ANTHONY VAN VUGT, B.Ec. (ANU)

International Development Economist,
Licensed Amateur Radio Operator (VK1VM & KN4VM)
and International Cruiser

S U B M I S S I O N

to the Australian Productivity Commission in respect of the Review of the Radiocommunications Act 1992 and related Acts.

Credentials: By way of introduction I would like to provide some background information about myself, as limiting as this might be, to explain my interests and qualifications for making this Submission. Professionally, I am an International Development Economist with extensive experience in the private sector, the Australian Federal Public Service and in development banking at the Asian Development Bank, based in Manila – the Philippines, and the International Bank for Reconstruction and Development (the World Bank), based in Washington DC, USA, respectively. Since 1995 I have managed my own firm, styled "International Development Associates" (IDA)[1] providing economic development advise to Governments in developing countries.

My current primary residence and base of operations are in the Washington DC metropolitan area in the USA.

By living and working in many parts of the world, including Africa, Asia, Australia; Europe, the Middle East and the United States, I have gained an insight into the process of development and particularly in the role of information and communication technology (ICT) in spurring such development.

I became an amateur radio operator in 1990 with licenses in both Australia (VK1VM) and the United States (KN4VM). Following my semi-retirement in 1997, I spend as much time as I can as skipper of my sail yacht, SV "Bojangles" (MD 3887 AN) in long distance cruising. During my extensive travels, often in remote locations, I came to appreciate the value of reliable digital radio communications.

Through this Submission, I wish to promote the case for allowing the operation, by radio amateurs in Australia, of WinLink 2000 -- a new and advanced digital communications system.

[1] See APPENDIX A for a Summary of Abbreviations and Mnemonics.

Field of Interest: Because of my specific interests, I will confine my contribution to a very narrow component of the wide field covered by this Review, that is, it is about Amateur Radio operations in Australia. In most countries, amateur radio operators are regarded as a national asset. These people, after having invested considerable intellectual effort, time and money to establish and operate their radio stations, stand by to spring immediately into service whenever a national emergency arises or when public events need their support. They are a valuable national resource. As such they deserve official support and encouragement.

I became concerned about the future of amateur radio in Australia when I learned about the decline in the numbers, and low volume of new entrants into the ranks of amateur radio operators. I, and many others, have a concern also that Australian amateur radio operators, under existing regulations, are precluded to fully keep in step with developments in ICT; particularly, where it concerns the *convergence* of radio and Internet communications. There are several major areas where Australian amateur radio operators can and should be allowed to make their contribution to Australia and to the wider international community.

These concerns prompted me to visit Australia during the month of July, 2001 with the objective, among others, the meet with officials of the Wireless Institute of Australia (WIA), the Australian Marine Safety Authority (AMSA) and the Australian Communications Authority (ACA). A brief Report on these discussions, with some minor deletions for privacy reasons, is attached[2].

Concern for National Security: I was booked to fly on 11 September 2001 from Washington's Reagan National Airport in Washington DC, to New York's JFK International Airport and from there, onwards to Amsterdam, the Netherlands thence to Frankfurt, Germany. Leaving Washington, I would have been able to see the Pentagon and, on arrival in New York, I could not have missed seeing the World Trade Center. While waiting for transportation to take me to the airport all hell broke loose. The WTC disappeared as did a part of the Pentagon. The latter is quite close to my home.

My thoughts turned to the almost naïve attitude about national security both here in the USA and in Australia. If the US, with an impressive arsenal of electronic intelligence, cannot protect itself adequately against terrorism, neither can Australia. Australia is a huge continent, with a relatively small population and a long coastline that is virtually indefensible. Australia, to its north, is bordered by a volatile geographic area. Possible civil wars, economic collapse, or natural disasters, including droughts and floods, starvation, volcanic eruptions, earthquakes and the effects of global warning in these adjoining geographic areas could propel major population movements. Australia does run the risk of invasion, infiltration, retaliation and other, possibly, destabilizing events that put its national security, economy and social welfare at risk.

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[2] See APPENDIX B for "Australia and WinLink 2000", a Report on Background, Discussions, Conclusion and Recommendation. Anthony Van Vugt, July, 2001.

Australia should not take its good fortune for granted. If it is to remain, as Donald Horne coined the phrase: "The Lucky Country", it must forever remain vigilant. Despite its, no doubt, competent military resources and Civil Defense Force, the Australian Government should, in my opinion, marshal the auxiliary resources that can be provided by the thousands of willing amateur radio operators. Some are part already of such voluntary effort[3] but it should be kept alive and strengthened by bringing more people into amateur radio. This potential support would be much like the National Guard in the US that can be mobilized by State Governors (or State Premiers in Australia) in times of national emergencies. Australia's amateur radio community has in the past, and it can again be geared up, to play a greater potential role in maintaining Australia's national security during emergencies. These volunteers should be officially supported and encouraged and not be belittled by petty-minded regulations, such as, disallowing WinLink 2000 operations or imposing fairly arbitrary user charges[4]. As events have shown, this is not the time to be complacent or limit our vision.

ICT Development: Australian Academy of Science President, Brian Anderson, speaking at the National Press Club in Canberra, in July 2001, stated that: "Australia has a global reputation as a technological backwater with a bleak economic future." In the informative Paper delivered by Gary Banks, Chairman of the Productivity Commission, at the Communications Forum held in Canberra in September, 2001, the case was put very well in that the author contended that it is not only the *production* but possibly more so the *use* of ICT that counts in supporting economic development. This, based on my international development experience, is a sound judgment. I would like to address both issues. Amateur radio operators can be a potent force in ICT development and use. Contributions by the amateur radio community are legion but for the purpose of this submission two such recent developments should be quoted. First, a group of radio amateurs in Germany pioneered the development of the PACTOR digital communications protocol. With its build-in error correction feature, it supports efficient and error-free digital communication under conditions where voice or Morse code transmissions would fail dismally. PACTOR is regarded as the most sophisticated and reliable digital communication system to date. Second, a group of radio amateurs in the USA has developed the WinLink 2000 digital communication system. WinLink 2000, using the PACTOR protocol, facilitates combined radio and Internet communication between parties at extremely remote locations; particularly, in conditions where no other electronic communications are available, such as, at sea or in wilderness locations, like Australia's outback.

[3] For example, the Wireless Institute Civil Emergency Network (WICEN).

[4] It seems almost petty-minded to require each Australian radio amateur to pay AUD50.80 for annual renewals of their equipment licenses. In the US, the Federal Communications Authority issues radio amateur licenses with a **ten-year validity** for **free**!

Such innovative developments take place only when the enabling environment is such that radio amateurs are given the freedom to experiment[5] and make use of the latest available ICT techniques, including interfacing with the Internet. Unfortunately, in Australia, amateur radio operators are specifically *prohibited,* by virtue of Section 11 of the Radiocommunication Licence Conditions (Amateur Licence) of Determination No.1 of 1997, to connect an amateur station to the Internet[6]. It is primarily because of this limitation that WinLink 2000 cannot, at present operate legally in Australia. I am proposing the repeal, in total, of this offending Section of the ACA Determination.

Safety-at-Sea: Australian-flagged recreational cruisers can be seen on all of the world's oceans and seas. Similarly, many foreign cruisers from Europe and the US live their dream to sail to Australia and New Zealand. Australia is remote and surrounded by massive oceans, dangerous seas and treacherous straits. This includes the Indian Ocean to the west; the South Pacific Ocean to the east; the Timor Sea, Arafura Sea and Coral Sea to the north; and the Great Australian Bight, Bass Strait and Tasman Sea to the south and southeast. Some of the geographic areas through which such cruisers must pass to reach or circumnavigate Australia can, at times, also be hazardous. In these situations efficient and reliable digital electronic communications are a major asset, not only for the concerned cruisers but equally so for their family and friends at home and for the Australian Marine Safety Authority (AMSA) to enable it to track overdue vessels. Failing this, it would possibly have to mount massive search and rescue operation to find vessels reported missing.

It is known that Australia's Telstra has withdrawn from communications with vessels on the high seas. It is further known that Australia's Federal Government has withdrawn from the provision and management of shore-to-ship radio communications, leaving this responsibility to the individual Australian States. Cynics have informed me that under these circumstances it will take many years before a reliable communication system for recreational cruisers will be available in Australia – if ever. It shouldn't take another Sydney to Hobart yacht race disaster, to realize that the safety-at-sea of recreational vessels in Australian waters and in the surrounding oceans and seas needs to be resolved without delay. An additional tool is now available, at no cost to the Government, by allowing WinLink 2000 operations in Australia. Willing Australian amateur radio operators are prepared to establish and operate such stations 24 hours per day, 365 days per year, at their own expense as a service to the local and international community. AMSA acknowledges and appreciates the support of amateur radio operators in Australia and overseas. Radio amateurs have come through with flying colors by assisting in the search for missing vessels. WinLink

[5] For example, I have suggested that WIA request ACA permission to operate an experimental WinLink 2000 station. It would assist all concerned with regulation in appreciating its value.

[6] Section 11, inter alia, reads: "The licensee must not, directly of indirectly, connect an amateur station to a public telecommunications network, if the station is: (c) using automatic mode; or (d) using computer controlled mode (including, for example, packet mode and radioteletype mode)."

2000 would complement its arsenal. AMSA recognizes also that it is better to *prevent* emergencies, and have precise float plans and positions of vessels available, rather than having to *solve* emergencies by mounting costly search and rescue operations at the expense of Australian Taxpayers. WinLink 2000 is uniquely equipped to *prevent* emergencies by supporting digital email communications *before* it is too late.

WinLink 2000 Explained: It is time now to examine the value to Australia, to the Australian amateur radio community, and recreational mariners in particular, of allowing WinLink 2000 operations in Australia. It is, unfortunately, necessary to explain WinLink 2000 in some detail because its convergence with the Internet it not generally understood or, in some cases, deliberately misrepresented. First, in point form, a brief introduction:

1. WinLink 2000 comprises a global digital messaging network, that does not as yet include Australia, of some 30 Participating Mail Box Offices (PMBO);

2. Only licensed amateur radio operators with a valid WinLink 2000 address can access the system. Others with an Internet Email address can *send* email messages to anyone with a WinLink 2000 address but they cannot access the system;

3. As the name implies, a PMBO is like a post office box. Messages received and intended for Internet Email addressees are automatically forwarded. Those intended for WinLink 2000 addressees are retained in computer storage until the addressee establishes radio contact with any of the PMBOs in the system;

4. All PMBOs are interconnected via the Internet so that a message sent to one PMBO can be collected from any other PMBO in the world. The component of WinLink 2000, that operates via the Internet, falls outside the scope of Australia's Radiocommunications Act;

5. Any local and foreign radio amateur who is licensed to operate in Australia, and I would argue, those in international waters surrounding Australia, could legally sent to or receive messages from an Australian WinLink 2000 PMBO (if one existed), over amateur radio;

6. Such radio messages could legally include so-called Third Party Traffic, that is, messages send on behalf of others, because Australia allows third part traffic within Australia (and for that matter with the USA where the WinLink 2000 Central PMBO is located);

7. Only those individuals who have no other way of contacting the mobile user would use WinLink 2000, that is, because these cannot be

reached by Internet or other reliable communication modes. Obviously, potential users would rather not have to rely on the sometimes unreliable amateur radio bands, especially, in the case of emergencies;

8. WinLink 2000, because it serves ***primarily those with no other means for communicating***, would include safety-related messages. With this in mind and recognizing different time zones around the world, WinLink 2000 must operate for 24 hours per day for 365 days per year. It cannot do so unless it operates in computer-controlled *automatic* mode, much like the local repeater stations already operating around Australia;

9. Australian radio amateurs by virtue of Section 11 of the Amateur Radio Determination are currently not allowed to *automatically* pass-on messages via the Internet but, like any other citizen, they would be allowed to do so *manually*; and

10. To make it practical for WinLink 2000 to operate in Australia requires rescinding Section 11 of the Determination issued under the Radiocommunications Act of 1992. Such a change to the Determination, is well within the power of the ACA to make. Allowing WinLink 2000 operations in Australia would ***not disadvantage anyone*** and have ***potential benefits for many***.

To provide more detail about WinLink 2000 operations, summarized below is the text of a Paper that I wrote for publication in radio amateur and yachting publications both in Australia and overseas. The text is as follows:

"As a digital message transfer system, the primary purpose of Winlink 2000 is to provide *mobile* licensed radio amateur operators (Hams) the opportunity to send and receive electronic mail not only to and from other Hams but also to and from anyone else with an Internet email address. Hams can do so via the Winlink 2000 system, by transmitting and receiving messages via radio transceivers that can operate on the ham radio bands. Such messages are routed via the nearest participating Winlink 2000 mail box office (PMBO). Hams operate PMBOs on a voluntary basis, and as provided under ham radio licensing conditions and in keeping with the spirit of amateur radio, the PMBO operators devote their expertise, time and money serving other Hams on a voluntary and unpaid basis. Of course there is a payoff in that those who do participate as users or as PMBOs can study and practice to stay at the forefront of development of electronic communications and thus, indirectly, make a contribution not only to Winlink 2000 users but also to amateur radio in general by fostering local expertise in electronic information and communications technology.

Different nations attach different values to their national amateur radio community. Generally, Hams are regarded as a national asset that can spring into action at any time a national calamity threatens, when search and rescue missions are mounted or when major national events take place. The US Federal Communications Commission (FCC) is exemplary in that it is very supportive in given Hams the opportunity to stay in the forefront of electronic communication and information technology developments (e.g. linking to the Internet). It also substantially reduced bureaucratic red tape by not getting involved in the nitty-gritty of regulation and by issuing US Hams with operating licenses that have a ten-year validity – free of cost to the Ham[7]. It is a standard by which the performance of regulatory agencies in other countries should be measured.

Winlink 2000 was developed by a group of Hams in the US[8] but with substantial support from overseas contributors. At present, it comprises a network configuration of about 30 PMBOs. A large number of the PMBOs are located in the continental United States but the remainder is spread around the world. The major area not covered by Winlink 2000 is Australia and its surrounding oceans and hence this area is regarded as "the Weakest Link" and the large "Terra Incognito" on the Winlink 2000 map. The number of PMBOs in other geographic areas of the world is growing as are the number of Winlink 2000 users. This includes use by Australian amateur radio operators.

Primarily, Hams who are mobile, and therefore have no ready access to the Internet, use Winlink 2000. This primarily comprises recreational cruising yachts on the high seas and those traveling on land in recreational vans (RVs - called caravans in some countries). It is useful too in other remote locations around the world, e.g. in many developing countries, where there is no ready access to reliable communication networks. The success in Winlink 2000 communications depends on station equipment being used, including antenna system, the propagation of radio signals and, of course, the number and proximity of PMBOs. There are strict standards for PMBOs. Winlink 2000 is not competing with commercially available services. Obviously, anyone with direct access to a telephone line or a mobile (cellular) telephone would use these services or sent email via the Internet, either from their home base or by using public Internet booths. These regular public communication networks are far less complex and more efficient modes for communicating. The services that are offered through Winlink 2000 are not available commercially at a reasonable cost. In fact, many commercial operators in both the US (AT&T) and Australia (Telstra) have withdrawn from public correspondence operations with vessels on the high seas.

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[7] With ***annual*** license renewals, the bureaucracy in Australia, just for this task, is **probably ten times larger** than it needs to be if the US FCC approach was used.

[8] The Winlink Development Team comprises (in alphabetical order): Hans Kessler (N8PGR) - n8pgr@winlink.org; Rick Muething (KN6KB) - rmuething@cfl.rr.com; Vic Poor (W5SSM) - w5smm@winlink.org; and Steve Waterman (K4CJX) - k4cjx@home.com. Jim Corenman (KE6RK) -ke6rk@winlink.org developed the AirMail software and Dan Sehnal (KQ4YK) - kq4yp@winlink.org provided support.

The messages that are exchanged via Winlink 2000 with such travelers are primarily for them to stay in touch with those at home and visa versa. Of particular importance are safety-related messages concerning present or expected weather conditions; marine and other hazards; medical concerns – including stocking up on prescription medicines; mechanical breakdowns – and the need for spare parts or repairs; and general concerns about public or personal safety. Winlink 2000 also includes an option for reporting ones' position and float or travel plans so that in the event of an emergency, by the traveler or at home, emergency search and rescue service providers can more easily establish contact. It should be noted that WinLink 2000 is as much about ***preventing*** emergencies than it is about ***reporting*** actual emergencies

Because these travelers could be anywhere in the world in different time zones, the Winlink 2000 network needs to be on the air 24 hours per day. As, obviously, an amateur PMBO cannot be manned for 24 hours per day, the operation of the PMBOs must be automated, that is, they operate without continuous personal intervention, that is, other than for routine maintenance and housekeeping, by the sponsoring ham.

The PMBOs are connected to one another via the Internet in a network configuration around the central PMBO so that information available in one mailbox, say, in the US, can be accessed also, by the traveler in Europe or Asia and, hopefully in the future, in Australia. This means that international recreational cruisers and other travelers, who are licensed Hams, are supported by a **large** safety net for 24 hours per day wherever they may be**,** except for the time being, in Australia and the major oceans that surround that large continent.

Considerable thought has gone into the mode of transmission that best serves the purpose. Communication by voice over long distance radio (DX) gets easily distorted due to multi-path distortion of radio waves and can often not successfully overcome atmospheric noise or interference from stations operating on nearby frequencies. Morse code, which penetrates further, needs exceptional good keying skills. In any event, Morse code operation was officially abolished as it has been replaced by more advanced communication protocols. The advanced methods fall under the heading of digital communications. By far the most robust protocol available to the ham operator is PACTOR. It, and its successor PACTOR II, was developed by a group of German Hams[9]. The success of this protocol is based on the efficiency of the Terminal Network Controller (TNC) that functions as a modulator-demodulator (Modem) to connect the computer to the transceiver. The PACTOR controller has a built-in error correction capability under which the radio signal received by the user is "bounced-back" to the sender and only when the signal sent and received are the same is it accepted as being correct. PACTOR II goes one step further in that, if after repeated exchanges no agreement is reached, PACTOR computes what it believes the

[9] This is another interesting example as to how amateur radio operators contribute to advances in electronic communication.

correct signal to be and uses this as the correct message. This way, PACTOR II messages are almost totally error free. What is more, PACTOR can function even when radio signals are not audible to the human ear (minus 18 dB). For this reason, Winlink 2000 supports the PACTOR protocol.

Working with Winlink 2000 is simple. First a potential user must obtain a Winlink 2000 address. This is exactly like an Internet email address domain name and is in the form <(callsign)@winlink.org>, where the callsign is the letter/number combination of the ham operator license issued by a national licensing agency. A Winlink 2000 address will be issued only to those with Ham radio licenses as listed in the various Government Radio Amateur licensing databases. Having established a mobile station (comprising the computer, transceiver, TNC and antenna) on a yacht or RV, computer software (named AirMail -- supplied by KE6RK at no cost to the Users) is initialized by entering the Winlink 2000 address and the callsigns and operating frequencies of those PMBOs that are most likely to be called by the particular Users.

Messages are than typed, and with a click of the computer mouse-button a “connect request” will be sent to the PMBO that has been selected for the transmission. The system will try this for about one minute by which time contact would normally be made. If contact is not established, further attempts may be made later or with a different PMBO[10]. As bandwidths for digital communications are very narrow, tuning must be very precise and the PMBO, while continually automatically scanning several frequencies, can work with only one User at a time. The usual and most efficient mode of operation is the “Bulletin Board” approach. Under this system, once contact with a PMBO has been established, the system will automatically upload (send) any messages that have been prepared for transmission and then download (receive) any messages that are in the mailbox. Once this is completed the system automatically disconnects. Because of the bandwidth limitation, each user is currently allowed only 30 minutes connect time with the PMBO per 24-hours. Messages must be brief and any attachments must be within a prior set limit of around 50,000 kilo bytes (Kb).

A particular important feature of Winlink is the Automatic Position Reporting System (APRS). A traveler reports position in degrees of latitude (LAT) and longitude (LON). These are nowadays readily obtainable from Global Position Systems (GPS) carried onboard sea-going yachts and often on RVs. The AirMail Client software has a provision for automatic NMEA input to the computer’s serial port for auto-updating the position report. A position may also be entered manually in a special template that is part of the AirMail software. When preparing position reports, it is only necessary to enter the LAT and LON, together with a brief comment, and this will be automatically transmitted when the

[10] Advanced PACTOR TNCs will automatically select the correct frequency when another PMBO is selected for contact.

next “connect” to a PMBO is made[11]. This information will be stored in a Winlink 2000 database at the Central PMBO in the US. Anyone interested in the geographic location of the traveler can sent a “Position Request” email message to Winlink 2000. Winlink 2000 will send a reply to the sender within about 15 minutes from receipt of the Position Request. To make it even easier, Winlink will forward the position to an APRS on the Internet <www.findu.com/(callsign)>, where all who are interested can see the geographic position of the traveler on a series of maps given at different scales and, for North American locations, also on a topographic map with a further option to view an aerial photograph of the area. Winlink provides an APRS option for transmission to the “YotReps” Website. The latter website may only be used for yachts in transit on the high seas and requires the input of detailed weather reports that can then be used by other cruisers in the immediate vicinity.

WinLink 2000 also provides weather reports. Over 350 text-based and graphic weather products are available globally in a WinLink 2000 catalog. It is as simple as looking at the catalog list, checking the desired weather report, sending the request and then receiving it from the nearest WinLink 2000 PMBO.

It should be obvious that Winlink 2000 provides a tremendous service that puts the travelers and family and friends’ states of mind at ease. This is particularly so when otherwise the traveler would be incommunicado for long periods of time. It can be invaluable in case of emergencies facing the traveler en-route or the family at home. As WinLink 2000 is not as yet operational in Australia, Australian hams and international travelers in the often-treacherous waters surrounding Australia are seriously disadvantaged. From discussions with the Wireless Institute of Australia (WIA), the organization that represents the amateur radio community in Australia, is seems possible that it will take an interest in the matter However, this will depend on its ability to bring along the more conservative elements on its managing committee. It is to be hoped that collectively, WIA will propose to ACA that Australian amateur radio operators should be allowed to access and operate, if they wish, a WinLink 2000 PMBO. Developments at WIA are being watched with interest by both Australian and international hams.

In the meantime, the Winlink Development Team (WDT) is working hard to keep in the forefront of developments in amateur radio including the link to the Internet. Enhancements that are currently under consideration include: (1) an APRS Tracking system that will graphically show the *route* that has been followed as well as the latest position reported by the traveler; (2) a hyper-fast file transfer protocol to make it possible to send and receive longer messages and binary attachments; (3) extend the catalog of dynamic graphic and text-based weather reports; and (4) an automatic message forwarding system under which all messages concerning recreational yachts at sea that have “May Day” status are

[11] Some GPS units can be directly connected to the computer so that LAT/LON information is automatically inputted in position reports.

immediately automatically forwarded – 24 hours per day – to local search and rescue organizations.

Those interested in learning more about Winlink 2000, Airmail software and the PACTOR protocol may find additional information on the Internet at http://winlink.org/k4cjx."[12]

Representation and Regulation. Representation of amateur radio and the attitude towards regulation of amateur radio in the US, which can be taken as an example for Australia, is best explained by referring to the American Radio Relay League (ARRL) and by quoting part of a recent speech by a senior official of the US Federal Communications Commission:

FCC TO AMATEURS: DETAILED REGULATION "NOT IN THE PICTURE"

"The FCC says the ball is in the court of the Amateur Service to determine the course of future Amateur Radio regulation. Speaking May 20, 2001 at the Dayton Hamvention FCC forum, Bill Cross, W3TN, of the FCC's Wireless Telecommunications Bureau, said that ***the days of Commission-imposed regulation are past***."

"Detailed regulation of the nitty-gritty of communication services, including the Amateur Service, is not in the picture," Cross said. "Rather, the FCC is shifting to strong and effective enforcement of ***truly necessary*** regulations." The FCC, he said, now plans to look to the amateur community to reach consensus on any new regulations it thinks it wants and needs.

Before the FCC initiates any rulemaking proceedings in the Amateur Service to change privileges, Cross said it wants to see proposals involving the implementation of ***"new and more modern communications technologies***," ***such as digital (communications)***." ***(Bolding added for emphasis)***

This enlightened attitude is possible only in countries when amateur radio is vibrant and progressive. This, unfortunately, does not appear to be the case in Australia. Below is an extract from a pronouncement made on behalf of WIA that pertains to this issue.

WIA Federal President's Response to the Martin Luther Papers

"In taking this opportunity to respond to these papers ***(by Martin Luther)*** I do not pretend that the situation for amateur radio is all rosy. In fact the first thing to acknowledge is the reality of ***falling*** numbers and ***increasing*** commercial pressure on what is seen as valuable (in dollar terms) radio spectrum." "Today,

[12] Attached, as APPENDIX C, is a Paper entitled: "Australia and WinLink 2000 – The Solution". It covers in more detail the faulty reasoning that prevents the operation of WinLink 2000 in Australia.

the amateur radio community, much like a number of other ***(aging)*** organizations, such as the RSL, find themselves in decline. Does this represent a lessening of the values that amateur radio has to offer? I dare to suggest not. Rather I see the current situation as one in which ***we need to become more active*** in all aspects of our hobby in order to sell its benefits to all members and groups of society Many of the traits of amateurs that made their contributions so valuable in the past are still valued today. We do however need to recognize that ***the shape or form of the hobby is changing***." "Conclusion: In writing this response to Martin Luther's papers I have been conscious of the need to make the public face amateur radio, and of the WIA, a more positive one. Having taken some time at the recent Federal convention to talk and listen to Martin Luther's views I do not believe that he has anything other than the best interests of amateur radio at heart. I take his comments seriously. However I believe that there is a strong future for amateur radio. Let us use this time as an opportunity to form a clear view of the future of our hobby and define the necessary objectives that will permit amateur radio to remain a vibrant activity well into the next millennium. Ernest Hocking (VK1LK), *WIA Federal President,* Canberra, 24th May 2001." (***Bolding added for emphasis)***

I have no way to tell whether WIA has changed over the last 20 years or so. However, it was alarming that during my recent visit to Australia I could not find any radio amateurs who had anything positive to say about WIA. Some found it dictatorial, stilted, expensive and not helpful. The sad state of affairs with amateur radio in Australia is that what has been inherited is probably no accident. It could be the result of years of neglect and infighting between those entrusted with guiding amateur radio in Australia. If so, it has not only held back the growth but actually resulted in a ***decline*** in amateur radio operations in Australia. These criticisms may be unjust but in my own dealings with WIA during 2001, it seemed unable or unwilling to express a view about WinLink 2000.The limited evidence seems to suggest that WIA represents only a small fraction of Australian radio amateurs, yet ACA looks upon WIA as the liaison point for *all* matters concerning amateur radio in Australia.

This should be compared with the dynamic role played by the ARRL in the US. It has actively supported WinLink 2000. This influential service organization has actually supported seminars and has extensively publicized WinLink 2000. It co-sponsored a TAPR/ARRL Digital Communications Conference, held in September 2000, and invited the WinLink 2000 Development Team to present a technical paper on WinLink 2000. It was held to be a "smashing" success and led to an extension of APRS. ARRL publications about WinLink 2000 include a Chapter in its Digital Handbook. It specifically seeks to introduce beginners to digital communication, including WinLink 2000[13]. Apart from these specific actions, the ARRL is extremely active in recruiting new members. For example, it contacts potential members annually inviting them to join. In ten years of holding

[13] There have been hundreds of articles published about WinLink 2000. APPENDIX D lists some of the most recent publications and conferences covering WinLink 2000.

my Australian amateur license, WIA has not contacted me once inviting me to membership.

Apart from the FCC, other official US organizations support WinLink 2000. For example, the US National Oceanic and Atmospheric Administration (NOAA) has an Internet website devoted to WinLink 2000 and its weather reporting feature. Similarly, the United States Coast Guard is highly appreciative of the service provided by WinLink 2000.

There is hope in the statement by the WIA President, quoted above. It demonstrates there is a vision that "***the shape or form of the hobby is changing***". It is hoped that the old guard at the WIA can read the writing on the wall and will now support its new President to lift amateur radio to the status that it deserves.

With shrinking national resources it is obviously best for governments to concentrate their resources on the major strategic issues that confront their countries. It is now clearer than ever before that this concerns national security, economic growth and social development. It should not be necessary for the ACA to micro-manage amateur radio. WIA or its successor, if truly representative of amateur radio, should self-regulate as is the attitude and practice in the USA.

Resistance to Change: One area that is alluded to in the Issues Paper concerning this Review, is the problem of inertia and opposition to change. My research shows that there are some minor but vocal opponents to advancing amateur radio in Australia. These, I believe come from three directions as follows:

1. **Commercial Interests:** There could be some tacticians within the commercial sector who believe that it would benefit from the collapse of amateur radio in Australia. Such interests may be eying parts of the radio spectrum that might become underused with an ongoing decline in amateur radio operations in Australia;

2. **The "old guard":** Amateur radio in Australia has been "graying". There have been few younger new entrants. A statement attributed to Albert Einstein goes: ""You can't do what you don't know if you keep doing what you do know." It could well be that some influential "old-timers" could be too comfortable with the old technologies and therefore would have no particular interest or support for investing time, energy or money in new technologies. This is not to belittle the contributions that might have been made by these early pioneers but rather to make the point that bringing new "blood" into its ranks is conducive to build up the vitality of amateur radio in Australia[14]; and

[14] APPENDIX E, a PowerPoint Slide Show presentation, could be used for educational purposes.

3. **Jealous amateurs:** Naturally, over the years, some leading radio amateurs in Australia have risen to take control and dominate certain amateur radio activities, particularly, the operation of older systems of MBOs. Such operators, rightly, take great pride in the volume of traffic that passes through their stations. Regrettably, some may fear competition from more advanced amateur communication systems, such as, WinLink 2000. While there is no reason why such older systems should not continue to operate, neither is there a reason why newer technologies should be restricted because of what might be selfish motives.

It is particularly encouraging that, in the Australian setting, the review into the Radiocommunications Act is being conducted by the independent Productivity Commission. It is equipped to look at the issues with an "arms-length" relationship to any vested interests. As chartered, the Commission must look at the subject matter from a wider *national* perspective. In its recommendations, therefore, it should be able to deal effectively with *narrow* interests of detractors.

Conclusion: Although, the case for allowing WinLink 2000 in Australia is but a small component of the Productivity Commission's wide-ranging Terms of Reference, it is still important for those who must rely on this form of communication for their safety. The case for supporting WinLink 2000 operation in Australia is ***not*** lesser because of the possibly small ***volume*** of communications but more about the ***content*** of such communications. WinLink 2000 is important also for liberalizing amateur radio operations, including the ability to keep up to date with developments in ICT. Finally, a vibrant amateur radio community could, if ever the need arose, play a role in defending Australia's national security in addition to the public and private resources that are available already.

I respectfully request the Productivity Commission to recommend that Section 11 of the Radiocommunication Licence Conditions (Amateur Licence) Determination No. 1 of 1997 be rescinded.

Anthony Van Vugt
1031 Carper Street
McLean-Langley
VA 22101-2106 USA

When in residence:
Tel: 1 703 734 2727; Fax: 1 703 734 1919; Email: Anthony@Van-Vugt.com.
Radio Call sign: KN4VM (When in the US or international waters).

When Cruising on SV "Bojangles":
Mobile: 1 703 508 5377 (When in US Coastal or Inland waters)
Email: kn4vm@WinLink.org (Worldwide, short messages, no attachments)
Radio Call sign: VK1VM (When in Australian or Australian waters)

APPENDICES:

The following appendices are an integral part of this Submission:

A. **SUMMARY** of Mnemonics and Abbreviations.

B. **AUSTRALIA and WINLINK 2000** -- A Report on Background, Discussions, Conclusions and Recommendations. July 31, 2001.

C. **AUSTRALIA and WINLINK 2000 – The Solution** -- A draft article for publication in Australian and foreign amateur radio technical publications and yachting magazines. August 30, 2001.

D. **LIST** of Recent Articles, Publications and Seminars, covering WinLink 2000.

E. **POWERPOINT SLIDESHOW PRESENTATION**: " WinLink 2000 – An enhanced Message System for the Mobile Amateur Radio User." It is in the format as presented at the gam organized by the international ***Seven Seas Cruising Association.***

APPENDIX A

MNEMONICS AND ABBREVIATIONS

ACA	Australian Communications Authority
ACT	Australia Capital Territory
AirMail	Software developed by Jim Corenman (KE6RK) for use with WinLink 2000
AMSA	Australian Maritime Safety Authority
APRS	Automatic Position Reporting System
ARRL	American Radio Relay League
BBS	Bulletin Boards (electronic)
Callsign	The unique alpha/mumeric combination issued by a national licensing authority that identifies each individual radio amateur
dB	Decibel, a measure of the volume of sound
DC	District of Columbia in the USA
FCC	Federal Communications Authority (of the USA)
GPS	Global position System,
Hams	Licensed Amateur Radio Operators (especially, in the US)
Hamvention	A convention of amateur radio operators
ICT	Information and Communications Technology
IDA	International Development Associates
JFK	John F. Kennedy International Airport in New York, USA
Kb	Kilo byte a measure of the size of digital information
LAT	Latitude, usually expressed in degrees and minutes to 2 or 3 decimals

LON	Longitude, usually expressed in degrees an minute to 2 or 3 decimals
MBO	Mail Box Office
MD	The State of Maryland on the USA
NMEA	National Marine Electronics Association of America
NOAA	National Oceanic and Atmospheric Administration
PACTOR	A digital radio communications protocol developed by German hams
PMBO	Participating Mail Box Office (of WinLink 2000)
QST	A membership publication by the ARRL
RSL	Returned Soldiers League of Australia
SSCA	Seven Seas Cruising Association
SV	Sailing Vessel (in Europe and some other countries - SY for Sailing Yacht)
TELSTRA	The Australian Telecommunications Authority
TNC	Terminal Network Controller
TPT	Third Party Traffic
WDT	Winlink 2000 Development Team
WIA	Wireless Institute of Australia
WICEN	Wireless Institute Civil Emergency Network (in Australia)
WL2K	WinLink 2000
WTC	World Trade Center
WX	Weather as in WX Reports
YOTREPS	A position and weather reporting system used by recreation vessels at sea

APPENDIX B

AUSTRALIA and WINLINK 2000

A Report on Background, Discussions, Conclusions and Recommendations.

By Tony Van Vugt (KN4VM/VK1VM)

Background

As an amateur radio operator and as a yachtsman, I developed an admiration of and appreciation for the contribution made by the Winlink Development Team (WDT) to the development of amateur radio and the establishment and operation of the Winlink 2000 digital message transfer system. As I was scheduled to visit Australia during July 2001, I asked Steve Waterman (K4CJX and one of the members of the WinLink 2000 Development Team), whether I could do anything for the Winlink 2000 effort while in Australia. In response Steve asked me to contact Clive Franklin of the Australian Communication Authority (ACA) – the equivalent of the US Federal Communications Commission (FCC) – and John Martin (VK3KWA) of the Wireless Institute of Australia (WIA is the equivalent of the Amateur Radio Relay League "ARRL" in the US), to discuss the possible establishment and operation of Winlink 2000 in Australia. Steve provided me with copies of a number of email communications on this subject that had been exchanged between WDT and WIA over the previous 12 months.

In preparation for the proposed meetings, I had sent, prior to my departure for Australia, email messages to both Clive Franklin of the ACA and John Martin of the WIA, requesting an opportunity to meet them individually, while I would be in Australia, for discussions regarding the Winlink 2000 expansion effort. As I had learned from the earlier correspondence, both ACA and WIA appeared to not support Australian amateur radio operators participating in the use of Winlink 2000, that is, neither as *Users* nor as *Operators* of a participating mailbox office (PMBO)[1]. In preparation for the discussions, I also re-established contact with a former colleague, Mr. Dan Steiner (VK1ST). Dan emigrated from the US to Australia and established residence in Canberra, Australia's national capital and seat of government. He now holds a senior position in the Australian Public Service. Apart from my wish to reacquaint, I did this to obtain his assistance to gain access and introductions to local (VK1) amateur radio operators.

[1] It does appear that Australian amateur radio operators, including some who play a role at WIA, do appreciate the value of WinLink 2000. Some 400 of them have accessed WinLink 2000 during the last 12 months.

On arrival in Australia I contacted Dan (VK1ST) by telephone and he provided me with a number of introductions. Unfortunately, he almost immediately left on an overseas trip so that further follow-up with him wasn't possible at that time. I also contacted in Canberra a personal friend, who is a retired senior civil servant and one thoroughly familiar with federal politics and bureaucracy, to seek advise on the best approach to pursue the subject at the Federal Government level. He also guided me to some important local contacts and advised me to focus on the safety-at-sea aspects of Winlink 2000. He advised me also to not speak with ACA until I had obtained all the facts and had sampled opinions within the amateur radio community in Australia.

In a way, I was rather poorly equipped to speak about Winlink 2000. Although I had seen a copy of a Winlink 2000 presentation, given sometime ago at a Seven Seas Cruising Association (SSCA)[2] Gam, I did not have the opportunity in time to use this or the updated PowerPoint presentations that were sent to me in Australia by Steve (K4CJX). I am also, unfortunately, a relative newcomer to the use of Winlink 2000 and than only after a frustrating familiarization period before becoming operational. It was only through the repeated assistance by Rick Muething (KN6KB) and receipt by email of a listing of the correct Winlink operating frequencies from Joost (ZS5S) that I got my systems at home and on my boat operational. In that time also we had the malfunctioning of the Automatic Position Reporting System (APRS) when the link with www.FindU.com was, apparently, made non-operational because of a computer virus. Even now, I still have a lot to learn, especially, about the new vessel tracking system that is provided by Ray Marine's RayTec Navigational software.

Finally, it should be noted that this report is based on discussions, over a relatively short period of two weeks during July 2001, with a rather limited number of people (less than 100) and, as important as some of these individuals might be, it was difficult to assess how candid and honest the respondents were and, therefore, whether I have been able to capture the mood in Australia correctly.

Discussions

Prior to starting the formal discussions in Australia, I spoke to a large number of local (VK1) and Victorian (VK3) amateur radio operators, primarily to assess their attitude towards the ACA, membership of WIA and their understanding of the Winlink 2000 digital communications system. In general, the respondents had little good to say about either ACA or WIA, whom they regarded as autocratic and way behind the times. Only few were aware of the existence of Winlink 2000. While, in the limited time available, I did not have the opportunity to find out the total membership of the WIA in relation to the number of amateur radio operators in Australia, I gained the impression that few of those I spoke to actually were

[2] I have been a member of the SSCA since about 1999.

members of the WIA. Yet, the ACA looks upon the WIA as the liaison to speak on behalf of *all* Australian amateur radio operators.

I next followed up on my proposed visit to Melbourne to meet Mr. John Martin of WIA. His email response was not encouraging. It was a very negative. It appears that he has made a major effort over the years to understand WinLink 2000 and make representations for its introduction into Australia. These efforts must have fallen on deaf ears. He was not prepared to pursue the matter of Winlink 2000 in Australia any further than he had already done; particularly not because, as he wrote, Clive Franklin of ACA had apparently told him to back-off. I had intended to contact him once again when in Melbourne, as the WIA is likely to be the key to advancing Winlink 2000 in Australia. However, in Canberra I was advised against attempting to do so.

The first positive response came from Mr. Samuel (Tony) Hughes of the Australian Marine Safety Authority (AMSA). He is the senior Search and Rescue Coordinator. He spoke highly of the amateur radio community as it had been of tremendous assistance to AMSA in the search for missing yachts and relaying communications to yachts at sea. The fact that he is a former Navy officer and a yachtsman did contribute to his understanding and support for the service provided by Winlink 2000; particularly, to recreational cruisers in Australian waters and the oceans surrounding Australia. Unfortunately, within days of our first contact he departed Canberra to cruise the Whitsunday Island group off the Queensland coast. He asked for and I promised to give him a detailed briefing about Winlink 2000 operations immediately following my return to the US.

My next following positive contact was with Mr. Gilbert (Gill) Hughes (VK1GH). He is the President of the Australian Capital Territory (ACT -- VK1 country) chapter of the WIA. He is also on the ACA/WIA Liaison Committee. He questioned me at great length regarding Winlink 2000 operations. He informed me about each of the concerns that ACA has about Winlink 2000, and briefed me about some of the internal developments both within ACA and WIA. For one, Clive Franklin who had been the ACA's voice on the subject of Winlink 2000 was apparently being retired. Also, the ACA was apparently being downsized, thus further contributing to its inability to deal with issues of lower priority, such as, Winlink 2000 operations. Downsizing would make it even harder for ACA to police it own regulations. During my visit to Australia, I could not help but gain the impression that Australia's private enterprise is gradually being strangled with regulations. This should be compared with FCC's attitude of amateur radio (see below). Similarly, WIA had just elected a new President. All these developments were seen by many as providing an opportunity to re-open the discussion about the prospects of allowing Winlink 2000 operations in Australia.

Gill (VK1GH) invited me to his house for further discussions and, unbeknown to me he had taken the initiative of inviting also Ernest (Ernie) Hocking (VK1LK) who was introduced to me as the new President of WIA. I was asked again to

explain how Winlink 2000 works, not so much from the technically but more so about the link between WinLink 2000 PMBOs and the Internet, about automated operation and in regard to third-party traffic. Ernie (VK1LK) very much played the role of “devil’s advocate” placing before me the comments and objections that he believed would be voiced by ACA about Winlink 2000 operations in Australia. A number of interesting observations were made during the discussions. These are as follows:

1. ACA would probably never come out publicly to give guidance about which features of Winlink 2000 it could support or reject. It merely plays the role of “bogeyman”, frightening Australian Hams about the severe consequences of breaking the license conditions, including the revocation of their operating licenses. This all against the background that ACA is practically unable to monitor contacts by Australian Hams with Winlink 2000 but then, if it ever decided to make an exemplary case it could always prosecute just one single operator as a test case. Australian amateur radio operators acutely fear this threat by ACA.

   A word may be said here about the Australian attitude towards authority. Australia was founded as a number of isolated penal colonies. There is a general perception that the jailers (authority) were far worse than the poor wretches (the jailed) who had been deported to the colonies. Australians in general have a disrespect for authority and those in charge (authority) seem to have no greater joy than issuing regulations controlling one or another activity of ordinary Australians. Observing developments that took place since my departure from Australia, some 22 years ago, is that rather than devoting its energies to the broader strategic issues that confront the country there appears to be an undue focus on petty details, like constraining amateur radio in a regulatory straitjacket.

2. It appears that in the past, the amateur radio community had more freedom and moved into new areas of operations without too much publicity. When the new mode, or whatever, had been firmly established, the predecessors of ACA were presented with a “fait-accompli” and had little option but to accept the new development. The Internet is an example of a development that just crept up on the regulators and could no longer be regulated – although there have been and could still be challenged in the future. Some I spoke, to seemed to hold to the view that it would have been better for all concerned to stay “mum”, that is – silent or to “not-rock-the-boat” about Winlink 2000 and just work with it until usage by Australian Hams is well established.

   In this connection, I got reactions that some who felt that Winlink 2000 was almost pushed down the throat of ACA and WIA by external (foreign) forces, that is, impliedly, the US. As friendly as Australians are towards Americans in general and admire American advances in technology in

particular, there is a national pride about evolving at their own pace and direction. One incident cropped up while I was in Australia. Australia's Navy had chosen a British IT solution but, as was said, had been forced to buy from a US source instead. Australians dislike this type of foreign intervention but should understand that it just doesn't pay to cut ones' nose to spite the face. Advances in ICT should be reviewed and introduced into Australia, including WinLink 2000, irrespective of its origin.

3. Much weight was given to ACA's rather pedantic adherence to restrictions on Third Party Traffic (TPT) by Australian Hams. Australia has TPT agreements with only five countries. These are: (in alphabetical order) Canada, Honduras, Israel, Solomon Islands and the USA. No one, I talked to, could understand why Australia has so few TPT Agreements. However, I know, that such international agreements are normally prompted only when influential Hams, who have an interest in TPT with a particular country for example with the US or Israel, use their political influence to have such international treaties negotiated.

   I responded that in today's world TPT is a dead issue. Firstly, the legislation restricting TPT was drafted in the days that governments protected their own Post, Telephone and Telegraph operations from any internal or external competition. We all know that this led to grossly inefficient operations in the telecommunication sector. The subsequent deregulation led to a great deal of private investment in the sector – leading to significant improvements. It was argued and our discussions that, following this privatization, the private sector should be protected from competition by Hams. This, I thought, was a weak argument given the development of the Internet and electronic mail. Virtually anyone in the whole wide world with access to the Internet can send to and receive messages from anyone else, including that from and to third parties.

   Furthermore, TPT needs met by Winlink 2000 are generally not available from commercial sources. It concerns only communications to mobile travelers who cannot be effectively reached by any other means, i.e., those on recreational vessels at sea or in Australia's outback. Also, the volume of traffic via Winlink 2000 is miniscule compared with the total telecommunication volume, including email via the Internet. I would not like the small volume to be used as an excuse to not support WinLink operations in Australia. While the *volume* may be small, the *content* of the messages may be significant.

   Finally, third party traffic is already allowed within Australia. Therefore, any TPT that would be received by an Australian WinLink 2000 PMBO, from other radio amateurs within Australia and in Australian waters (and I would argue from recreational vessels at the high seas) may be received by radio. Similarly, email received and held in the Australian WinLink 2000

PBMO, for collection by a WinLink 2000 User falling in the same categories, may be transmitted under the same conditions. Of course, communications received or sent by an Australian amateur radio operator passed on via the Internet are allowed as this already is a right held by all Australians. On balance, I could not see the rationale why Australian Hams should not be allowed to play a role in WinLink 2000 operations, Unfortunately, this part of the discussion left me with the uncomfortable feeling that some at the ACA and WIA may be too closely allied with commercial interests.

4. I pointed out the superiority of the PACTOR protocols in facilitating long distance communications; particularly, in respect of reporting or preventing emergencies at sea and for receiving emergency messages from home while cruising. Both Ernie and Gill advised against using the Safety-at-Sea features in any future discussions with ACA on the grounds that this would place the ACA in conflict with the Australian Marine Safety Authority (ASMA). WIA would much rather pursue the issue of Winlink in Australia on the basis of the advancement of amateur radio operations. Nevertheless, I am sure that WinLink 2000's ability to file itineraries and position reports and access weather reports is one of its most valuable features. I propose that WinLink 2000 should be enhanced so that it automatically forwards any May-Day messages, immediately and directly to 24-hour manned search and rescue stations, such as, the Coast Guard, it would strengthen the case for Winlink 2000 in a Safety-at-Sea role.

5. Ernie (VK1LK) indicated that he knew of Australian Hams who would be interested in running an Australian-based WinLink 2000 PMBO. This indicated to me that there had been discussions about this possibility. However, it was equally clear that at this stage no Australian amateur radio operator would be prepared to incur the possible censure and penalties (loss of license) of the ACA. Therefore, pending a favorable resolution, Australia will continue to fall short in facing opportunities and meeting responsibilities.

6. I was given assurances that WIA is prepared to reopen the discussions with ACA; especially now that there are different players on both sides. I welcomed that development but urged that they wait with the start of any discussions until I could send them a full briefing on Winlink 2000 operations and a draft of possible responses to ACA's concerns. They indicated that in reopening discussions with ACA they would very much like to have the support from others, such as, FCC, ARRL and relevant organizations representing mobile users, such as, yachting organizations and RV users.

7. When asked what my personal interest was in making Winlink 2000 accessible to Australian Amateur radio operators, I responded that as an Australian:

    a. I was concerned that Australia does not appear to fully appreciate the potential valuable role of amateur radio during national emergencies;

    b. I feel bad that amateur radio operators are precluded from taking part in enhancing their expertise in line with changing development in ICT;

    c. That Australian and foreign cruisers (including myself) would benefit from having several operational WinLink 2000 PMBOs in Australia;

    d. That I was embarrassed that Australia and its huge surrounding oceans appears as the "Weakest Link" and the great "Terra Incognito" on the Winlink 2000 map; and

    e. That I was promoting Winlink 2000 in Australia *not* as a representative of the Winlink Development Team or commercial radio or modem manufacturing interests but as a concerned Australian amateur radio operator and yachtsman.

At the conclusion of the meeting I was given copies of the full text of the ACA's letter to the WIA concerning Winlink 2000 together with the relevant legislation[3]. In return I agreed to supply them soonest with a concise explanation of Winlink 2000 operations, that I would solicit support from overseas amateur radio operators and yachting associations and would be willing to assist WIA in the preparation of any proposal to ACA to amend the Radio Amateur Determination.

Armed with the information gained during the discussions, I called Clive Franklin of ACA to attempt to arrange a meeting. He had not responded to my advance email message and did not respond to my follow-up request. Instead we talked on the phone for about an hour. He regurgitated what we already know. He strongly defended ACA's rulings on the interpretation of ITU rules and Australian legislation. In questioning he seemed to support my view that the ACA has room for amending its position. He said that the ball is in the court of WIA. It had been asked for a formal submission, he said, but this had not as yet been lodged. He further argued that the WIA is the only body consulted by ACA on amateur radio matters. He agreed, reluctantly, that submissions by individuals and clubs not

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[3] The full text of the Radiocommunication Act of 1992 and related Acts is available on ACA's website.

associated with the WIA would also be taken into account but it appeared that these would not be very welcome.

We briefly touched on the political support, if any, for amateur radio. Both he and the WIA officials told me that politicians do not understand or value amateur radio as a potential resource in times of national disasters, primarily, because there were no votes in this matter (National elections will be held later this year). I told them of the enlightened attitude among specific Congressmen in the US and the FCC, which makes amateur radio licenses available ten-year validity periods – free of charge. This should be compared with the Australian practice of requiring annual renewals at a cost of AUS$50.80 per annum (Five-year renewals are possible, provided 5-years' license fees are paid in advance). With *annual **renewals**,* Australia's administration of Ham radio licensing must require a bureaucracy that is possibly ten times larger than it would if it issued ten-year licenses.

Clive Franklin concluded the talk by telling me about the further reduction of staff at ACA and that, in any event, amateur radio is low in the order of ACA's priorities. He intimated that ACA was not going to take any action in respect of Winlink, on its own accord, unless prompted to do so through a formal submission coming from WIA.

Conclusions

The discussions held in Australia, and the realization of how important Winlink 2000 would be to Australia and to amateur radio operations in general, led me to a number of conclusions. These are summarized below:

1. The lack of approval for Winlink 2000 in Australia is primarily an Australian problem (although the absence of PMBO's in Australia may also endanger international cruisers in the oceans surrounding Australia[4]) and the problem needs to fixed by Australians, with external help to the extend that this is possible. We need to figure out how we can best assist the Australians getting their house in order;

2. WIA can succeed in getting the ACA to change its Determination under the law, in my estimation, only if it can successfully argue that:

    a. TPT limitations are a dead issue as the initial rationale for this prohibition, that is, prevent competition with the public sector, has been superceded with the development of the Internet;

[4] Winlink 2000 has been able to get by in some fashion in the southern hemisphere but I have seen communications from cruisers who are greatly perturbed that, although they are licensed amateur radio operators, Australian amateurs have refused to pass-on urgent communication because they were in fear of loosing their amateur radio licenses.

b. The prohibition against connecting amateur radio stations with the Internet are no longer logical, if ever it was, given the rapid development ICT technology;

c. That the changes proposed are allowable under the existing ITU Agreements and are implemented already by the FCC in the USA; and

d. That the benefits of Winlink 2000 and the relatively low level of traffic are such that it warrants special consideration and departure from or amendment of the standing ACA Determination.

3. I understand the view held by some that one could penalize and perhaps activate Australian Hams into action by denying them access to Winlink 2000 or, alternatively, establish a website exposing the archaic attitude of ACA and WIA. However, in my view, this would be counterproductive. I firmly believe that Winlink 2000 should continue to operate as usual for those who are in;

4. The WinLink 2000 Development Team should look again at the way it disseminates information promoting Winlink 2000. I was quite appalled by the lack of knowledge and understanding of what is such an advanced and reliable amateur radio service;

5. At this stage it is politic to give WIA the benefit of the doubt and hope that it will speak out on behalf of Australian radio amateurs rather than stick to an archaic position or be influenced by improper commercial interests;

6. Only when it is found that WIA is not playing its part would it be necessary to refer the issue to the wider amateur radio community in Australia and internationally; and

7. It is unsound to abandon arguing the case for Winlink 2000 on the grounds of its important safety-at-sea features. AMSA should be kept informed and involved.

Recommendations

Based on the above conclusions I have developed a number of recommendations. These are listed below in the approximate order of priority:

1. As a matter of principle and tactics it's up to Australians to advance amateur radio and Winlink 2000 in Australia;

2. That for the time being, reliance is placed on WIA to promote Winlink 2000 and put its case before ACA;

3. That WIA should be offered support and be asked this can best be provided;

4. That, as a first step, I will provide WIA, AMSA and other interested parties in Australia with a precise description of Winlink 2000 operations;

5. That Winlink 2000 Development Team keep track of the use of the system, especially, of official endorsements that could be used in Australia to support WinLink 2000 in Australia;

6. That Winlink 2000 Development Team gives wider publicity about Winlink's 2000 operations, preferably by developing a common WDT website to which each team member contributes a part. Once developed it should be publicized here in the US and overseas;

7. That Winlink 2000 encourages and assist in the preparation of Winlink 2000 User success stories in publications like ARRL's QST Magazine, Cruising World, SSCA's Commodores' Bulletin, and other suitable publications, including those in Australia, to publicize Winlink 2000 and thus indirectly support its introduction in Australia;

8. That further development of Winlink 2000 concentrate on potential safety-at-sea features, such as, my proposed instant May-Day forwarding proposal;

9. Prepare a contingency plan for implementation in case WIA does not advance Winlink 2000 interests promptly or in the desired direction. This contingency plan could include but is not necessarily limited to:

    a. Conduct mass mailings to Australian Hams;
    b. Establishing a website dealing with Winlink in Australia;
    c. Arrange for mailings from cruisers, hams etc to ACA and WIA;
    d. Submit articles for publication in Australian newspapers;
    e. Involving FCC, ARRL, SSCA and other organizations; and
    f. Have, if necessary, the issue raised at a future ITU and Marine Safety meetings; and

10. If everything else fails, encourage the establishment of additional WinLink 2000 PMBOs in countries surrounding Australia, including: Indonesia and East Timor, Papua and New Guinea, Brunei, Malaysia, Singapore and the South Pacific Island nations.

APPENDIX C

AUSTRALIA AND WINLINK 2000 – THE SOLUTION

By Tony Van Vugt (VK1VM – KN4VM)
Onboard SV Bojangles – a South African Miura 9.5
Annapolis, Maryland, USA

WINLINK EXPLAINED

Winlink 2000 is an electronic communication system that serves, primarily, amateur radio operators (hams) who are operating mobile at land or at sea. Typically, such mobile users would be in remote locations, with absolutely no access to other communication facilities, like telephones or the Internet. Such travelers could be caravanning in Australia's outback or be on recreational yachts at sea. At sea, Winlink 2000 is of particular importance, not only to Australian recreational yachtsmen but also to the hundreds of international cruisers transiting the often-treacherous oceans, seas and straits that surround Australia.

Being able to stay in touch with family and friends is important to all travelers. This is particularly so when the traveler or those at home face emergencies, such as, inclement weather, medical problems or equipment breakdowns that could pose safety risks. The ability for travelers to regularly file itineraries or float plans via WinLink 2000, greatly facilitates keeping track of overdue travelers. In the absence of such information, search and rescue operations could be much delayed or ineffective.

Operation of WinLink 2000 is relatively simple, that is, after the user has made the initial effort to earn an amateur radio license, install ham radio equipment and study the WinLink 2000 code of conduct. The mobile user then obtains a WinLink 2000 address in the form <(callsign)@WinLink.org>. This address is issued only to licensed amateur radio operators. It allows the ham access to the WinLink 2000 network via ham radio and allows family and friends to reach the traveler via the Internet. The mobile user typewrites and stores electronic mail (email) messages on an onboard personal computer (these are normally carried onboard for navigational purposes). The user then establishes radio contact with the nearest WinLink 2000 Participating Mail Box Office (PMBO). During the contact: (1) any messages that are in the user's mailbox at the PMBO are downloaded to the onboard computer; and (2) the messages that are ready in the computer for transmission are uploaded to the PMBO. The traveler's messages are then forwarded by the PMBO to the ultimate recipients either via the Internet, for those with Internet email addresses, or stores the messages in the PMBO, for those with WinLink 2000 addresses, for later collection by these addressees. The PMBOs operate in an automatic mode for 24 hours per day -- 365 days per year. PMBOs are located at about 30 locations around the world but are notably

absent on the Australian continent. The objective of this paper is to make the case for having PMBOs established in Australia.

To be of use, WinLink 2000 has to be robust and easily accessible. For the sake of reliability, WinLink 2000 supports the sending and receipt of text messages or graphics in *digital* format. The most efficient protocol currently available is Pactor. A Pactor Terminal Network Controller (TNC) connects the computer to the amateur radio. The value of Pactor is in the build-in error correction feature that ensures that messages are almost totally error free. Pactor will function successfully under conditions where the spoken word and even, the now defunct, Morse code signals would fail. Pactor was developed by a group of German hams and serves as an example of the contribution that can be made by hams to the development of information technology.

WinLink 2000 includes an Automatic Position Reporting System (APRS) that allows mobile users to report their position whenever they logon to the WinLink 2000 system. The position is reported in degrees of longitude and latitude that, with today's Global Position Systems (GPS), normally used onboard, is accurate to within 10 meters. The traveler's position can then be monitored by those at home, either via email calling on the WinLink 2000 APRS Database or by viewing positions on charts and maps on the Internet. This system also provides information about others who have reported positions that are close to the traveler. Knowing that others are nearby provides a further safety net.

WinLink 2000 also delivers to the traveler, on request, weather reports and charts that cover the traveler's current and proposed land or sea route. There are hundreds of weather products to choose from the menu provided by WinLink 2000. Particularly for recreational travelers at sea, including those participating in competitive races such as the annual Sydney to Hobart yacht race, it is important to have accurate and timely weather reports available. This too can significantly contribute to the prevention of maritime disasters of which Australia has had a few.

The effectiveness of WinLink 2000 depends on the comprehensive coverage of those areas in the world that are frequented by mobile travelers. There are at present close to 30 PMBOs. All PMBOs are inter-connected via the Internet so that a message residing at the central US-based PMBO may be accessed also from any other PMBO in the WinLink 2000 network, wherever it is located in the world. All in all, there is a reasonably good global spread and continuous growth in the number of PMBOs. Many of the PMBO's are sited in the US. This is because of the positive official US attitude towards amateur radio and the advocacy by the American Radio Relay League (ARRL) in promoting the interests of amateur radio. An example of this official support is that US hams are issued with operating licenses that have a 10-year validity – free of cost. Australian hams have to renew their licenses annually and over a ten year period would have paid in excess of AUS$500. It implies that Australian bureaucracy,

just for the issuing of licenses, is ten times larger than it needs to be. As stated above, the major void in the global WinLink 2000 network is in Australia – it is the Weakest Link and the "Terra Incognito" on the WinLink 2000 map. The establishment of one or more PMBOs in Australia would be of great benefit to many – not only to travelers but also for their families; to the Australian amateur radio operators and ultimately for the Australian taxpayer who stands to pay for any, otherwise unnecessary, search and rescue operations.

WinLink 2000 and its companion AirMail software were developed, and are continuously being enhanced, by amateur radio operators. These volunteers have invested their intellect, time, equipment and money for development and round-the-clock operation of WinLink 2000. In keeping with the spirit of amateur radio, access to and use of WinLink 2000 and the AirMail software is free to all amateur radio operators. WinLink 2000 makes a significant contribution to many and deserves applause and active support.

THE RESTRICTIONS

Despite the obvious advantages of WinLink 2000 to Australian hams, to international cruisers on the high seas near Australia, to Australia to support development in information technology and for search and rescue operations, Australian hams are precluded from taking part in this exciting and worthwhile project. The Australian Communications Authority (ACA), the agency that in consultation with interested parties establishes the regulations governing amateur radio, has advised that: "It would be very unwise for any Australian amateur to continue WinLink 2000 operations because it would be virtually impossible to comply with these (the ACA) regulations, …" If they did continue, Australian hams might run the risk of having their amateur radio license revoked, equipment confiscated and be fined with heavy financial penalties.

ACA's ruling is given in its Determination No. 1 of 1997 "Radiocommunication (sic) License Conditions (Amateur License)", issued under the provisions of Australia's Radiocommunications Act of 1992. ACA does have the power to issue amendments to its Determination and has done so three times during 2000. To its credit, ACA has indicated that, in respect to WinLink 2000, it would be willing to consider any submission advocating change. Such advocacy should be at the initiative of the Wireless Institute of Australia (WIA). This role for WIA is in keeping with its constitution that provides, inter alia, for it: "To consider, originate, promote and procure reforms and improvements in laws affecting amateur communication frequency allocations and amateur radio and to support or oppose proposed alterations therein and to effect improvement in the administration of such laws".

Therefore, securing ACA amendment of the current Determination rests squarely on WIA. In its role as the organization representing Australian radio amateurs, it

needs to consider the following: (1) whether the ability to participate in WinLink 2000 operations would be beneficial to Australian amateur radio operators, specifically, and to Australia, in general; (2) whether it is prepared to make the effort and provide resources to prepare a submission to be placed before ACA; (3) decide how best local and overseas amateur radio and mobile users associations can assist WIA in preparing a submission; and (4) decide on a timetable. This should not be a major task.

In preparing a submission, it is necessary for WIA and Australian hams to: (1) understand WinLink 2000 operations; (2) analyze where and how Australian hams would be in breach of the current Determination when using WinLink 2000; and (3) provide the rationale why ACA should amend its Determination.

WHERE'S THE CONFLICT?

The crux of the conflict between the ACA's Determination and WinLink 2000 operations, in as far as concerns Australian hams, arises from two Sections of the Determination discussed below.

The first of these concerns is about, what is called "third party traffic." Third party traffic is a message sent by an amateur radio station on behalf of someone else. Third party traffic could be messages that came from other radio amateurs, from others with Internet email addresses or are obtained through personal contact. The messages could have been received over the air, via the Internet, passed-on orally, or have been delivered by a carrier pigeon. It makes no difference.

The ACA Determination, in respect of third party traffic, in Section 5, subsection (1) reads: "The licensee must ***not solicit*** a message that is to be transmitted on behalf of a third party unless the message relates to a ***natural*** disaster"; and subsection (4) states: "A licensee must ***not transmit*** messages to an amateur station in a foreign country, on behalf of a third party, unless the government of that country had made a special arrangement with Australia for the transmission and reception of messages on behalf of third parties, between amateur stations in Australia and amateur stations in that country". (Australia has such special arrangements with only five countries, that is, with the United States of America, Canada, Israel, Honduras and the Solomon Islands.)

The second of these concerns is about interconnecting an amateur radio with the Internet. The ACA Determination, in Section 11 states: "The licensee must not, ***directly or indirectly***, connect an amateur station to a public communications network if the station is: (c) using automatic mode; or (d) using computer controlled mode (including, for example, packet mode and radioteletype mode). (***Italics*** added for emphasis)

The origin of the restrictions against third party traffic dates back to the distant past when countries sought to protect their state-run telecommunication

departments from competition by both commercial and, from what they feared, amateur radio operators. All telephone, telegraph and mail communication operations were therefore, by law, to be channeled via government agencies. As experience has shown, this policy has led – worldwide -- to gross inefficiencies at these state-run monopolies. As a result these monopolies have in most countries been corporatized, privatized or deregulated, specifically, to promote competition. A related factor that has diminished the validity of restricting third party traffic is the phenomenal growth of the Internet. The latter allows anyone on earth (except in some totalitarian regimes) to send and receive electronic mail, both personal and third party traffic, without hindrance, across national borders to and from anyone else in the world. These developments have led to an explosion in the advancement of information technology and the achievement of tremendous efficiencies in communications. Therefore, it is clear that restricting third party traffic, in today's world, is as archaic and inappropriate as the carrier pigeon is for mail delivery.

Fortunately, Section 5, may not be as restrictive as might appear at first glance. While Australian hams may ***not solicit***, that is, put a shingle on their radio shack or a banner on their boat advertising radio transmissions, it would appear that they are allowed to accept such third party messages legally as long as these hadn't been obtained through ***solicitation***. For example, as absurd as it is, if an Australian ham would ***offer*** to send a message on behalf of a shipmate about a death in the family, he would be in breach of the Determination as this message is not about a natural disaster. However, if the shipmate had ***asked*** the ham to send the message it -- being unsolicited -- would not appear to be in breach of the Determination.

In any event, ***soliciting*** third part traffic for transmission over public amateur radio wouldn't be a great success. Third parties that have access to telephones or the Internet would certainly use these private, quicker and more reliable modes of communication. In other words, third party traffic would be transmitted ***only*** in those few cases when the third party does not have any other means for communicating, that is, they are in extremely remote wilderness areas or at sea. Therefore, the Australian ham does not compete with any commercial or public provider. Also, the volume of traffic that could potentially flow via WinLink 2000 in Australia would be infinitesimally small when compared to the total volume of the many millions of email messages and other communications that are exchanged daily by other means. However, the lack of volume should not be used as an excuse to not immediately support WinLink 2000. It is the substance and the conditions under which such messages are exchanged that count.

To sum up the situation in respect of third party traffic, Australian hams are:

(1) not allowed to ***solicit*** messages for transmission excepting those that concern natural disasters. However, the Determination does appear to

prohibited accepting or receiving such messages as long as these are unsolicited;

(2) allowed to send third part traffic over the air to an Australian PMBO, if one were available on Australian soil. This is because third party traffic is allowed within Australia;

(3) allowed to send third party traffic over the air to a PMBO located in the US or its territories, in Canada, Israel, Honduras and the Solomon Islands. This is because Australia has third party agreements with these countries; and

(4) probably not be allowed to send third party traffic over the air to any PMBO located in a country with which Australia does not have a third party agreement.

In respect of the latter, a case could be made for arguing that any third party traffic channeled via a PMBO in a "non-third-party-traffic-agreement" country, should be allowed as long as the message does not go to a citizen of that country. PMBO's work as repeater stations. Any messages not for addressees in that country are automatically forwarded via the Internet to the central PMBO in the USA. Therefore, these messages do not appear to contravene the restriction, given that the Determination implies that it is concerned only with ***direct*** third party traffic.

From a practical point of view:

1. Australian hams do have personal control over what third party traffic and by which route they choose to pass this on. Australian amateur radio operators should be trusted to use digression about such traffic depending on the circumstances of the originator and the content of the message. It would seem unreasonable for the concerned third-party-country, or for the ACA, to make a major case out of messages that are passed on by an Australian ham in good faith via a station operating in repeater mode. No one looses anything and many could gain. However, given the official attitude in Australia about third party traffic, it would appear that the Australian ham, at least for the time being, may have to operate within the present restrictions; and

2. Australian hams, especially if mobile, would have considerable difficulty making direct contact with an US-based PMBO. It's a difficulty that one would wish to avoid, especially when at sea, and when it concerns emergency traffic. Making contact with a PMBO located in a nearby country would, under those circumstances, be preferable. However, based on the attitude by the parties referred to above, this could be problematic as well. The obvious and totally satisfactory solution for all would be if

> Australian hams could connect to a PMBO located on Australian soil. This is so, because third party traffic is legal within Australia. The Australian PMBO would, as is the normal practice, pass the message on via the Internet to the US-based central PMBO. Such traffic is legal as well, because the Internet has no restrictions on third party traffic.

However, the real problem for Australian hams is that, for all intents and purpose, the ACA Determination makes it difficult for them to keep up with all developments in information technology. They are prohibited, by virtue of Section 11 of the Determination (see above), to connect their radios to the Internet. The origins and rationale for this prohibition are unclear. At best it is a hangover from the historic restrictions on third party traffic. At worst, it is a deliberate action to bar Australian amateur radio operators from advancing their skills. It could well be that commercial interests, fearing competition from amateur radio operators, have conspired to have this provision included in the Determination. It would be of interest to have an honest explanation of this unrealistic and discriminating restriction. The WIA would be aware of the background. It seems weird that while each and every ordinary Australian citizen is allowed unfettered access to the Internet but that Australian hams do not have this right. It seems doubly illogical given the fact that amateur radio operators make a major contribution Australia.

To fully comprehend the severity of this restriction on Australian hams it is necessary to understand how a PMBO operates. First, for PMBOs to provide an ever-dependable safety net they must operate 24 hours per day – 365 days per year. No amateur radio operator can, obviously, man his station for 24 hours per day; therefore, to be practicable, a PMBO must be operated in a computer controlled automatic mode. Second, PMBOs must operate in digital mode. This facilitates error-free radio communication under conditions where other modes, e.g., voice or Morse code transmissions would not be possible. WinLink 2000 processes all its communications in digital mode. The fact that Section 11 does not allow the interconnection between ham radios and the Internet means that Australian hams cannot effectively and legally operate a PMBO. This has the ultimate effect that Australian hams are precluded from taking part in the development of this area of information technology and, worse, that the Australian continent and its surrounding oceans are not covered by the much needed safety net for mobile operators. It’s a state of affairs that should be rectified.

Perhaps the views of the Australian Academy of Science are pertinent. It has stated that Australia already is regarded internationally as a backwater in IT development and that it has a bleak economic future. A United Nations survey found that: “Australia does not make the list of the world’s top 30 producers of high-tech equipment”. These finding are understandable, if the restriction hampering Australian amateur radio operators are taking as an example of stifling initiative and development. The negative attitude should be compared with the official positive support of amateur radio in other countries, particularly in the

US. In the US, the establishment of PMBOs is officially supported. The US Coast Guard and associations of mobile users are appreciative of WinLink 2000. It is understood that the Australian Maritime Safety Authority, equally, appreciates the contribution made by hams and would welcome the contribution that would be made by WinLink 2000 to improve safety-at-sea. Successes in other countries that come to mind in respect of amateur radio include: (1) Pactor, the world's most advanced digital radio protocol developed by a group of German hams; and (2) WinLink 2000 and AirMail, its supporting communication software, that was developed by Hams in the USA. Just from this perspective, Australian interests would be well served by freeing up amateur radio rather than continuing the imposition of archaic and illogical constraints.

THE SOLUTION

For amateur radio in Australia to advance into new areas of information technology takes some courage. People often prefer to stay with what they are familiar with. Neither should regulators, necessarily, be expected to initiate reform. This is up to local champions who have a long-term vision that goes way beyond the past or present time to drive progress. This is the role of the Wireless Institute of Australia.

Arguing the case for the introduction of WinLink 2000 into Australia, requires considerable intellectual effort to fully understand its mode of operation, understand the benefits that are offered and formulate a case for amending the current Determination. This might take some resources and time. There may be other priorities for Australian hams, yet it is hoped that they would concentrate and give priority to those issues that bring them closer to the global amateur radio community. WinLink 2000 is such a cause.

Given initial inertia and, possibly, a multitude of competing tasks that are facing WIA, it would seem best to advance in small steps – focusing on those initiatives that will bring the greatest return to potential WinLink 2000 users. It would appear that challenging the prohibitions against third party traffic would be too complex an issue to tackle at this time. However, the one issue that stands out and which could probably be easier challenged is Section 11 of the Determination. This section stifles the development of amateur radio. WIA should lobby for the repeal of Section 11 in its entirety. The establishment of PMBOs in Australia would open the doors to Australian hams to venture forward as both users and operators of PMBOs. It's a new world that should be accessible to Australian hams. It is known that among the 400 or so Australian hams that utilize WinLink 2000 already, there are several who would be keen to establish a PMBO. They would serve Australia well.

One would hope that eventually reason will prevail and that the Wireless Institute of Australia will make its voice heard clearly; both for fostering amateur radio in

Australia by obtaining for them the opportunity to play a role in the wider international community and keep pace with developments in information technology, as well as, for having Australia play a much needed role in providing a safety net for Australian and foreign cruisers. One would hope that Australia soon ceases to be the Weakest Link and the great “Terra Incognito” in the WinLink 2000 safety net. Can’t wait to cruise the Whitsunday’s Island group and logon to the first Australian PMBO.

30 August, 2001

APPENDIX D

LIST OF PUBLICATIONS ABOUT WINLINK 2000

1. Nuts and Volts Magazine, Vol. 18, No. 8 August, 1997, 3 page, Article entitled "**Seagoing Hams Link Up on the Internet**" by Gordon West.

2. QST, May, 1998, page 50 -51, Article entitled "**A Conversation With Steve Waterman, K4CJX: The Latest in a Series of Interviews with Hams who are making and important contribution to our hobby.**" Written by Steve Ford, Editor-in-Chief, QST. It refers to the then new methodology, "WinLink/NetLink", which is still the early Internet Interface kludged version of what is now calling WinLink 2000.

3. The ARRL Beginners Publication, "**The New Ham Companion, your Introduction to QST and the American Radio Relay League**" has an article called "**Global Hopping- Digitally, There is more to Ham keyboarding than Packet or the Internet**," there is a section called "**The HF Internet Connection**" which very briefly explains the WL2K concept to the beginning ham.

4. In the ARRL Field Forum, volume 14, number 2, July-December, 1998 Edition, there is mention of the NTS circuit now employing WinLink/NetLink as a vital part of any emergency coordinated effort.

5. In the April 1999 issue of Blue Water Sailing, there is a 5-page article entitled "**The Ham e-mail Advantage**". Written by Dan Sehnal, KQ4YK.

6. In January, 1999, Dan Sehnal wrote another 8-page article entitled "**EMAIL OFFSHORE**". It is a comparative analysis of all commercial email carriers and private coastal stations with Ham radio. Ham radio favors greatly in this article.

7. In March of 1999, issue #97, Ocean Navigator placed a 1-page article entitled "**Keeping in Touch**" about WinLink/NetLink Email."

8. In the January, 2000, UPSIDE Magazine, a magazine for Internet Business related interests, there was an article in a Monthly column, "UPSHOT," called "**An ON-Line Anchor on the High Seas**" about how WinLink 2000 found a lost vessel in the South Pacific, among other stories regarding the service.

9. In the March, 2000, issue of QST, page 90, there is an article in Digital Dimensions, once again mentioning "**WinLink, A Worldwide BBS**." Talks of APRS, the K4CJX PMBO station and WEB Site, etc.

10. Last year, the ARRL and TAPR invited the WinLink Development Team to come to Florida and present a technical paper on WinLink 2000. This was presented by Rick, KN6KB, and published in their TAPR/ARRL 19th **"Digital Communications Conference, Orlando, Florida, September 22-24, 2000**." It was a smashing hit and the reason APRS and YotReps have linked with our position reporting. Rick's has a color pix in the front of a very recent QST presenting our Technical paper.

11. In the January, 2001, QST, there is an Article on page 50-53, again in Digital Dimensions where an insert on page 51, entitled "**WinLink 2000-Internet Email from Anywhere**" is highlighted in Yellow. About a third of a page.

12. In the March 2001, QST, there is a mug shot in color of Steve, k4cjx, Norma, W8PZH (who gives exams to hams in the Bahamas each year). Last year, over 400 Hams qualified due to WinLink 2000. This does not include Mexico, the US, Trinidad and many other locations enlisting new Hams as a result of using WinLink 2000 on the High Seas.

13. The National Oceanic and Atmospheric Administration (NOAA) has a WEB Page, devoted to WinLink 2000 and NOAA WX. Apparently, they think it is important**. http://205.156.54.206/om/marine/ham.htm**

14. For the last three years, the ARRL has put a chapter in the ARRL Digital Handbook" entitled WinLink 2000. This forth year, the issue will be updated to correctly reflect what we are currently doing. Steve Ford, Editor-in-Chief, QST.

15. Ocean Navigator, March/April 2001, has a nice 4-page article entitled "**Radio Email**" all about WinLink 2000. Lot of good visuals, etc.

16. In May 28, 2001, Newsweek, "MY TURN" column, is a one-page article with Pix called "**Bringing the World with Us-Virtually**." It does not specifically mention WinLink 2000, but that is what it is about. Heartwarming article about how valuable the service can be to the cruising ham (family).

Winlink 2000

An
Enhanced Message System
for the
Mobile Amateur Radio User

By:

Vic Poor, W5SMM
Hans Kessler, N8PGR
Rick Muething, KN6KB
Steve Waterman, K4CJX

Winlink! 2000

- What is it?

  The Digital transfer of personal E-mail, Weather Bulletins, & Position Reporting between the Internet and the cruising Radio user via message mirroring from *any* of the 26 participating stations, **Worldwide**!

- *WinLink 2000* with *AirMail* is one of the most advanced Radio E-mail/Information System's on the Planet, supporting unprecedented functionality to over 3500 users, World-wide.

- This Presentation will touch on the Use of WinLink 2000 and some of its more obvious features.

Winlink! 2000

- **Who Did it?**
  - **Vic Poor, W5SMM, a Globe Wireless Technical Consultant and Principal**: Initial Concept, Internal Engine, Message Interface, WEB ACCESS user Interface, and more.
  - **Hans Kessler, N8PGR**: All Radio and CMBO/PMBO Communications Interfaces, Keeper of the CMBO and WEB ACCESS.
  - **Rick Muething, KN6KB**: Weather/Help Inquiries, Internet SMTP E-mail Interfaces.
  - **Steve Waterman, K4CJX**: Alpha/Beta Testing, Public Relations, Global PMBO Network, Users interface, operations.
  - **Jim Corenman, KE6RK**: ***AirMail*** Client Software.
  - **Neil Hughes, VE1YZ**: Weather product coordinator

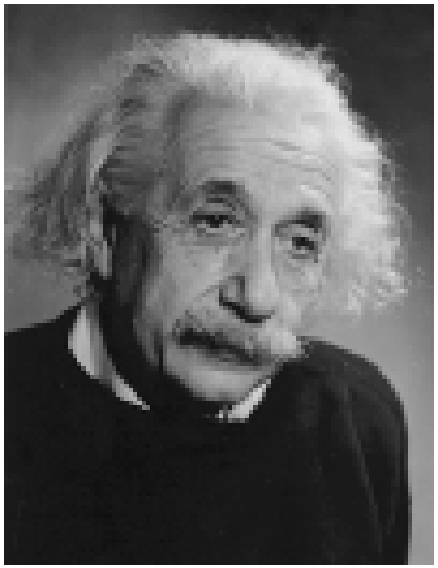
What **is** *WinLink 2000*? "The Truth"

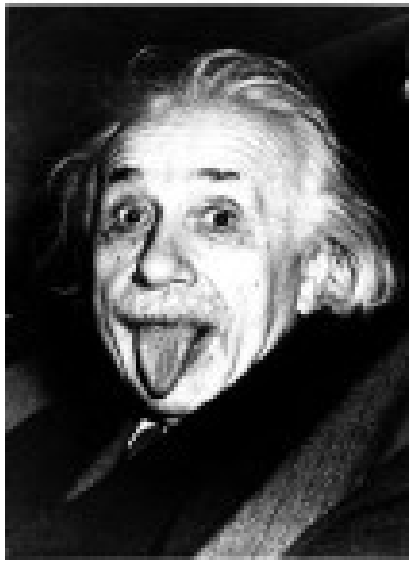
```
Private Sub RadioTCP_DataArrival(ByVal bytesTotal As Long)

  Dim i As Integer, j As Integer, szTemp As String, sType As String
  Dim lChecksum As Long, iChannel As Integer
  Dim nCurrentSequence As Integer, nExpectedBytes As Integer
  Dim sHeader As String
  'Static DataStream As String
  Static DataStream() As Byte, lOld As Long
  Dim lnew As Long, bNewData() As Byte
  Dim bCommTimerState As Boolean
  Dim iHisProtocol As Integer
  Static nLastSequence As Integer
  Static bOneShot As Boolean

  If bOneShot Then Exit Sub
  bOneShot = True
  bCommTimerState = frmTNC.ComTimer.Enabled
  If bTCPLocked Then GoTo Done
  frmTNC.ComTimer.Enabled = False
  With frmRadio.RadioTCP
    While .BytesReceived > 0
      lnew = .BytesReceived
      If lnew > 0 Then
        ReDim bNewData(lnew - 1)
        .GetData bNewData
  "      frmMain.TCPList.AddItem szTemp
        On Error Resume Next  ' to prevent error on initial call to UBound
        lOld = UBound(DataStream)
        On Error GoTo 0
        If lOld > 0 Then lOld = lOld + 1
        ReDim Preserve DataStream(lOld + lnew - 1)
```

The WinLink 2000 Development Team

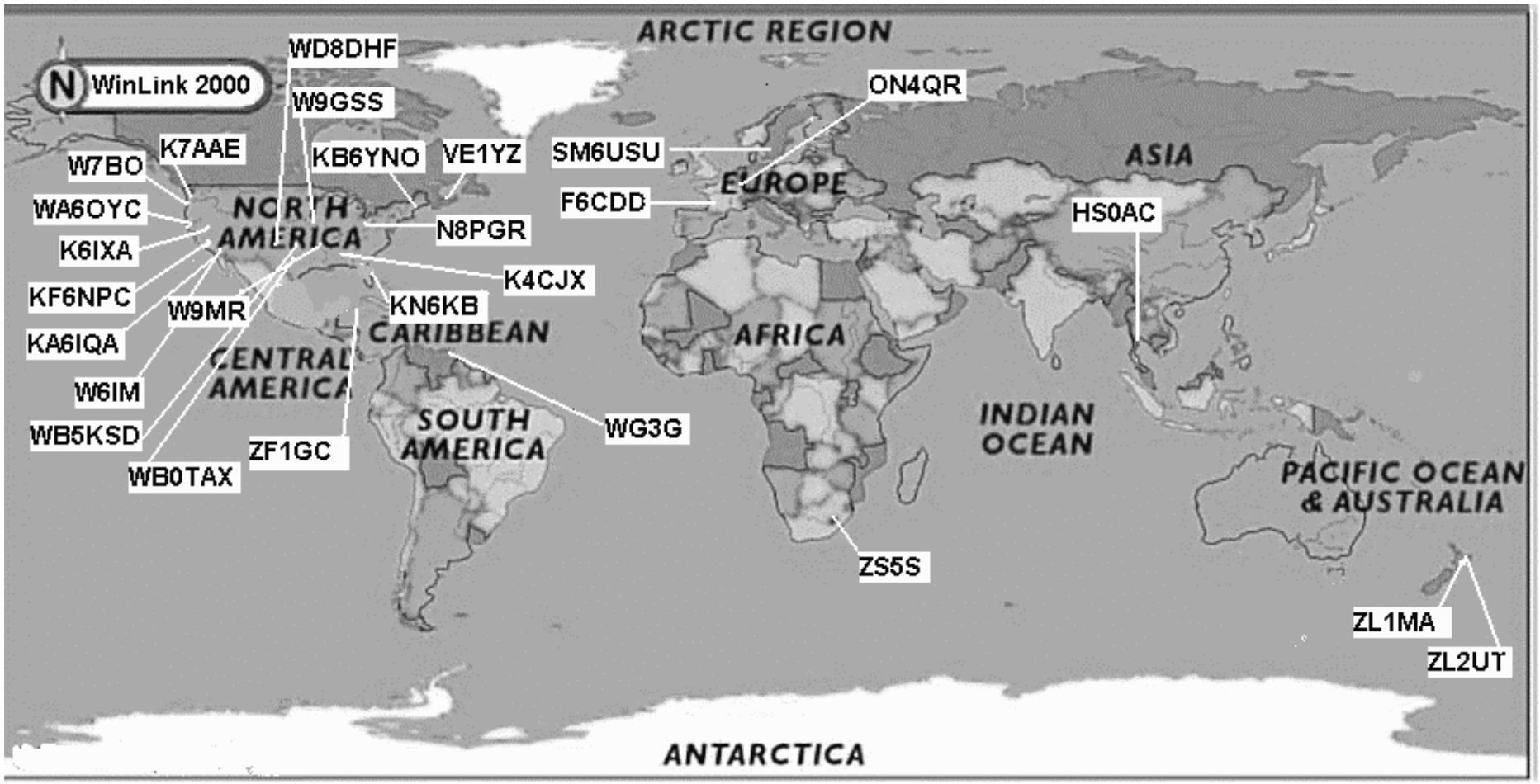




Before ***After***

The Results!

Where in the World Are You?



The ***WinLink 2000*** Participating Shore Stations (PMBOs.) A Truly Global Network linked to the Central Server (CMBO) by the Internet for the purpose mirroring message distribution and delivery to the Mobile user.

Growth of the *WinLink 2000* Network

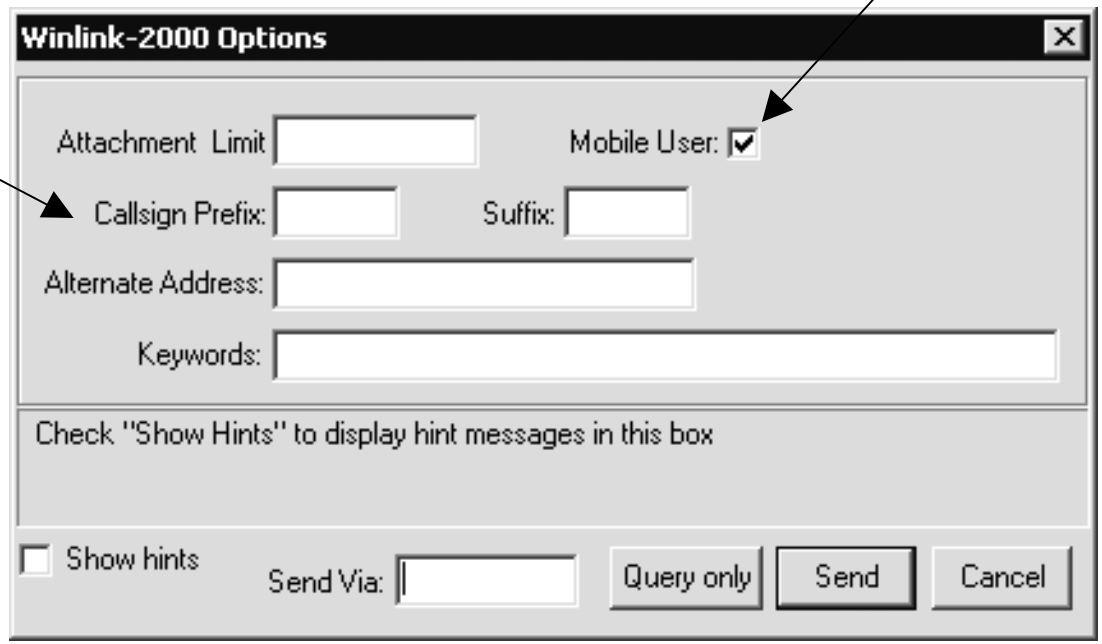
- PMBOs must meet minimum Equip./Computer Requirements.
  - We will continue to optimize the WL2K PMBO Network for the Users.
- Some PMBOs are dedicated to Specific Services:
  - Long-Haul Packet Transfer between communities of local VHF BBSs.
  - WEB Access (WMBO.)
- **Our primary Mission is to remain dedicated to the safety and well-being of the Mobile User.**
  - E-mail, Position Reporting, Weather/Information, Emergency Communications Coordination, Global Access.

WinLink 2000 Features

- Biased toward the ***mobile*** maritime user.
  - Biased toward the transfer of ***Internet*** Information.
    - ***Use on Land*** at a Cyber Café via the WEB, or from AirMail.
  - Over 300+ ***graphic & text WX products*** and other help information.
  - ***Position Reporting*** to your Family Via E-mail, or graphically via APRS Maps.
  - Compressed Text based ***E-mail*** with binary attachments.
    - **Graphic** files (JPG, TIF, GIF, BMP, WMO, etc..).
    - **Text** files.
    - **Binary** files (EXE, XLS, DOC, RTF, etc.).
  - **Uses *AirMail*** Client Software with expanded functionality.
  - There is ***No fee for the WinLink 2000 Services.***

Another WinLink 2000 Feature

- Biased toward the ***Mobile*** maritime and land Cruising user.
  - ***AirMail*** Provides Classifications for Users to Determine:
    - Mobile (Message Distribution to ***ALL*** PMBOs.).
    - Non-Mobile (PMBO Routing to a ***specific*** PMBO.).
    - Temporary Alternate Internet E-mail Address.
    - *Note* ***AirMail*** version 2.16 Options for WinLink 2000 Users:



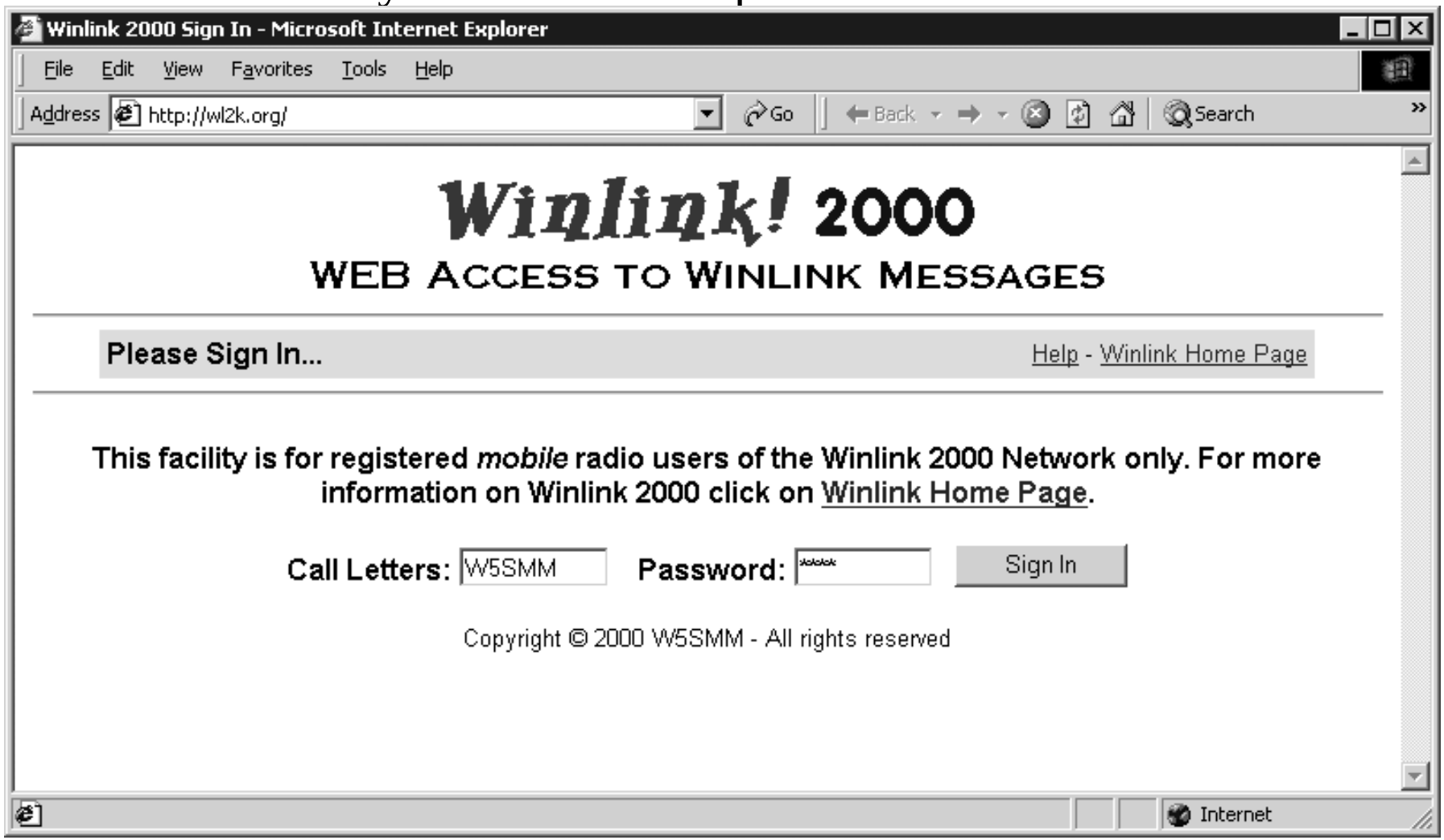
Another WinLink 2000 **Feature**

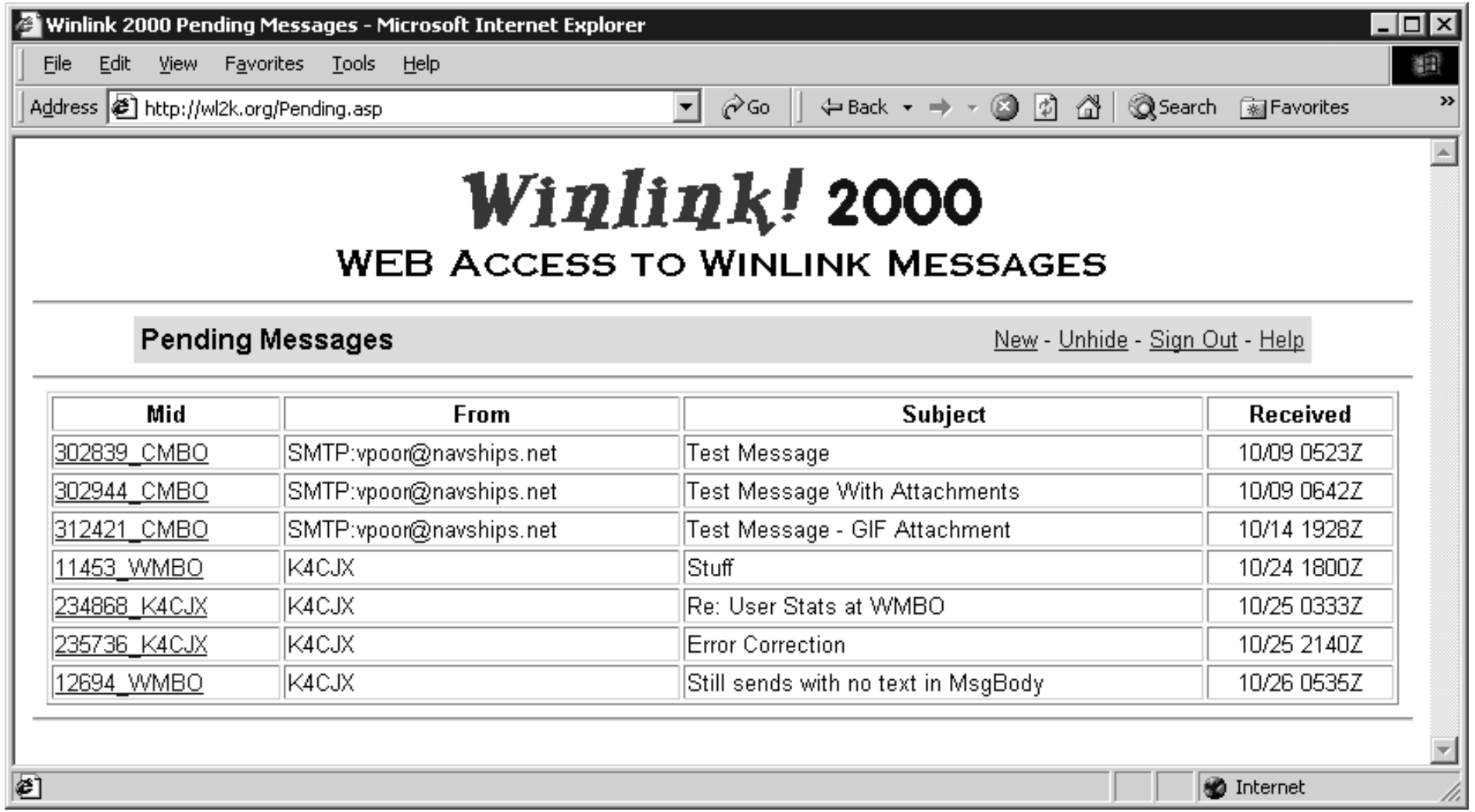
Biased toward the transfer of ***Internet*** Information.

- Interfaces WL2K to the Internet E-mail system through the AirMail client.
- Accepts E-mail attachments with user definable file size limits.
- Accepts mixture of radio and Internet E-mail addresses.
- Enables radio user to contact the WinLink 2000 Message System via WEB Browser access or through Airmail over the air and via telnet over the Internet.
- Enables user to use short-haul Packet access to WL2K over VHF Radio.
- Queries the Internet for Weather Products via a “Laundry” list in Airmail.
- Utilizes the Internet to inform Family & Friends of the WinLink mobile user’s position via E-mail or graphically via APRS (Automatic Position Reporting System) Maps.

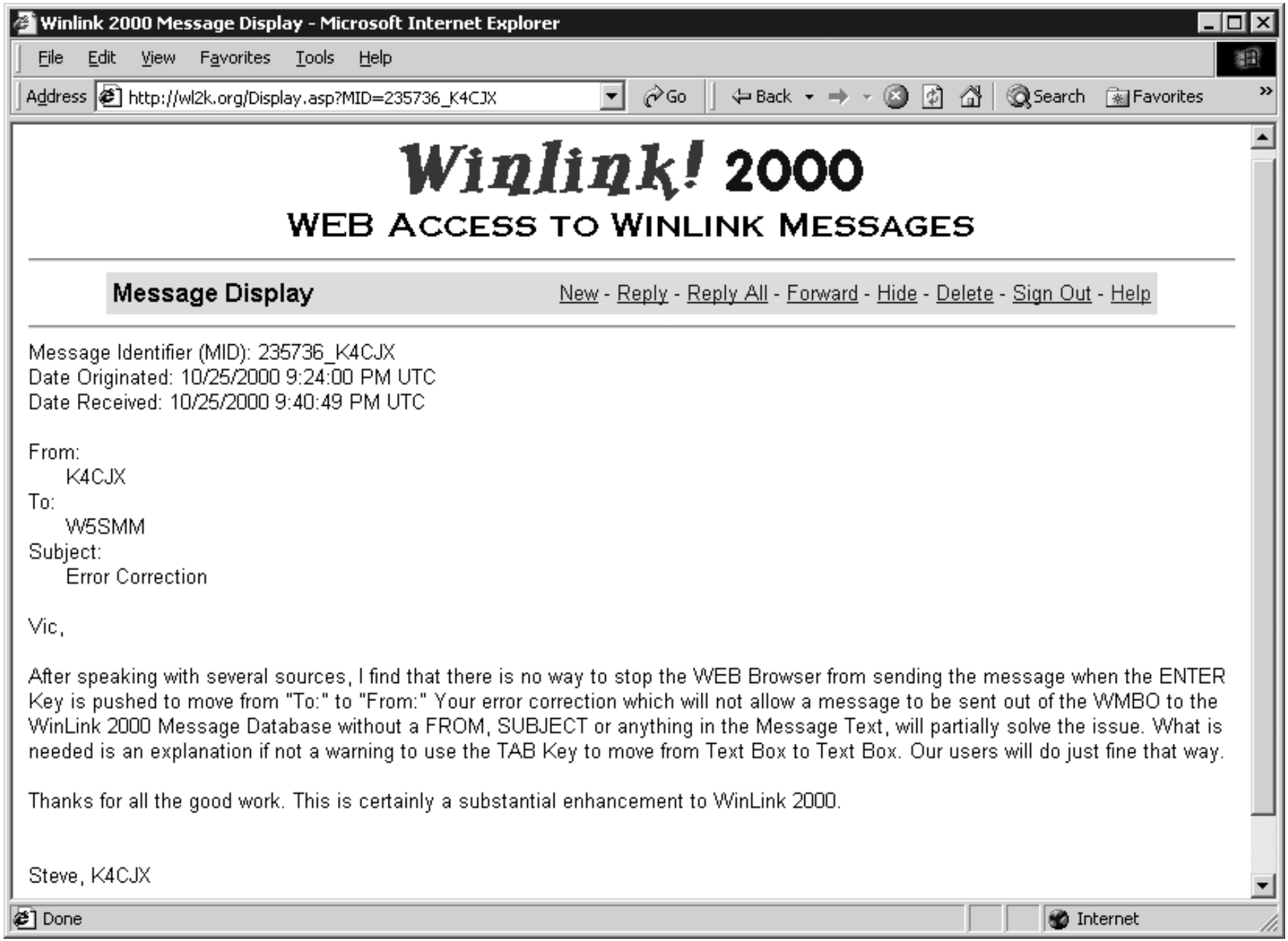
Another WinLink 2000 Feature

- ***Use on Land*** at a Cyber Café via a WEB Browser, or from AirMail via any Internet access point.





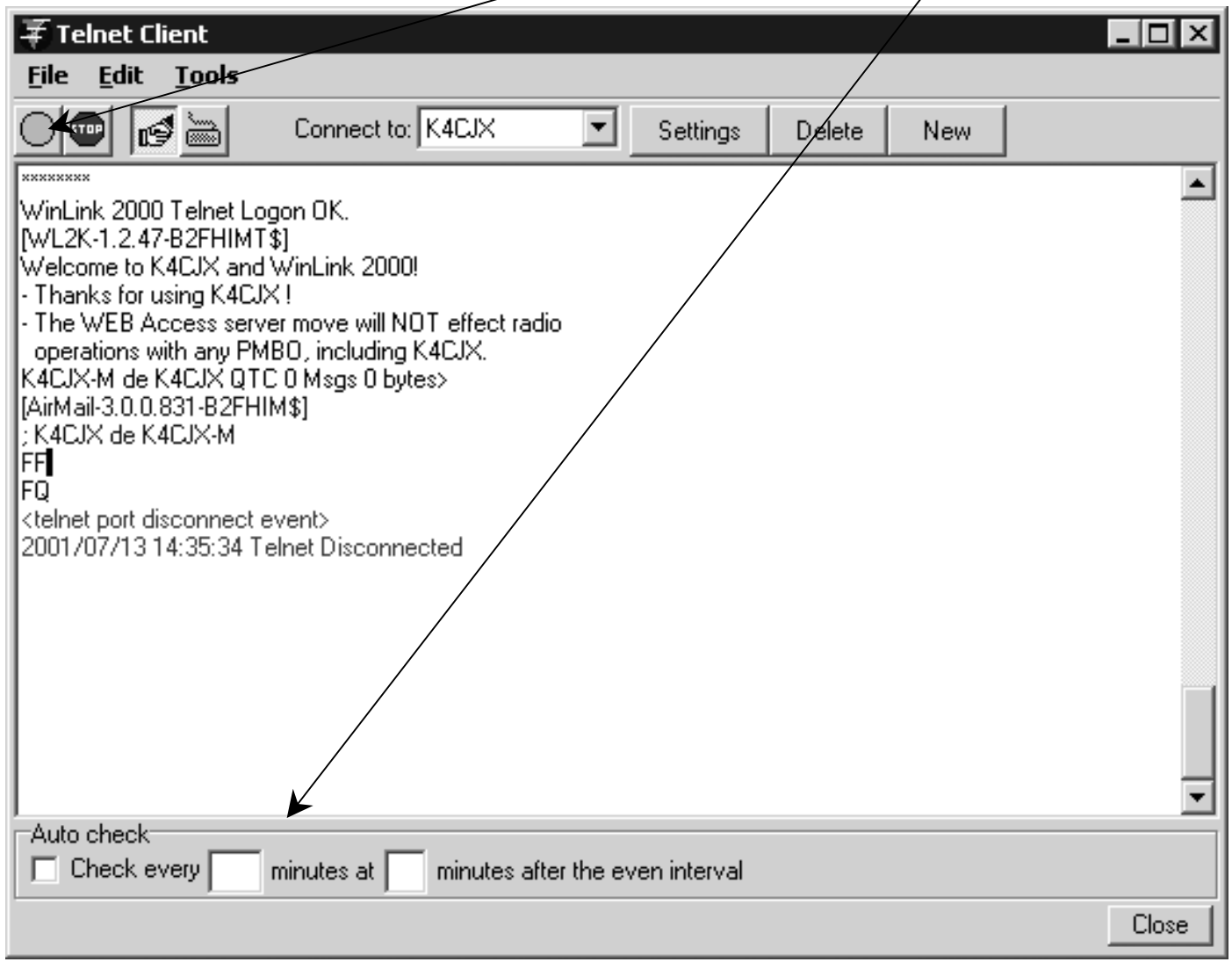
Messages for W5SMM via WEB Access



A Message to W5SMM From K4CJX via WEB Access.

Another WinLink 2000 Feature via *AirMail:*

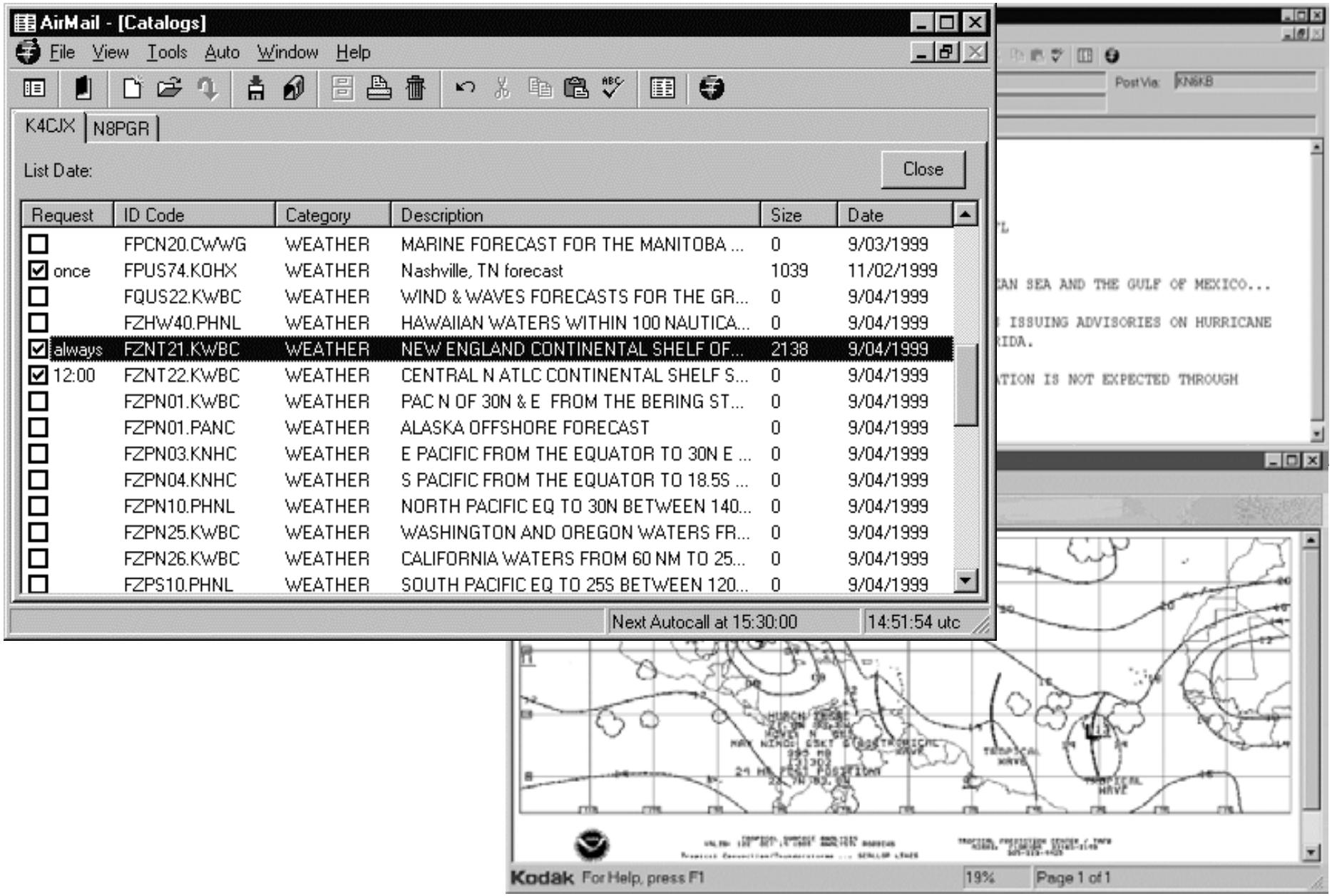
The ability to use the new *AirMail* telnet client module directly to a PMBO Telnet Server over the Internet, manually or Pre-scheduled.



Another WinLink 2000 Feature

- Over 375+ ***graphic & text WX products*** and other help information.
  - Currently over 300 + Weather downloadable Weather
  - Products.
    - ***AirMail*** now comes with a catalog of WX/Info items.
  - ***AirMail*** provides for a “change only” update to existing
  - catalog.
  - Users may request specific Weather Products from PMBO.
    - Most popular Bulletins are Cached at PMBO for faster delivery to User.

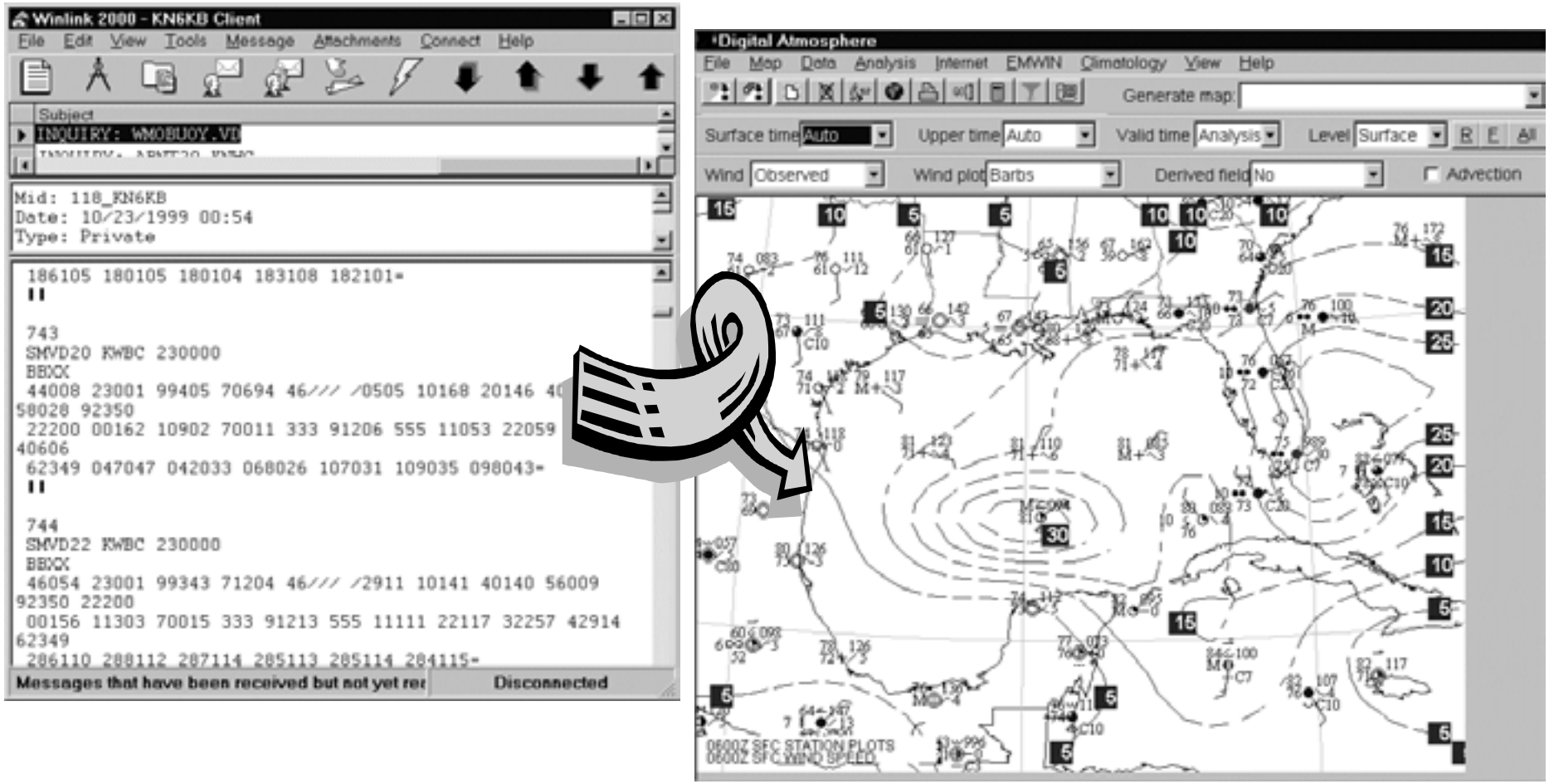
On-demand Internet WX Bulletins



MBO Filtering and Client Post Processing

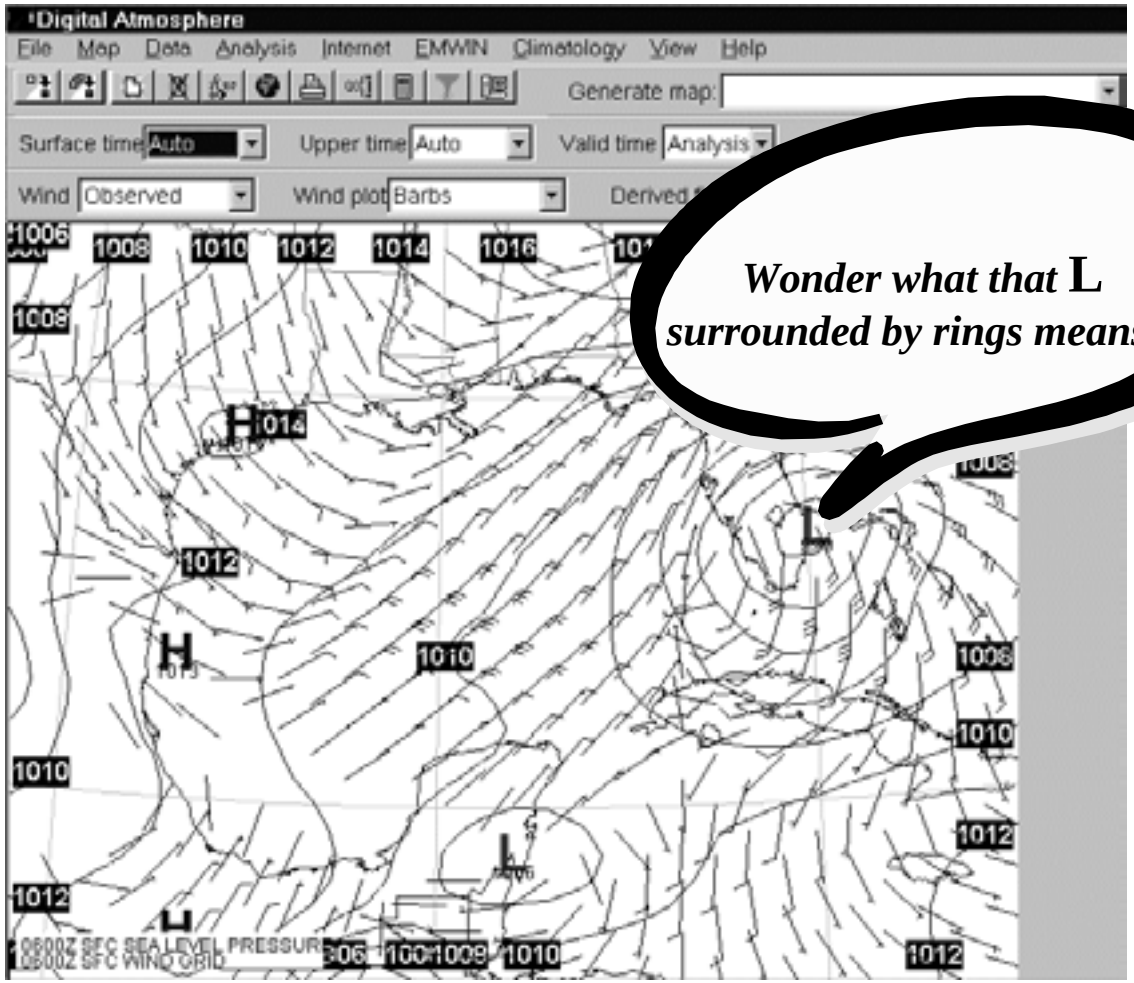
Hourly WMO Ship and Buoy Data
Filtered for Specific Geographic Regions

Data plot and wind speed contours generated locally by Digital Atmosphere from downloaded ship and buoy data



Benefits and Limitations of Client (Local) Post Processing

Surface Pressure and wind field vectors
Produced by Digital Atmosphere from
Ship/Buoy data during Hurricane Irene



Wonder what that **L** *surrounded by rings means?*

Benefits

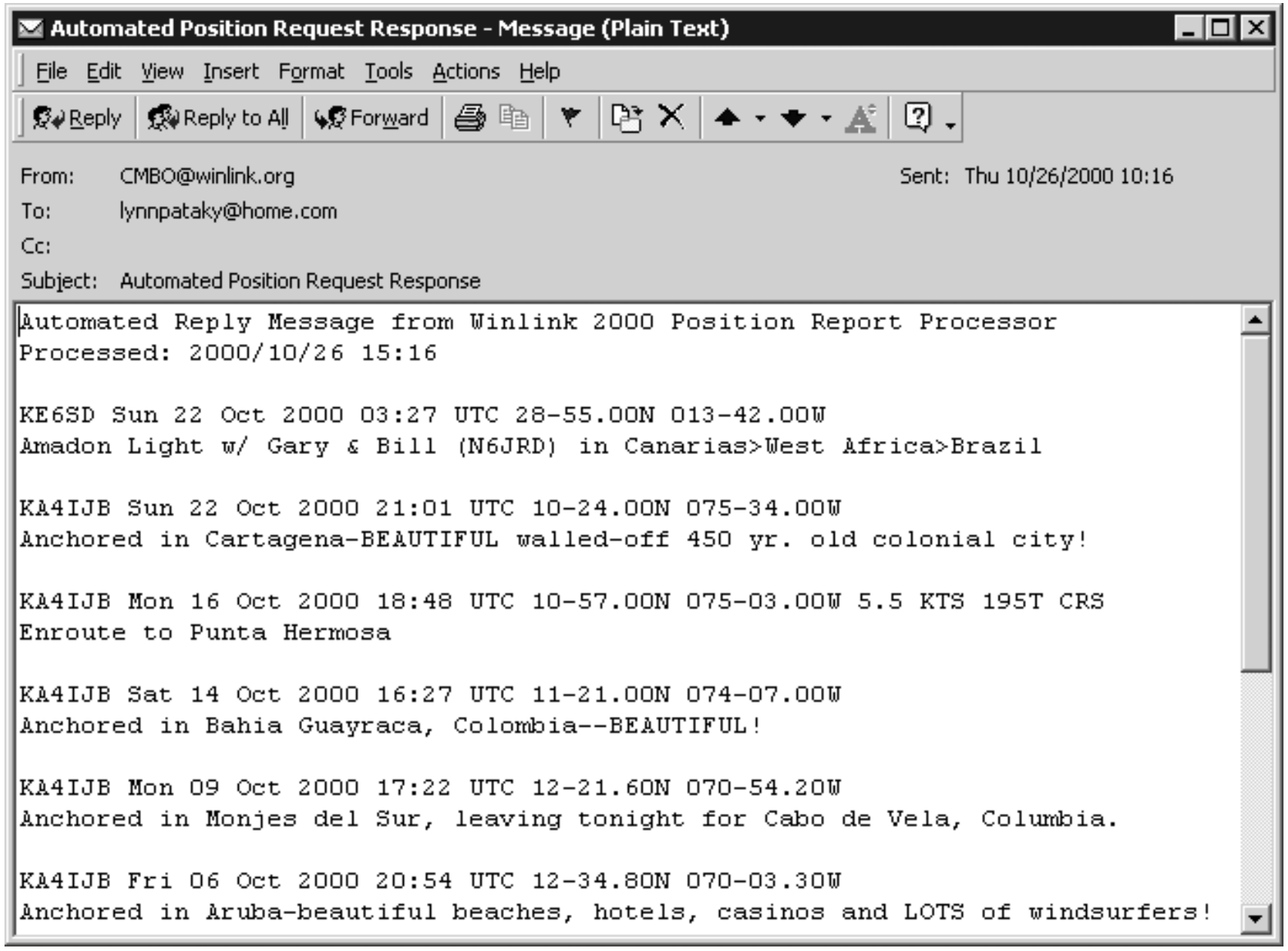
Reduced data transmission time (encoding)
Easily customized by user:

- **Area and scale**
- **Data and how presented**
- **Personal Notes**

Another WinLink 2000 **Feature**

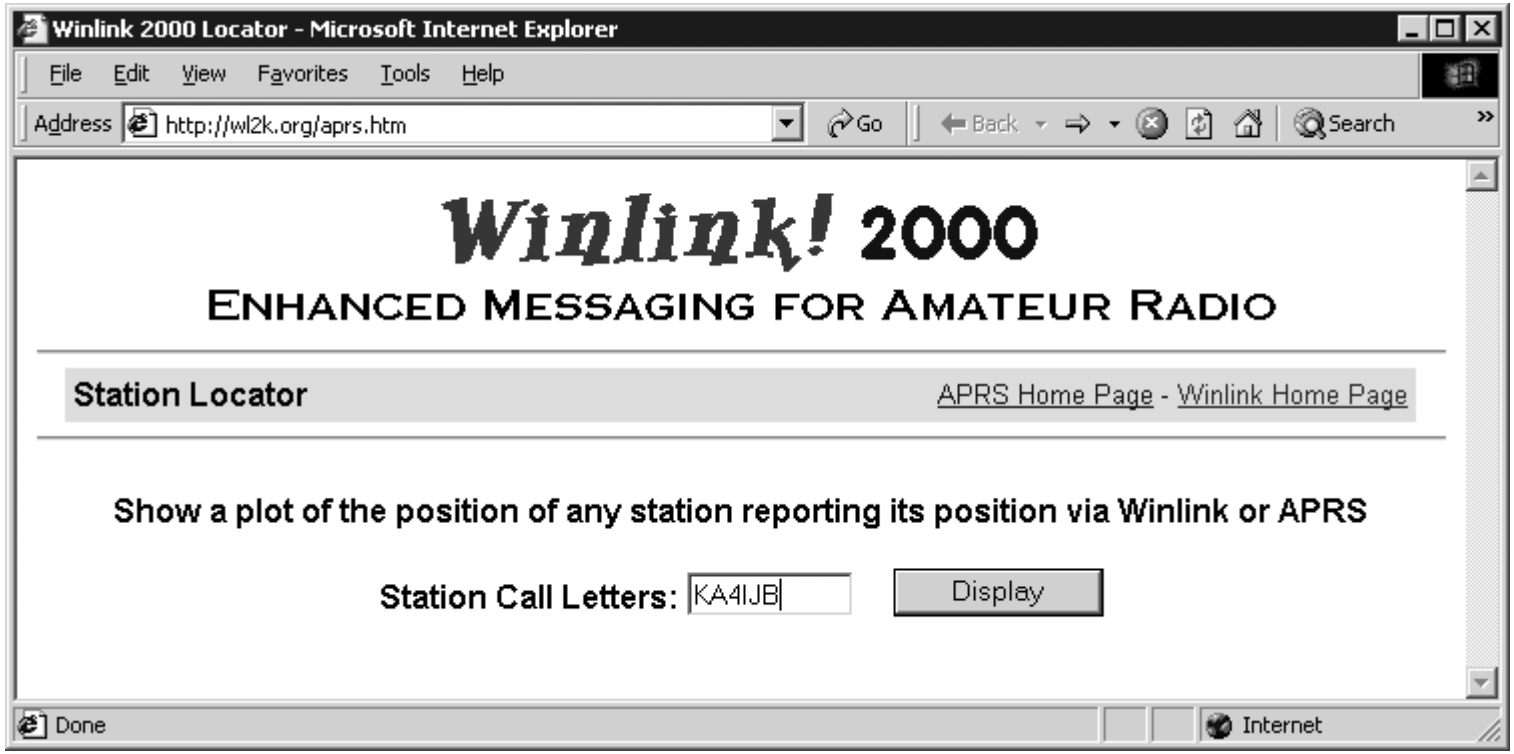
- ***Position Reporting*** to your Family Via E-mail, or APRS Maps via the WEB.
  - Your recipients may send an E-mail for a multiple station request.
  - Your recipients may send an E-mail for the most recent, some, or all of your Position Reports.
  - Your recipients may locate your last report for up to 10 days on the Automatic Position Reporting System (APRS). Over 40 nearby stations are also listed upon demand. Safety first!
  - Instructions containing the options for locating you via a position report are on the WEB:
    - http://winlink.org/wl2k.
    - http://winlink.org/k4cjx.

What Your Recipients See (E-mail)



What Your Recipients See (E-mail)

What Your Recipients See (APRS)



WinLink: Current Location of KA4IJB - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://www.findu.com/cgi-bin/winlink.cgi?KA4IJB Go Back

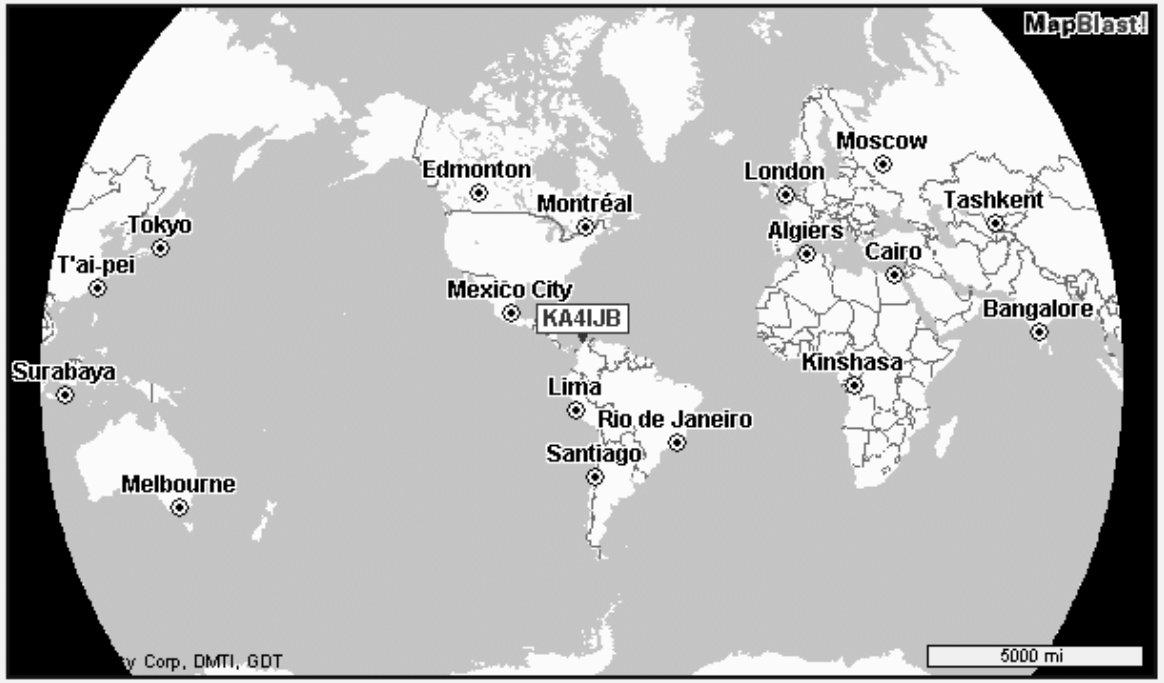
WinLink: Position of KA4IJB

Report received 3 days 18 hours 14 minutes 25 seconds ago

Comments: Winlink 2000/10/22 21:01 10-24.00N 075-34.00W Anchored in Cartagena-BEAUTIFUL walled-off 450 yr. old colonial city!

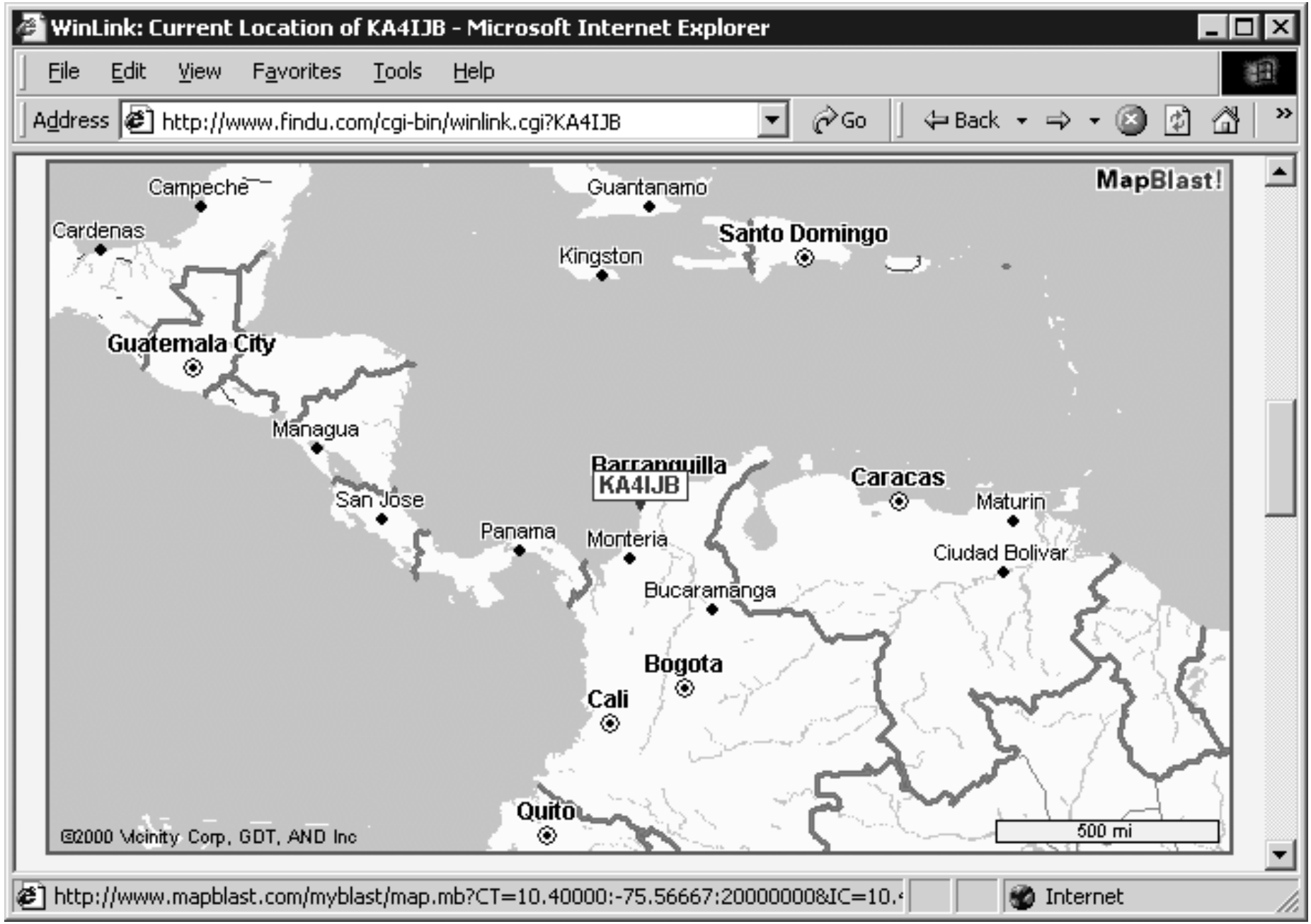
To send a **short** email to this station, click here.

The system uses positions reported by the WinLink amateur radio network and stored on the findu.com APRS database. Questions and comments on the WinLink system should be directed to K4CJX, while questions about the findu.com system should be directed to K4HG.

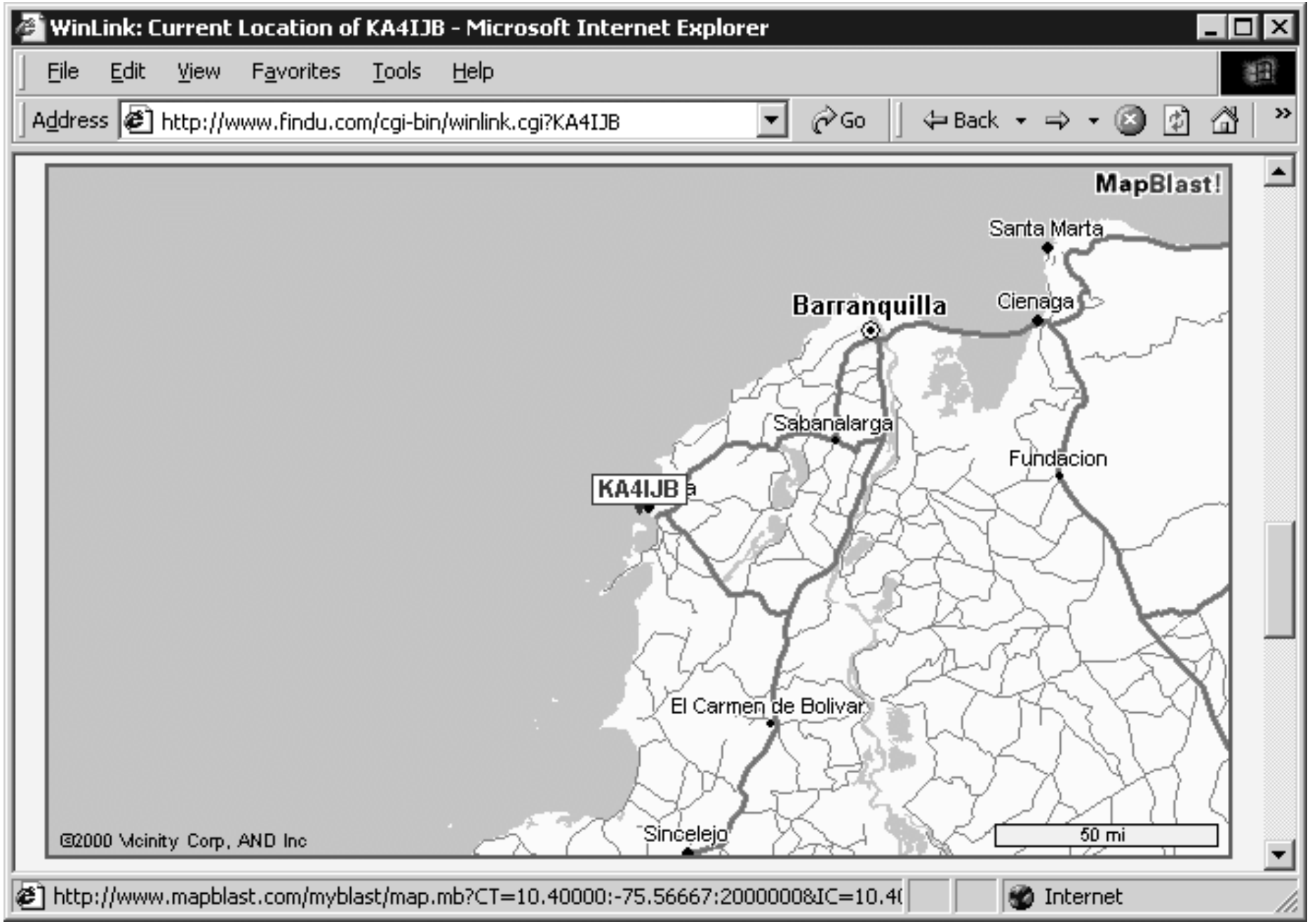


http://www.mapblast.com/myblast/map.mb?CT=10.40000:-75.56667:200000000&IC=10 Internet

APRS - 500 Mile view.



APRS - 50 Mile view. (Smallest View is 250 Feet.)



Another WinLink 2000 Feature

- Text based E-mail with attachments.
  - Graphic files (JPG, TIF, GIF, BMP, WMO, etc..).
  - Text files.
  - Binary files (EXE, XLS, DOC, RTF, etc.).
- With the proper setting of ***AirMail***, ***WinLink 2000*** special "B2" protocol (developed by Hans Kessler, N8PGR), compresses transmissions from 33 to 45 Percent.
- File attachment are yet another reason to use Pactor II.

Another WinLink 2000 **Feature**

- Uses ***AirMail*** 3.x Client Software with expanded functionality.
  - *AirMail* may be shared with some Commercial Applications, providing a safer communications system.
- For Global Amateur service, there is No fee for the use of the ***AirMail*** Client Software nor the ***WinLink 2000*** Services.

Winlink! 2000

Where do we go from here?
(What do you want!)

Questions?

Winlink! 2000 & *AirMail*

- Bottom Line: Amateur Radio has once again proven itself by creating the most sophisticated radio email system on the Planet.
  - By providing cutting-edge enabling technology that is readily available and easy to use.
  - By aiding immeasurably toward the safety and well-being of the maritime user, World-wide.
  - By melting Global differences in promoting Global cooperation among *ALL* Amateur Radio, World-Wide.
  - By providing World-wide incentive to those who travel to become Amateur Radio Operators.