REMARKS FOR ADILAS SOFTWARE INPUT

Thanks to Adilas for opening up their place of business with access to developers on the first day of the race—this was really needed. Also thanks for being so receptive to our team's cosmetic and functional software adjustments for the event.

Creation of DNF files to transmit to Aid Station radio operators needed to be in .csv or other simple format in order to keep the files as small as possible. Excel output files added too much data that was not needed, making them much larger than a .csv file and taking longer to transmit via Winlink radio.
DNF file only needs, Time, Aid Station number and Runner Number. This makes a smaller file and it easier to read.

Creation of DNF files needed by Aid Stations from Net Control (to help determine if all runners were accounted for between Aid Stations) could not be done in a timely manner. Untrained Net Control operators could not pull DNF information from the system (a lengthy process) nor put it into Winlink for transmission to the requesting Aid Station.   (Net Control frequently had to call the data entry team to do it for them and provide instructions on how to create/address Winlink messages.) This occurred most often during some Net Control shifts, especially when Aid Stations did not include DNF information in the OUT-time column of their transmitted files--a separate problem).
This became a real problem without the DNF file being updated we had later station still looking for runners who had left the race filled out the DNF form but we were still looking for them on the Course.
Aid Stations would verbally report to Net Control, which then reported it to data entry team. More training plus a quicker way to list DNFs is needed. Additional information is provided in Concept 2, near the end of this report.

A method for quickly determining first runners into Aid Stations (leaders) and last runners out was needed to determine expected in-times for the next Aid Station. This was a frequently requested item by Aid Stations and Net Control.

Is there a way to have race software show a history of Aid Station file names sent in and already included in the race database? We found occasions where we needed to go back and double check that a file submission was, or was not, properly included in the database. Perhaps such a file list page or function showing all uploaded file names (for use by multiple Input Team members) would help ensure accuracy. Don't really understand.

I believe what is requested in the above paragraph is a list of the file names uploaded so the Data Upload Team can check to see if they've already uploaded a particular file. (Laurie)

There was no apparent easy way to clean-up bad runner data (repeats of old information and changes) on the DNF List. As a result we received complaints that information lists sent to Aid Stations contained bad information entries. If additional DNF entries cannot replace old data automatically, then operators need a way to quickly manually delete line items before a report is sent out. Let's explain to Brandon.

When Aid Stations sent in a runner number 02 instead of 2 (for example), it caused a bad runner error. Can software be changed to delete all leading zeros in a runner number so that 2, 02 and 002 are all treated the same? Brandon should be able to fix. This was pointed out the first day, but was considered too big to fix that day. (Laurie)

The Adilas training video was very helpful to teams in "learning" the software. It was good that the Franklin County group was able to come the training and learn the upload process.

Team was thankful for after-hour tech support which gave us a workaround to access website when someone exceeded max attempts to login. It caused a shutout of anyone needing to use the same login for data entry. Yep that helped when I couldn't type in the right password.

Sometimes an Aid Station would not show an in-time or DNF entry for a DNF runner stopping in their data. (only gave verbal DNFs over the radio). There didn't appear to be an easy way for the Data Team to make new entries to fix such an omission. Because of busy times, data team put a note in previous Aid Station data indicating that the runner was DNF at the following Aid Station. (Training to the data team was to put changes in notes, and to not correct Aid Station data to preserve what was sent in from Aid Stations.) I think the big problem was the Aid Station teams not entering them in correctly. I think building a reference sheet that has instructions like +,-,/ , how to handle DNF and correct errors. Would help alleviate a lot of those problems.

REMARKS FOR DATA ENTRY TEAM

Adilas training video was very helpful for "learning" the software. Suggest continued use.

BARC Data Entry Team members (Tom Baldwin, Laurie Littledike and Kent & Shirley Larsen) on race day met at Adilas's business building from 6 a.m. until 5 p.m. giving them an opportunity to learn some of the software's more powerful commands and to have access to the programmers, to tweak the software, and to see how the software was working for the event. The team was able to continue working from their homes for the remainder of the race

(connected by Skype/cell phones/radio). This seemed to work well, and we would suggest that next year the Data Team again start-out on site with programmers.

Now that the software has been written, suggest that next year's data entry volunteers (BARC & Franklin) spend some additional time learning the software, well before the event.

Saw "Manual Override" notes in the database that the Data Entry team did not do. Others apparently need to be trained on the use of the term. Some of these entries were erroneous and had to be corrected by the Data Entry team. Not quite sure what you mean here.

REMARKS FOR NET CONTROL INPUT—FRANKLIN ARES

Skype worked well for non-radio link between Data Entry Team & Net Control by cutting down unnecessary chatter on the radio net. Suggest next time we set up a Skype Bear 100 account for the race so we have access for anyone needing it (avoiding the need to exchange multiple personal Skype account info).
It also worked well to be able to talk to Shirley from Finish Line.
We recommend more communication before the next race between BARC leaders and Franklin ARES. Suggest a before-race meeting with all key radio operators (Net Control operators, BARC officers, Data Entry Personnel, etc.) so each clearly knows their responsibilities via joint training sessions. Franklin ARES: Please include key BARC radio operators in the training night for Net Control operators to help with coordinating the event. Was there a separate Data entry team at Net Control in Franklin or was the Net Control trying to do it. I think it should be totally separate.

With the frequent changing of Net Control—there needs to be some standardized paperwork and a procedure notebook available for use during shift changes. The Data Entry team was able to help new Net Control operators catch up with what important issues were still pending, but a formalized "changing of the guard" would have been more useful.

Training of Net Control operators was lacking on whom they should contact for Aid Station supplies and trail problems. They also repeatedly released Aid Station radio operators before accounting for every runner. Early release of an Aid Station communicator without fully accounting for all missing runners had negative consequences over an extended period of time. Recovery was needlessly slow and difficult. Let's Talk about it.

Level of experience at Net Control was too variable. In-briefings (at shift change) seemed to be inconsistent and sometimes supervision of controllers was absent, all creating confusion. Too often we heard the excuse "No we can't do that--no one showed us how."   Also, net controllers

were not even aware of what their specific duties or jobs might have entailed. Not everything was passed on during shift changes. When experienced Net Control/key Franklin ARES members (Lamont, Warren, Robert) were not there, the requests for assistance went way up. More training or a procedural book might have helped. I heard a lot of traffic for Race Director that shouldn't have gone to him it was for Net Control to manage.

Shirley AD7HL spent a good amount of time helping non-experienced Net Control operators learn, and did some on-the-spot training over Skype. One issue that lasted through two sets of Net Control operators was releasing three Aid Stations without making sure that all runners were accounted for—thus causing the problem of "lost runners". The attitude of inexperienced Net Control operators was--if we haven't heard from them for a couple of Aid Stations, then they must be DNF (not realizing the three Aid Stations were released before a runner arrived). Shirley trained Net Control that they cannot assume anything and that they must verify that all runners were either still on the course, missed at later Aid Stations, arrived after an Aid Station was released, they were "lost," or they were DNF--and we needed to know which. Embarrassing calls had to be made to support crews to make sure runners were DNF (there were also some runners that had not reported quitting). We had one runner that wasn't being reported as last in/out at two Aid Stations, and his support crew was very concerned about where he was. Responsible Aid Stations had already been released so the next Aid Station had to "suffer" through our making additional calls to insure that everyone was accounted for, before they themselves could be released. We wouldn't have accumulated so many of these problems if verifications had been made at each Aid Station before they were released by Net Control. Glad that some of the more experienced Aid Station communicators shared Shirley's concerns over non-reporting, and were willing to stay open extra hours until everyone was properly accounted for.

There was a need for a printout of all runners and a place to record DNS or DNF runners for easy access. This was especially true for verbal DNFs not sent to Data Entry via message.

We needed to decide whether we had a directed net, or not. Most times non-directed worked, but there could have been problems if Net Control were bypassed and lost control of the net.

There was a need for updated call sign info on substituted Aid Station radio operators and for current Winlink message addresses at each Aid Station. Suggest a provision for maintaining this information in race software be added--especially if future software provisions are made for the automatic addressing of Winlink mail. Needed a current copy of Aid Station personnel, especially which call signs will be used for packet transmissions.
Tactical email address
Every aid station should have a tactical email address instead of individual email addresses!!!

There was a need for Net Control to send out timelier DNF reports throughout the race, to only open/operating Aid Stations in order to minimize message traffic-- not automatically include addresses of closed Aid Stations. I don't think sending to closed stations hurts anything. They would just set in the MPO until somebody at a later Date receives it. Question where did we get the list of the stations that where active and the winlink callsigns associated with them. (We should probably have this prior to the Race Kinda of what I hoped would come out of the white list email.)

Need to keep track of last runners out of each Aid Station to help determine which runners the next Aid Station needs to watch for, BEFORE shutting down. This is done with Cordell's Software but needs to be sent ASAP and forwarded to the Aid Stations be good to be a central file that is sent out to all Stations by Data Entry Team, Hopefully generated by the Adilas program.

Net Control needed to keep a record of last known location of Race Director and Aid Station Leader so they could contact the correct Aid Station with pending questions (cell phone numbers are not going to work in the mountains). Race Director and Race Official had Shadow Operators with them this year Not sure we will do this again because it was very poorly used. Net Control said many times that they were trying to contact them but it seems they were not trying on the radio. Plus they kept asking Race Director to take care of things that was in there control not Race Director. Like calling the Racers contact number to see if they had left the race. I did it twice to find out that they had DNF'ed and filled out Paper work for DNF and it was not entered in the Data properly by our Operators.

Numerous times Net Control was asked who was the first woman and first man to finish—they just needed to go the "finish" tab and the runners showed up in order of finish.

Net Control needed training on the basics of Winlink, Cordell's program, and uploading software. They did not know how to send out info requested by a single Aid Station via Winlink, so Data Entry had to do it for them. (They understood how to send out multiple addressee messages, but not to a single addressee.)
This was my fault for not having a list of Winlink addresses for the Aid Stations.

REMARKS FOR WINLINK RMS EXPRESS/COMMUNICATIONS AID STATIONS

Must attend as many before-race trainings as possible. Many problems could have been averted because many areas had been covered in training sessions. If people can't attend—they should view the PowerPoint and recorded videos of trainings.

If runners DNF at your Aid Station, then you must enter an IN-time for them, and also show DNF as their OUT- time. <u>THIS IS A MUST</u>!!!! I agree whole heartily This makes it easier to spot DNFs on Adilas.biz sites (because they show-up in the OUT-time for that Aid Station, in all views). If the Data Input team has to put DNFs in, (they were told to do it in the Notes section for the runner in order to maintain an audit trail of Aid Stations), then if someone wants to find out if a runner is DNF, they have to look through the Notes and/or visit the DNF page (which gets longer and longer, and makes it progressively harder to spot a runner). Not including DNFs at the Aid Station can cause hours of extra work for the Data Entry team to manually input DNF records, and actually caused delays in Aid Stations being able to shut down. All this because we couldn't account for a runner -- and also because Net Control was not keeping track of DNFs.

CSV data files from Aid Stations MUST NEVER This caused a major problem be opened-up (or examined) in Excel before they are transmitted in Winlink to Data Input! (Excel changes data formatting, thereby corrupting the files and costs the Data Entry team hours to repair them before uploading and publishing.)

When Aid Stations save/send- Do a Saveas in a new .csv file, PLEASE use the "Standard csv format" There is nothing need to be done by operators this is the format that Cordells Software puts it in.—and be sure to add a <u>sequential</u> number in the file name for each file sent. We received some files that had the same name as the previous files, thus causing data problems. All Operators need to review the radio operators guide for the Bear 100 all of the instructions are listed.

DO not shut down an Aid Station until ALL runners coming from the previous station are accounted for. Net Control released three Aid Stations without requiring this, causing an accumulation of non-reported DNFs. Sorry but there will always be runners not accounted for. Looking at the data you will find holes at almost all of the Aid Stations. Aid Stations are Chaotic and you miss some.

Make sure Aid Station computers have the correct date and time before starting data entry software! We received some files that should have had a.m. times with p.m. times, thus requiring extensive editing.

Some personal Winlink mail (downloads and uploads) was monitored during the race. Please use telnet before leaving home to download/send personal mail & training mail. This caused quite a bit of unnecessary winlink traffic. So if we have a good white list and list of Callsigns that will be used at each Aid Station get this prior to the Race Starting.

Some collective thought should be given to which items should be communicated via packet versus voice. Consider congestion, urgency, the function providing/requesting the information, etc.

Aid Stations, please submit timely reports (even if it is only updating just a few runners. (This helps with first in/last out/DNF monitoring.) Suggest one team member be responsible for sending out data files every 30 minutes if possible—timely uploads of the runner information onto the live site would help a lot of people trying to find a runner, update crews, etc. Perhaps a prompt in Cordell's software for time/batches of runners could be included to remind Aid Stations that it is again "time to send." Some Aid Stations preferred to keep small amounts of data so as not to waste effort or Winlink time. While appearing somewhat helpful, this idea could slow down the movement of time-sensitive information and defeat the near-real-time objectives of the overall software system.

Packet sounded a lot better than voice due to digipeating. The .720 repeater was very crackly sometimes and there were way too many repeats/no-copy reports. We need to promptly (now) make a list of weak (hard to hear) Aid Stations, and for next year insure those areas find better antennas and/or use HIGH power. We heard some instances of stations using low power and after not being heard, temporarily boosting their power to adequate levels. For better audio, these problem stations should have used high power full time and compensated by bringing extra batteries or antennas, etc. One Major Problem was that the audio path from the Red Spur Link had a problem we will get it fixed.

We had a hard time tracking changes in call signs in Aid Stations (scheduled vs substitutes). Couldn't keep Packet message addresses up to date, nor could Net Control. Need a formal sign-in system.
Tactical email address. Every aid station should have a tactical email address instead of individual email addresses!!! Remember for next year. May take a little research but I think it is pretty simple.

Because of the amount of work writing down runner in/out times and then transferring to Cordell's software to be sent via Winlink, we might consider using some non-ham help at the Aid Stations (maybe using GMRS radios and being placed up the trail from the Aid Station). Helpers could radio-in runner data, which could then go directly into the software (I believe the Aid Station where Kevin Reeve worked used GMRS radio, and that it worked well).

REMARKS FOR AID STATION COORDINATOR

Pickup of DNF riders especially in the middle of the night.

Suggest a ham radio operator be assigned to Aid Station Coordinator for questions on supplies needed/missed pickup of drop bags, DNF runners needing pickup, etc.

REMARKS FOR RACE DIRECTOR/OFFICIALS

Many questions were asked of Net Control, which were of a miscellaneous nature and couldn't be readily answered. Many were event related questions. With so many different shifts in Net Control and the fact that each could not be thoroughly versed in everything, answers were difficult to find. Net Control sounded like they had unusual difficulty getting in touch with race officials--especially during the night when bad stuff was happening--runners getting lost, trail maker problems, packs not picked up, shuttle info needed, Aid Stations running low on supplies, etc.

Many of the questioned asked were not in the control of the Race Officials and totally in control of Net Control. Several of the actions were resolved by calling the Racers phone number list in the file given to us. I made several from Finish line and they all cleared up the problem.

Continued

Concept #1 - Special Reports Needed

Sorry, but this writer is not a programmer, so some of our terms and theories may be a bit hard to follow and may require some translation into a more modern language.

During the Bear 100, software users experienced several delays in getting reports published due to related difficulties that we think could be simplified by the addition of a small optional system for expediting the movement of information among Data Control, Net Control, and Aid Stations. This could entail some customization of the software, which might be undesirable for the "company's" final software product but useful for Bear 100 managers. Perhaps the following suggestions could be implemented in the form of "Special Reports" for use by future Bear 100 teams and only be incorporated if a particular race needs them and invokes them using some type of a customizing setup routine.

Problem: Communications are difficult due to terrain and the limits of Winlink software used to transmit information. Some reports were requested over and over again for variable information such as "the last three runner numbers out of an Aid Station" (so the next station knows which/when last runners may arrive). Similar requests for "the first X number of runners into an Aid Station, and their departure times," and "Who are the current leaders and what was their last station & the times they were last seen?" plus questions like "Who are race leaders and who are last (red lantern) in entire race?" were received over and over, ad nausium! Another popular request was, "WE need an updated list of DNS and DNF runners." Perhaps due to unfamiliarity with the software by Net Control operators, it took too long to go thru the lists and find or formulate a reply, or to publish new updated lists. These requests significantly ate up valuable time in Data Control, in Net Control, at waiting Aid Stations, and also in radio airtime.

What Might Help: If operators on-line with the race software could merely hit one of a few "Special Report" buttons for such questions, and have the system automatically find and kick-out the needed information immediately, along with an option to export it in attachment format for

immediate Winlink distribution, a lot of time/effort could have been saved especially when other race business got busy. We basically need several very tiny digital data output options in a format designed to cut down on data-radio transmit time--Excel creates way too big output files, where Plain Text, CSV files or another underlined unencrypted format that Windows users could directly read on their laptops/tablets would be a more preferable format. Winlink mail already uses B2F compression, so no additional compression is needed. Also, it would be nice if there were an option in the same place to allow users to simply print a desk copy of the report at Net Control, Data Control, or at other live terminals such as at the Finish Line. I think it would be great if we could have the Adilas Software create a .CSV file to send back out a Full view list of the race for our Aid Stations to receive. We are constantly being asked by support people where there runners are. I know that this would be more data traffic but you would only need to download it when nessary.

Other: Please be aware that other Concept papers may get into areas which could be incorporated into the above suggested "Special Report" function. For example, in Concept #2, we address the need for a written messaging system to enhance communications among Aid Stations, Net Control, Data Input, Race Officials, (etc.) working in the field. (Couldn't this simply be included by adding a Quick Winlink Message format under Special Reports?) Perhaps at some future time, cheap portable laser (non-freezing ink) printers may become available for printing these products in the field (printers are also needed for local emergency responses, too).

Concept #2 - Messaging for Race Officials

Problem: Radio Clubs may wish to address methods of communication between Net Control and Race Officials, Aid Station Supervisor, and other managers in the functional areas when they are out of cell phone range in the back country. We noted especially during the night that communications were difficult when several issues surfaced (lost runners, trail problems, stations running out of supplies, etc.) While some of this was fixable, it did demonstrate the need to develop a system through which, if such notifications were needed, they could be expedited.

Discussion: There are a number of distinct possible fixes for Director notifications. One suggestion was for race officials to get their own ham radio licenses and radios and use the established net. Another was to have additional hams (of which we had too few) shadow more key managers than just the Race Official so that they can nearly always be reached to issue necessary direction or make necessary clarifications. Another more automated system could also be considered which would facilitate the easy forwarding of Winlink messages to Aid Stations where an official is expected to visit. Radio operators could post a certain colored card (or any type of predetermined whiteboard notice) in a predetermined common location where officials

would check when first arriving at an Aid Station. Pre-numbered, time and dated messages could be created at Net Control and sent by a software-generated Winlink notification (possibly using a Special Report feature from Concept #1) and held in Aid Stations computers. Officials could then use a nearby radio to give instructions, make clarifications, etc to Net Control or others on the net. (If printers were available a more complete message could be printed, or a message could be merely referenced by a control number for lookup on the local Winlink computer.) The more automated the system (within field-use limitations) could help reduce radio operators' workload when they are busy processing runners, etc. Messaging could also reduce the times normally associated with finding race officials and simplify associated frustrations in Net Control, or in a problem area.

What Might Help: Devise and implement some of many options available so that such a large amount of messaging doesn't have to be handled on an "exception" basis. In a few cases, messaging between Aid Stations could have also helped, had it been included in such a software solution.

Concept #3 - Minimizing the Volume of Data

Minor Problem: Bear 100 for 2015 saw a tremendous improvement in the way race data was moved; however, should time exist to take another look at Cordell's program, there might be a few options for further reducing the amount of data transmitted to an absolute minimum. Further reducing the amount of data involved might further simplify data operations and make more room available for other important data-related functions and future enhancements. Also, a number of data collection/entry errors occurred requiring a lot of time and effort to correct them, even though the effect of these errors on everyone except the data managers was basically inconsequential. In an operation run by less experienced volunteers, some of whom may be lacking in some computer skills, there might be a room for additional simplifications. The idea here would be to reduce the volume of data in a further effort to reduce total errors, and to minimize the amount of human effort needed to keep the database on-line system error free.

Discussion: This topic may need to be divided into several subject areas for treatment separately, with the aim of ensuring that the tail does not appear to wag the dog. A few examples follow:

Runner data: Could all the involved parties sit down and determine if there is a way to reduce the volume of Winlink runner data with an eye towards lessening the sheer number of places where data errors can occur? Things like arriving at a compromise where "in" and "out" times might be reduced to "out" times only, could shorten data string lengths considerably. In lieu of

everyone's carta blanche rejection of this idea, perhaps all parties could successfully negotiate something simpler such as recording a simple check-mark for time in and only a time out being recorded at intermediate Aid Stations. Similarly, the use of dates in data could be reduced to a mere day "1" or day "2" since the actual calendar dates of a race are known by everyone. An additional the feature of "data simplification" could leave room for increasing the scope of error correction routines, even further enhancing the accuracy of data and lessening the need for locating and making continual manual corrections.

Data Submission: There are probably good arguments for and against the sending of incremental or cumulative Aid Station runner data. Is there a way Winlink data quantity can be even further reduced without jeopardizing the accuracy of information sent? What is the advantage of resubmitting old data over and over again when only the last submission (with or without usual errors) is retained and overwrites previous submissions in the master database? Perhaps there are other more complex methods of data verification/with error replacement that would reduce data volumes without sacrificing accuracy. (The use of checksums etc. might be helpful here.)

Winlink Limitations: All decisions on the above questions should take into account the limitations imposed by the use of Winlink messaging. It is slow, its meaning cannot be obscured (encrypted) and must be open for reading by anyone using only publicly available compression protocols; data needs to be contained within simple message attachments; data must comply with FCC rules on format, bandwidth/speed, station identifications etc.; and most importantly, handling needs a degree of simplicity which does not exceed the abilities of operators who are from the volunteering public and may not possess more than basic home-computer skills. Required Winlink software and messaging is and will continue to be in development for the foreseeable future and input/outputs need to remain restricted to the most simple of methods (Windows cut and paste, simple email attachments only, simple printing, etc.) Race software may need to be more complex to achieve compatibility with Winlink limitations, even though such adjustments may not be the most technically optimal way to go. Once Winlink is replaced with something better (perhaps MESH) this limitation should disappear.

Note: This concept (#3) should probably be a nice-to-have enhancement and doesn't seem to be too urgent based on results of Bear 100 in 2015. There was not too much data on the air. The only advantage might be to make more data space available to implement future program or informational enhancements.

Concept 4 - Profiles

Discussion: Have developers incorporated a method of further customizing their program for various uses other than Bear 100? We believe so but are unaware of details. We did see a few places where some customization might be helpful--a place where the user can input a number of preferences to make the software friendlier to a specific race, or to different users. A very non-inclusive set of preferences follows only for the purpose of demonstrating an idea, if this is not already implemented:

Name of Race: Use in page headers, formats, titles, help files, etc. This could also refer to a canned, predetermined list of variables developed under the name Bear 100, for example:

Max number of participants: Internal program setup; data error detection
Time: 24 hour or 12 hour: with or without colon: time zone: etc.
Date: Number of day; date formats, etc.
Elapsed Times: Times in/out; format selection, etc.
Runner Numbering: Bib-001, or other options desired; error detection
Message Numbering: Different format selections; sequential or alpha; dashes, etc.
Data Submissions: Format of numbering system; preferred data format items;
Addressing Station: Aid Station, Rest Stop, Feed Station, etc.
Station Numbering System: AS-01, Stop #2, Check #3, etc
Tactical Calls used at Aid Stations etc:.Yes/no; helpful for Winlink message addressing/tracking
Official Titles: Options to use for race-official message addressing
Special Messages Needed: Select needed from list; create a Quick Message Selection page

Many others, obviously!

Concept 5 - "What-If" Binder at Net Control

Problem: Level of experience at Net Control was too variable. In-briefings (at shift change) seemed to be inconsistent and sometimes supervision of controllers was absent, all creating confusion. Too often we heard the excuse "No we can't do that--no one showed us how." Also, net controllers were not even aware of what their specific duties or jobs entailed. Not everything was passed on during shift changes.

Discussion: Some people did quite well, especially when supervision was present to give direction; however, it was quite apparent when supervision was not present. Most Net Control workers wanted to help but couldn't, and a few felt they were personally exempt from accepting certain responsibilities. A formal list of duties posted at the work center could have helped people realize the scope of their jobs. Similarly, a 3-ring binder of instructions based on a variety of questions and situations that might well be encountered would have been most helpful.

Leadership should make a long list of possible situations followed by a few sentences after each item explaining who to contact or what to do. Using a word processor would help to grow the list of items as the reality of the race continued to set in. Save the document for updating prior to the next year's race would make the binder progressively more and more useful. Also the use of a checklist of things to cover during shift change could have helped prevent a gradual decline in Net Control capabilities across a series of shift changes.

Concept 6 - Data Control Duties

Computer and data maintenance experience within the Data Control group proved to be quite helpful--especially as a numbers of data errors from the race were input into the master database. Additional experience in working with the program suggests that a different organization in the group might have been more helpful. Most tasks fell in one of the following categories:

Supervision and Communications: This person served as a general trouble-shooter and was able to track most activities in the section by communicating on the radio net. This person also was usually on the Skype net with net control and other team members at home.

Data Repair: One person probably could have handled the problem of bad data coming in from Aid Stations. It seemed that Aid Stations were probably too busy to check or fix their own data errors. Provided the needed expertise was available in the Data Control group, this work may have best stayed with the group.

Data Transfer: A third specialization within the group could have been digital communications. One person handling the publishing of DNS and DNF lists via Winlink could have prevented information backlogs. Transmission of these two reports was with Net Control, but they frequently got too busy to keep up, or couldn't furnish lists because they didn't know how to query the system or put needed information into Winlink. A person who knows how to find and export this information to Winlink on a timely and repetitive basis could have helped Aid Stations significantly. Depending on the outcome on other suggestions in this submission (like the dispatch of Special Report" products could also have been handled by this Date Transfer function. Additionally, special messaging such as locating and advising race officials of race issues while they travel out of contact with the voice net could be handled in a similar manner.

Lessons Learned from BEAR 100 2015
Laurie Littledike, KF7DKM

Proposed for Bear 100 Data Upload Team for next year:

Work in 6 hour shifts in monitoring FCRACES email, uploading files and troubleshooting data. This would distribute the workload so that one person would not bear the burden for most of the duration of the race.

Do NOT work both Bike the Bear and Bear 100.

Skype is definitely a good tool for this event.

Having software developers nearby is useful for the first of event. The Radio Team, especially the Data Upload Team, needs to explore reporting features and become familiar with all options of Web pages.

Improve Winlink skills.

Promote Winlink usage in BARC. There were 4 or 5 ARES Meetings that were dedicated to Winlink and the Bear100. As well as the in 2014. Yes, I know. My intent with this comment was to continue to promote Winlink usage, not that there hasn't been any promotion or training. (Laurie)

Proposed for Bear 100 Race Director for next year:

Emphasize importance of runner contact with each and every Aid Station for identification.

This is and was emphasized to all of the runners but they have a lot on their mind when coming into an Aid Station.

Proposed for Bear 100 Net Control for next year:

Be more aware of what the data indicates so that they can draw conclusions regarding runners who may be at risk and Aid Station open and closure times.

Control net more so that Data Upload Team does NOT become the central point of contact.

Proposed Web Software Changes for Bear 100 for next year:

The current square-bracket-delimited list of reports or summarizations is too obscure to be easily readable. Perhaps these summary tools should have their own Web page, or be a bulleted list or some other form that is in larger print than they were for the Bear 100 2015. It took too much time to find what we needed. The title of each was a "software developer" title, in other words, the titles were not worded in a way that was easily recognizable by someone other than the coder. Create titles that are in ham-radio-ese or runner-ese or race-director-ese.

Font size may need to be larger on the main page. Remember, reading under pressure to find what you need can temporarily alter eyesight, making reading smaller print difficult. You either have to do that or make sure the pages scale well if the reader increases the size with the Web browser.

On main Radio Team page at the top and bottom, continually display the total count of registered runners, the total count of runners checked in at the Start Line, and the total count of runners that have reached the Finish Line. Yes Please

On main Radio Team page to the immediate right of each Aid Station, there is enough "real estate" to display some totals next to each Aid Station icon that could be used by Net Control, Race Director, Race Official, and Radio Team. These totals would give point-in-time totals with each arrival-at-the-page or refresh-of-the-page. The totals would provide a quick overview of runners on the course per Aid Station and overall.

To the right of each Aid Station icon, I propose point-in-time counts of: the count of DNF at that Aid Station, total count of DNF at all Aid Stations, net total runners on course

(count of runners checked-in at Start Line minus count of DNS minus total count of DNF minus count of runners that have reached the Finish Line), and count of runners that have reached the Finish Line.

This way, it would be clear how many runners dropped out at each Aid Station, as well as runners on the course.

As time neared the cutoff of 18:00 hours on Saturday, say 14:00 hours, there could also be a list of runners still on the course in case there was concern or inquiries about particular runners.

The totals would be calculated at the time of arrival at the main page or at a Web page refresh.

Please remember, when under pressure as the radio operators and Data Upload Team are, grid lines around data help identify which data fits with which Aid Station. That has been done very nicely on the detail pages such as "Full Race". This proposed change to the main page would benefit from some of that.

Tracking the runners on the course is the best way to promote their safety.