apparent that radio communications out of the Care Centre were highly depended upon operator location. It is of concern that no land-line telephone is located in the Care Centre area.

One of the Therapy vans had to be tasked with attending to a medical incident inside the Recovery Area – one of the ARES operators came across a medical incident and the Medical Net Controllers were unable to get on-site medical resources assigned (time & runner number available from ARES Coordinator).

One of the Recovery Area Amateurs transmitted a "Code Blue" signal at the request of a Security Volunteer in that area. It does not appear that an actual medical emergency was occurring and it is not certain that an actual medical incident had occurred.

Identification of Hospitality Station Captains remains difficult since there is no way to easily distinguish a Station Captain from any other volunteer when everyone is wearing the same volunteer t-shirt.

Bike 9 has difficulty accessing the medical repeater from the north side of the course (5 watt hand-held with operator vs 50 watt mobile radios with external antennas on vans).

Apparently the Volunteer Tent was either closed or closing down as the last medical vehicles returned to the stadium – several sets of medical volunteers were apparently unable to get anything to eat at the conclusion of the Marathon.

ORGANIZATIONS SUPPORTING MANITOBA MARATHON AMATEUR RADIO OPERATIONS

loaned equipment or facilities, recruited volunteers

Winnipeg ARES
Winnipeg Amateur Radio Club
Manitoba Repeater Society
University of Manitoba Amateur Radio Society
Winnipeg Senior Citizens Radio Club
Pathfinders Amateur Radio Club
South-Central ARES
Manitoba ARES

Winnipeg ARES-owned equipment was used for the three temporary base radio stations at the Comm Centre and two "loaner" portable radios with accessories were provided to two Amateurs requiring portable radios.

2011 RECOVERY

Recovery activities for the Marathon Radio Group mainly involves return of borrowed equipment and documenting any "Lessons Learned". It is expected that the return of all loaner equipment will not be completed before 29 JUN at the earliest.

A summary report will be prepared for publication in the SEP 2011 WARC newsletter.

2011MITIGATION

(i.e. LESSONS LEARNED/CONCERNS/SUGGESTIONS)

We need at least two reserve or back-up operators per sector – it is very challenging to recruit the number of Amateur operators required however.

Amateur volunteers must be reminded to make alternate arrangements if they cannot attend the Amateur Radio briefing.

An experienced Amateur who is a retired educator has been asked to do a short session for newer Amateurs at next year's briefing.

Ad hoc requests for additional participant tracking emanating from the Comm Centre should not be passed on to on-course operators – at times there is a lot of priority traffic taking place and it is unfair to suddenly ask about the progress of lead runners in the relay category when that was never discussed by the coordinators nor briefed at the Amateur Radio meeting. A possible solution would be to station folks from whichever sector has a particular interested in lead runner identification around Mile 25.5 to communicate incoming participant bib numbers – those folks could monitor the Amateur Radio Hospitality Net for some cueing but that is not a function that Amateur Radio can take on.

Sweep Vehicles need one medical sign each to get past the cordon to attend the "reefer" to pick up ice & coolers that they are required to deliver or the security coordinator must brief his/her staff to allow these two vehicles entrance prior to race time.

All parties must use standard nomenclature when referring to marathon medical vehicles and that should be the actual call-signs used race day.

The patient drop-off area at Triage must be reconfigured for safety. One suggestion is to decrease the north-south length of the Recovery Area to allow for a loop or "U" for medical vehicle use.

Care Centre communications difficulties must be solved. ARES technical experts are exploring several options. When the recommended option is identified arrangements should be made by Manitoba Marathon for access to the Soccer Complex for comprehensive testing with the participation of Dr Pilat's Shadow, Shawna's Shadow and CoraLee's Shadow. This should be done by SEP 2011.

A land-line should be considered for the Care Centre – specifically the Major Treatment area.

Amateur Radio Medical Net Control Operators (or "dispatchers") need to know who in the Comm Centre is dispatching which group – in the future that might obviate the need for an on-course medical unit to be assigned to cover an incident in the Recovery area

(that was an actual incident in progress, not the "phantom" Code blue).

A new set of magnetic signs for on-course medical vehicles should be obtained – ARES is perfectly willing and able to assume custody since accountability for these signs does not seem to exist.

Four "Sweep Vehicle" magnetic signs should be produced so that these two vehicles are explicitly identified.

Hospitality Station Captains should be distinguishable from the numerous volunteers at a given station. One way to achieve that would be to obtain a set of unique vests that would be held by the Marathon and used annually to identify Hospitality Station Captains.

Improving the coverage area provided by VE4UMR ought to be explored – a question for UMARS – can the repeater antenna be any higher?

If the Volunteer Tent is going to close before all vehicle crews are back off the course should those crews be taking a break during the event? If that was going to be done, would have to be staggered so that on-course coverage is not severely impacted.

Several Amateur Radio operators suggested post-event that a diagram of the Care Centre would be useful as would a map including the area from the Soccer Complex, Triage, Recovery and the west side of Pan-Am Stadium.

A particular script has been suggested for the WSCRC Liaison Operator to follow so that there is uniformity from year to year. That script will be incorporated into the Amateur Radio Guide as well as additional details for the Liaison Operator at the Comm Centre as to what information ought to be passed from the Comm Centre to WSCRC.

Some time ago, a telephone list of Tech Team members used to be circulated within the group – that practice seems to have stopped – perhaps consideration could be given to resuming that practice.

APPENDIX

New forms introduced this year:

- Marathon Alert Form
- Half-Marathon "Runner Report" Form
- Shawna's Shadow Report (minified form used by Craig VE4CDM in approx 4 X 5 inch format as an easily carried writing pad).

DATE: SUN 19 JUNE 2011 STATION LOCATION	÷	OPERATOR'S
CALLSIGN:		

Time	Rx'd or Tx'd	RECEIVED FROM	TYPE R – Runner Alert T – Therapy Situation M- Medical Situation	SEX M/F/O	AGE Adult or Child	RUNNER NUMBER	CLOTHING DESCRIPTION Shirt Color/Shorts Color	SITUATION/EXACT LOCATION

		Male Half Marathon					Female Half Marathon	
Mile	1st	2nd	3rd		Mile	1st	2nd	3rd
2					2			
4				Γ	4			
Relay 1					Relay 1			
6					6			
HALF					HALF			
22					22			
24					24			
25					25			

SHAWNA'S SHADOW REPORT

(Care Centre Manager's Shadow)

Time:
Care Centre Manager's Shadow shall update Gerry Desjardins in Comm Centre via radio every 15 minutes with the following information:
Total Number of Patients in Care Centre?
How many Open Cots in Care Centre?
Patient Condition Summary: Green (stable)?
Yellow (unstable)?
Red (life-threatening)?
Any cardiac arrests (if no cardiac arrest do not mention)?
Before Race Start:
Any shortage of or missing supplies in Care Centre?

REFERENCES

- 1. Disaster Management Cycle, Wikipedia References, accessed 1 JUL 2010: http://en.wikipedia.org/wiki/Emergency_management
- 2004 Marathon Radio Group, Amateur Radio Report PSE-81, Jeff Dovyak JUN 2004, accessed 1 JUL 2010: http://www.winnipegares.ca/documents/2004%20MRG.pdf
- 3. 2005 Marathon Radio Group, Amateur Radio Report PSE-86, Jeff Dovyak VE4MBQ, AUG 2005, accessed from personal notes.