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Marine HF/SSB radio with DSC

A Communications Strategy
for
Yacht Races, Rallies & Cruising

This strategy has developed in response to requests for Brunei Bay Radio to provide voice skeds for yacht rallies, races and cruising in Brunei Bay Radio's service area; SE Asia, the NW Pacific and eastern/northern Indian Ocean, including the north and west coasts of Australia. Like 99% of the popular cruising, racing and rally areas of the world, Brunei Bay Radio's service area is similar to most of the Atlantic, Pacific, Arctic, Antarctic and Indian oceans in that it is way beyond that very small part of the world where 24/7, professional, immediate response, search and rescue and sophisticated VHF marine radio facilities exist; ie: around Europe, the UK and some parts of North America.

The background information for this strategy, in particular the important and unique aspects of modern marine HF/SSB radio with DSC, which satellite communication systems cannot possibly replicate, are addressed in a separate document - HF-SSB DSC-for Yacht Race, Rally & Cruise - which should be read in combination with this strategy. A third document – HF-SSB DSC - Function – gives more details of how the modern marine HF/SSB radio with DSC operates, and how this facilitates on-board communications, including each vessel's role as a contactable and nearby resource to assist other mariners. A fourth document – HF-SSB DSC-Easy Installation – describes technologies and techniques which make installing a modern marine HF/SSB radio with DSC quick, convenient and successful.

This strategy is designed to:

1. Address the need for reliable Distress, Urgency and General communications for yachts in a race, rally or just cruising.

2. Address the obligation for yacht crews – whether racing, in a rally or cruising independently - to comply with their radio operator license and vessel radio license requirements to maintain a 24/7 watch for Distress and Urgency communications from other mariners. This principle is the foundation of the Maritime Safety Communications network. All vessels listening for Distress calls from any other mariner - recreational, commercial, marine tourism or government – and responding to those calls with advice, equipment, a tow or other assistance to help resolve a problem, and as a last resort, rescue.

3. Address the obligation for yacht race participants to provide assistance to any mariner in danger – whether in the same race, or any other commercial, government, marine tourism or recreational vessel – as required by the Racing Rules of Sailing's very first rule, Fundamental Rule 1.1 – Helping those in Danger.

4. Address the radio communication requirements specified in the Special Regulations for Yacht Racing ("And Recommended for Cruising Boats, Including Monohulls, Multihulls and Trailables") issued by Yachting Australia. The Yachting Australia Special Regulations are more detailed, specific and designed for racing and cruising in this larger, emptier side of the world, beyond that 1% of the world's yacht cruising and racing areas where 24/7, immediate response, professional, search and rescue services are instantly accessible via an integrated and comprehensive VHF marine radio network based upon long-range, mountain-top relays and repeaters; ie, around limited parts of North America, the UK and Europe.

5. Facilitate the traditional practice of mutual self-help which has always existed amongst mariners at sea. Numerous recent incidents confirm that despite the amazing technologies available – such as satellite communications – the fastest response and most effective assistance is likely to be another yacht, commercial, marine tourism, cruise ship or government vessel on-passage nearby, anchored on the other side of the tropical island, surveying 200nm away, fishing just over the horizon, diving the nearby offshore wreck or reef, surfing the break on a deserted National Park island offshore, or patrolling the international border 50nm away.

   In these bigger, emptier areas of the world's oceans – where RNLI lifeboats, Coast Guard cutters and rescue helicopters do not exist – it is regularly demonstrated that direct contact with an unknown but nearby vessel is far more likely to bring timely advice, assistance or rescue than a technologically amazing satphone call to the MRCC hundreds or thousands of miles away.

6. Follow the advice of the Australian Maritime Safety Authority (which operates MRCC Australia), and co-ordinates search and rescue responses in an extensive area of the Pacific, Indian and Antarctic oceans. Based in their considerable experience, AMSA states:

   "*While satellites and satellite-compatible distress beacons have significantly improved the effectiveness of SAR operations, the system is NOT a substitute for carrying appropriate marine or aviation radio.'' (AMSA Website) And that:*

   Depending on the circumstances, your initial distress alert should still be made by radio if possible. You should activate your distress beacon only if contact cannot be made by any other means or when told to do so by a rescue authority.

   MRCC Australia also states clearly that, like 99% of the world's cruising and racing areas, "*The arrangements for search and rescue (SAR) in Australia have been influenced by the physical size of the island continent, the large size of the search and rescue region, Australia's relatively small population and the nature of governmental processes. Dedicated SAR facilities are limited in Australia. When necessary, other facilities are diverted from their primary function by arrangement or request."*

The basis for this communications strategy:

1. The very first rule in the Racing Rules of Sailing - Fundamental Rule 1.1: Helping Those in Danger - requires that "A boat or competitor shall give all possible help to any person or vessel in danger." To know that "any vessel or person is in danger" when beyond VHF radio range, requires yachts to maintain an effective 24/7 watch on a marine HF/SSB radio which can be contacted by fellow event participants, and any other mariner – commercial, government, marine tourism or recreational.

1.2 VHF and HF/SSB radio training courses for operator licenses and the license for ship station call-signs highlight the obligation of crews to maintain a watch on the marine emergency frequencies for distress calls broadcast from all other mariners. This requirement underpins the effective operation of the mutual support and assistance network at sea. Marine radio is still the principle means by which mariners can quickly broadcast – free of charge – a request for assistance, and the principle means for other mariners to immediately know about "any person or vessel in danger". Each vessel and crew must play their part – maintaining a 24/7 watch for Distress calls - for the system to be effective.

1.3 The practical reality is that very few crews on recreational vessels are willing to maintain 24/7 monitoring of the open voice Distress and Calling frequencies, because of the intrusive background noise that occurs, and the conversations and calling broadcast by other vessels. Apart from disrupting many of the values we seek in recreational boating – such as the tranquillity of the sea, a beautiful anchorage and escaping the incessant phones, emails and instant messages of modern life – the constant noise from the speaker of a HF/SSB radio scanning the voice distress frequencies can disrupt on-board crew communication, prevent sleep for off-watch crew, and disturb concentration at the nav table.

1.4 Inevitably, yacht crews choose to turn down the HF/SSB radio's volume or switch off the radio. By doing so, a yacht crew is no longer following the established obligation to monitor for emergency calls from other mariners, and to provide assistance. This action also makes it very difficult to comply with Fundamental Rule 1.1, of the Racing Rules of Sailing, because - without knowing about a distress situation - it's rather difficult to "give all possible help to any person or vessel in danger".

1.5 The modern marine HF/SSB radio equipped with DSC (Digital Select Calling) overcomes these problems. It silently (with the radio speaker muted) scans simultaneously for DSC Distress/Urgency alarms on the DSC Distress calling frequencies, and for MMSI/DSC General calls for the specific yacht on the DSC General calling frequencies.

By fitting a modern HF/SSB radio with DSC, a yacht crew can comfortably – ie; without the noise and distraction of an old style HF/SSB radio with open speaker - satisfy the marine radio operator and ship station license obligations to monitor for Distress and Urgency calls, and ensure they are contactable and thereby able to implement Fundamental Rule 1.1 of the Racing Rules of Sailing – Helping Those in Danger. The effectiveness of this DSC system has already been well-proven by commercial vessels.

1.6 Yachts without a marine HF/SSB radio with DSC, cannot receive DSC Distress and Urgency alarms from the commercial, marine tourism and government vessels which are compelled to fit them; the same vessels which the MRCC will call upon to assist a yacht in distress. Nor can they receive DSC Distress or Urgency alarms from other recreational vessels already equipped with a DSC HF/SSB radio.

1.7 Yachts without a HF/SSB radio with DSC are very unlikely to listen 24/7 for voice Distress calls from other yachts or mariners without a DSC radio; it's too noisy and distracting. The DSC equipped marine HF/SSB radio helps crews to satisfy their reciprocal obligation to ***give*** assistance to others. And significantly increases the potential to ***get*** nearby and timely assistance when they need it.

2. With regard to Yachting Australia's Special Regulations for the provision of radio comms:

2.1. Yachting Australia's Special Regulations have been specifically developed for racing yachts - "And Recommended for Cruising Boats" - operating along coastlines without a VHF (DSC) service (eg: the USA and Australia have officially declared they have no VHF GMDSS/DSC service), and in sea areas without immediate response, 24/7, professional search and rescue services (ie: no RNLI or Coast Guard) covering inshore and offshore areas; ie: for 99% of racing & cruising areas in the world.

2.2. Paragraph 3.25.1 of Yachting Australia's latest (July 2013 to June 2016) Special Regulations requires a marine transceiver be fitted for every Category of yacht race. In addition to the traditional requirement of a HF/SSB radio for Categroy 1 races, it is now also required for Category 2 races. "It is recommended that all HF transceivers be DSC capable". And, from "1 July 2013, all new HF transceivers shall be DSC capable."

VHF comms is acceptable where "shore based VHF facilities exist for the entire length of the course". VHF radios should also be "DSC capable" and from "1st July 2013 all new permanently installed VHF transceivers shall be DSC capable".

2.3 Paragraph 3.25.8 states "A race committee shall arrange for constant monitoring of the nominated race frequency/ies while any race is in progress and for a reasonable period prior to and after the race. Details shall be provided in the Sailing Instructions."

2.4 Paragraph 3.25.1 (d) advises "A satellite phone is recommended. The satellite phone should have coverage of the race area, and be connected to the main power or have a spare battery."

Of significance is the fact the satellite phone is recommended only – not required – and it cannot be used as a substitute for the marine HF/SSB radio. Satphone communication does not have the essential characteristics of a modern marine HF/SSB radio for Distress or General comms during events, passages or cruising:

- Distress communication via HF/SSB radio is free of charge; so everyone can help each other without fear of the expense and without risk of communications being cut off – for a lack of satphone credit - during an incident.

- Distress and General communication is broadcast simultaneously by HF/SSB radio; so everyone receives the identical information at the same time. And everyone involved can determine how best they can contribute to the needs of the General or Distress situation.

- One DSC Distress alarm can simultaneously alert all other yachts in the event, any other nearby vessels – commercial, recreational, marine tourism or government – and MRCCs. The satphone requires hundreds or thousands of expensive individual calls to achieve the same result.

- It is not necessary for crews to keep track of which other vessels are nearby to them, nor to update themselves with the satphone number of those vessels; so they know which to call first in an emergency. A single DSC Distress alarm will alert all vessels monitoring 24/7 for DSC Distress calls. The alerted vessels can determine if they are closest or best suited to assist.

- It is not necessary for a crew in Distress to know which other nearby vessel has the people, equipment, size or other capabilities to provide the type of assistance they need for a particular Distress situation; so they can phone the correct vessel to ask for help. A single DSC Distress alarm will alert all vessels monitoring 24/7 for calls. Crews and MRCC staff who

receive the DSC Distress alarm and subsequent voice description of the situation, will use their intelligence and judgement to make those decisions, so the crew in danger can concentrate on dealing with their immediate and most critical tasks.

2.5 These HF/SSB radio communication requirements bring Yachting Australia's Special Regulations into line with the Marine and Communication authority requirements in Australia the UK and Europe, where the minimum Marine and Communications authority standard ICOM radio accepted for recreational vessel installation is the M801(E). According to a UK based installer and RYA GMDSSS/DSC HF/SSB trainer (Bob Smith - YachtCom) - who also uses the M801(E) in his own yacht – this is because experience shows the M801(E) to be very durable, waterproof and therefore dependable in an emergency.

3. With regard to operational advantages of modern, DSC equipped marine HF/SSB radios:

3.1 Modern marine HF/SSB radios with DSC a pre-installed with the complete ITU Marine HF/SSB band-plan. This ensures event organisers and yacht owners/skippers can be confident that voice frequencies/ channels chosen for an event from the ITU Maritime Service will be available to every participating yacht.

3.2 Modern marine HF/SSB radios with DSC also have a section for user programmable frequencies. This allows HF/SSB radio *email* frequencies to be added to the radio. This facilitates the use of HF/SSB radio email as part of a race, rally or cruising communications strategy and permits convenient compliance with this particular Special Regulation when racing. (Note: The most common and wide ranging HF/SSB radio email service for yachts – ie: SailMail - can also directly control the radio's frequency via software and the Pactor controller, eliminating the need to pre-program the frequencies into the radio, and allowing easy changes when additional SailMail stations are established, or if frequencies at existing SailMail stations change or increase.)

3.3 Most MRCCs around the world, including the Pacific and Indian Oceans, SE Asia and Australia (see http://www.bruneibay.net/bbradio/bbremergcontactlist.htm for details) have now changed to DSC only monitoring for Distress, Urgency and General calls. Only by using a marine HF/SSB radio equipped with DSC, will race, rally and cruising yachts be able to initiate radio contact with most MRCCs.

3.4 Voice calls - MAYDAY, PAN-PAN or General - on the HF/SSB marine distress/calling voice frequencies are very unlikely to get a response, either from MRCCs or from nearby commercial, government or marine tourism vessels. Modern maritime communication regulations allow larger vessels and MRCCs to maintain a DSC watch only; not a voice watch for MAYDAY and PAN-PAN calls. And very few racing or cruising yachts maintain a 24/7 voice watch with radios scanning the open 2, 4, 6, 8, 12 & 16 Meg distress/calling frequencies for MAYDAY or PAN-PAN calls from other mariners.

3.5 A marine HF/SSB with DSC mutes the radio's speaker when in DSC watch mode – scanning for DSC Distress alarms or General MMSI/DSC calls – so the crew is not disturbed by background noise or other calls.

This muted speaker feature in DSC watch mode makes maintaining a 24/7 watch for Distress (ie DSC alarms) or General (ie MMSI calls) calls from other vessels very convenient. It eliminates the usual response by crews using a radio without DSC, to turn down the speaker volume or turn off the radio; causing any MAYDAY or PAN-PAN voice calls to go unheard.

3.6 With a modern DSC equipped HF/SSB radio, the **DSC Distress Receiver** in the radio – not the crew – is quietly and constantly monitoring for DSC Distress calls; only disturbing the crew when a DSC alarm call is received.

Therefore, it's now easy and realistic for yachts to quietly monitor for *Distress, Urgent or Safety calls* from each other, MRCCs and any other mariners – commercial, government, marine tourism or recreational – 24/7, simply by maintaining their DSC equipped marine H/SSB radio in standby mode; scanning for DSC alarms. This satisfies marine radio operator and vessel radio licence obligations, and facilitates Fundamental Rule 1.1 of the Racing Rules of Sailing – Helping Those in Danger.

3.7 The **DSC General Receiver** in the modern HF/SSB radio - not the crew – simultaneously maintains a silent 24/7 watch for *General MMSI calls*. These can be specific MMSI calls for a yacht (like a phone call to the yacht's unique MMSI number), or Group Calls for a race or rally fleet, or a self-help group of cruising yachts. All yacht radios in the group – or an event shore station – can be programmed with the group call MMSI, to immediately alert each member of the group.

3.8 A significant advantage of sending **DSC Distress alarms** is that any nearby commercial, marine tourism, cruise ship or government vessel – which now mostly fit DSC equipped HF/SSB radios and maintain a 24/7 watch for DSC alarms only - will also be alerted. Therefore, the reliability of attracting nearby attention and fast response assistance, advice or resources is greatly increased. Many on-board problems can be solved with advice, equipment or a tow from a nearby vessel; eliminating the need to abandon a vessel.

3.9 Another significant advantage of modern DSC equipped HF/SSB radios is the ability to connect GPS data, so the yacht's position is automatically and correctly transmitted with any Distress alarm. This can be a great saving in search and rescue resources, and facilitate much faster arrival of assistance.

4. Complying with the requirement to "maintain constant radio monitoring" of event frequencies.

4.1 Yachting Australia's past and recent (para 3.25.8) Special Regulations state "A race committee shall arrange for constant radio monitoring of the nominated race frequency/ies while any race is in progress and for a reasonable period prior to and after the race. Details shall be provided in the Sailing Instructions."

4.2 Many race, rally and cruise-in-company events in regions beyond the range of effective marine VHF (with DSC) networks will require HF/SSB radio communications to provide communications – for Distress or General traffic - to all event participants over the entire event route. VHF marine radio range will not be sufficient to link all participants with event organisers.

Event organisers – race, rally or cruise-in-company - commonly do not have their own HF/SSB radio equipment to provide effective communications over the entire event route. This being the case, event organisers need to find alternate options to satisfy the requirement for effective and reliable communication – for Distress and General communications - and "constant monitoring of the nominated race frequency/ies"

Considering all these factors, an effective communications strategy will:

1. Nominate the HF/SSB DSC Distress calling frequencies and the associated maritime HF/SSB distress voice frequencies - for safety, urgent and distress calls. Most MRCCs around the world already maintain *constant monitoring* of these frequencies for DSC alarms. A few (eg: New Zealand) still monitor for MAYDAY and PAN-PAN calls on the official voice distress/calling frequencies. (See our Brunei Bay Radio website information on MRCC contact details for more information.)

Other yachts in the same event – plus recreational and commercial vessels – which are nearby and able to give timely advice, equipment or assistance - will also be maintaining *constant monitoring* of the DSC Distress calling frequencies. This ability to simultaneously alert MRCCs and nearby vessels using a single DSC alarm maximises the probability of an effective and timely response to a Distress situation.

Whichever option – voice MAYDAY or PAN-PAN call, or DSC alarm – is used to initiate contact with an MRCC or nearby vessel, the ongoing communication to manage the Distress or Urgency situation should take place on the official marine voice Distress/Calling frequencies. These need to be nominated for the event. They will be *constantly monitored* by all involved – MRCCs or nearby vessels – during a Distress incident.

2. Nominate the HF/SSB email frequencies used by the not-for-profit SailMail Association stations which service the race, rally or cruise route - for general HF/SSB communications, via email - with the Race Committee or event organisers. Existing SailMail stations already maintain *constant monitoring* of their HF/SSB frequencies for email traffic.

With an effective marine HF/SSB (DSC) radio already installed, it is a relatively minor additional expense and installation task to add SailMail – email via the existing HF/SSB radio – for convenient, low-cost and reliable email communications; including numerous free services – eg: YOTREPS position reports, GRIB weather charts, METAREA and coastal forecasts - suited to small-craft operations.

2.1 It is well known that data/email transmissions via HF/SSB will get through accurately even if atmospheric conditions and/or on-board noise, activity etc make effective voice communication difficult.

2.2 Emails distributed directly to all race or rally participants ensure everyone receives identical information. Email direct to each participant eliminates errors that commonly occur with voice skeds, or with emails to one participant relayed by voice to others.

2.3 SailMail communication allows crews to send position reports and other general communication with the race committee when on-board duties, sail changes, squalls and navigational priorities permit.

2.4 SailMail enables event managers to simultaneously broadcast identical email updates and information to all participants from any convenient office or PC/notebook with internet access. It is not necessary for race or event managers to be in a specific location – eg: at a HF/SSB radio for a voice sked – or to move themselves from one radio location to another during a passage event, or to maintain a 24/7 schedule with a race official "constant monitoring" the nominated race frequencies. The SailMail stations do it for event organisers.

2.5 SailMail also facilitates private email communication between yachts in an event, and between yachts and event organisers.

2.6 SailMail also ensures all participants have reliable access to identical official weather publications (METAREA and coastal forecasts), GRIB weather charts, and regularly updated storm warnings, at no additional charge.

2.7 SailMail does not charge for each email message or by connection time, but by a single, annual, membership fee. Therefore cost cannot become a factor that limits some event participants access to information and services.

3. Nominate the HF/SSB MMSI/DSC General calling frequencies specified by both Cmdr (US Navy Ret) Terry Sparks and Bob Smith (Yachtcom - UK) in their revised frequency scanning plan for the these radios' DSC General receiver. The race or rally yachts can themselves provide *constant monitoring* of these frequencies for General DSC/MMSI calls and subsequent voice traffic amongst the participants, simply by maintaining a 24/7 watch using their marine HF/SSB radios with DSC.

This re-programming of the DSC General watch frequencies in ICOM M801(E) and M802(DSC) radios - for longer distance yacht-to-yacht communications - has been in successful operation for some years in the UK/Europe and in the USA, based on the (co-incidentally identical) strategy of both Terry Sparks (see www.made-simplefor-cruisers.com) and Bob Smith (see www.yachtcom.co.uk).

3.1 Making this change to the General DSC watch frequencies enables longer range yacht-to-yacht DSC/MMSI calls. Yachts can maintain a constant watch for General DSC calls from other race, rally or cruise-in-company participants, utilising the quiet/muted functionality of the DSC radio. There is no need to establish listening periods when crews standby for voice calls from other competitors, and no need for competitors to wait for a sked time if they need urgent advice. The DSC equipped radio (quietly) monitors its General receiver 24/7 on behalf of the crew, and only switches on the speaker and "rings" when their specific MMSI ID is received.

The details of this adaptation and the technique for making the changes in an ICOM HF/SSB with DSC radio are shown in the accompanying documents, or can be found on the Brunei Bay Radio website - http://www.bruneibay.net/bbradio/bbrmarinecomms.htm - at the bottom of that page.

3.2 Making this adaptation also creates the opportunity to establish a unique DSC Group Calling facility for the event participants. Any yacht can then initiate a DSC Group Call (via the radio's General receiver, not the Distress receiver) that will un-mute all participants' radios. This will allow any participant to quickly and easily contact all other participants for advice, assistance and mutual support.

A Group Call can also be used to initiate routine skeds between the event yachts. Here is the description adapted from Terry Sparks:

This group MMSI call would allow participants to contact others in a less than distress mode. To setup, all participants need to program into their DSC radio a group with the same MMSI number. The number just has to be unique and the easiest way to establish one is to take a real MMSI number, put a zero in front and move the other numbers right one place.

For example, with an MMSI of 366820740. The group UI to use could be 036682074

Using DSC Group Calling by race fleets is also recommended by Bob Smith (YachtCom- UK).

To implement this communication strategy, participating yachts will:

1. Carry a suitable marine HF/SSB radio equipped with DSC – for distress calling – which is also capable of full-power operation for email/data communications; eg: ICOM M802(DSC) or ICOM M801(E).

2. Maintain a 24/7 watch on their DSC equipped HF/SSB radio for DSC **Distress** calls from the event participants and any other mariners. (ie: to comply with radio licensing obligations and to facilitate Fundamental Rule 1.1 – Helping Those in Danger.) Utilising the DSC radio's muted speaker feature allows all yachts to have their radio quietly monitor 24/7 for Distress calls, without the noise of an open speaker.

3. Maintain a 24/7 watch on the DSC equipped HF/SSB radio for **General** DSC/MMSI calls from individual race yachts or as a group call, and subsequent voice communication with other race participants. Utilising the DSC radio's muted speaker feature allows all competitors to have their radio quietly monitor 24/7 for General calls, without the noise of an open speaker.

4. Fit a Pactor controller and subscribe to SailMail, for general email communications direct with the Race Committee or event organisers. This will be much cheaper than using satellite options for email and capitalises on the capabilities of the existing, required, HF/SSB radio, without getting into another – less versatile – technology.

5. Subscribe to emailed tropical storm warnings and regularly download METAREA forecasts and GRIB weather charts via SailMail, for safety related weather information. These weather products and the mail server to create them are included with a membership of the not-for-profit SailMail Association for no additional charge. Along with position reporting, monitoring a shore email address, mailmerge (ie: send one message to any number of recipients) and numerous other money-saving SailMail Association features.

Based on this communications strategy, the frequencies to be specified in the Sailing Instructions, rally or cruise-in-company information would be:

1. Maritime voice Distress and calling frequencies
2. Maritime DSC Distress calling frequencies
3. Maritime MMSI/DSC General call frequencies (ref: Terry Sparks and Bob Smith)
4. The calling and working frequencies of any Limited Coast Station in range of the event.
5. Primary and alternative SailMail frequencies for the event area.

NOTES:

A. This above frequency list seems long but it is easily achieved as any properly installed marine HF radio will be supplied with all voice and DSC frequencies pre-programmed. SailMail frequencies are listed on the website - www.sailmail.com - and can be programmed into the optional user programmable frequencies in most modern radios, eg; ICOM M802(DSC) or M801(E).

B. Most Pactor controllers used for SailMail can directly control the frequency of popular radios – eg: ICOM M802(DSC) and ICOM M801(E) - so frequency is selected in the SailMail software, not at the radio. This further simplifies installation and setup.

C. A SailMail membership includes access to METAREA and coastal forecasts, and GRIB weather charts with predictions to 10 days in advance, for no additional charge.

D. The Pactor controller for SailMail can also be used to download weather fax and NAVTEX broadcasts, where these are available. The software is available free with a SailMail membership.

E. A satphone - with supply of dry cell batteries – can be a useful (but expensive to operate) backup communication device in case of failure of the on-board electricity generating system, failure of the HF/SSB radio system or in the case of transferring to a life-raft.

F. Most common satphones (eg; Iridium, Thuraya) can be used as a substitute email carrier in conjunction with a SailMail memberhsip. They function in combination with the AirMail software, which is designed specifically for optimisation of email communication via low bandwidth - ie: HF/SSB radio and satphone - services. SailMail's message management and compression will significantly reduce the satellite phone email connection time and therefore the cost.

G. Fundamental Rule 1.1 of the Racing Rules of Sailing – Helping Those in Danger - states "A boat or competitor shall give all possible help to any person or vessel in danger." To lend assistance to another vessel or person in danger - race participant or nearby commercial, marine tourism, government or recreational vessel – first requires knowing about the situation. The official between-vessel maritime distress communications service in open water is based upon a HF/SSB radio with DSC. Race and rally yachts carrying a modern marine HF/SSB radio with DSC can conveniently and easily satisfy the need to be accessible for a vessel or person in danger to communicate with them to advise of a problem. Without knowing about "a person or vessel in danger", it is not possible to "give all possible help".

H. It is not possible to use a satphone as a legitimate substitute for HF/SSB radio Distress and General calling because 1. the satphone calls are not free and require credit in an account, which can be disconnected if the credit expires, 2. the satphone cannot broadcast communication to simultaneously advise or alert all listeners, 3. the yacht in distress will not know the satphone numbers of all the vessels that might be in the vicinity or over the horizon and able to assist, 4. the crew on a yacht in distress may not have time or battery power to make dozens, hundreds or thousands of satphone calls to find another vessel that can help and 5. a satphone does not make the yacht easily, quickly and conveniently contactable by others in distress who may need their assistance.

I. Because a marine HF/SSB radio is necessary to participate and take a responsible role in the maritime safety network for Distress and General communications, it makes financial sense to use that same radio equipment as the on-board mechanism for sending and receiving email with event organisers - who are not able to sit beside a suitable HF/SSB radio 24/7 during the event. SailMail stations *constantly monitor* their frequencies.

I. The not-for-profit SailMail Association stations have overlapping coverage areas, based on their location and frequencies. This provides duplication and system redundancy.

J. MRCCs around the world have overlapping HF/SSB radio ranges, so DSC alarms are likely to reach more than one MRCC. This provides duplication and system redundancy.

K. DSC alarms are likely to reach multiple vessels, which could be nearby (eg: within 20nm) or distant (within a few thousand nm), thereby guaranteeing that a DSC alarm sent by a vessel in Distress will be heard. This provides duplication and system redundancy.

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