Report on Equipment for Field Of Play Management and Provision of Vessels Required for London 2012 Olympic and Paralympic Sailing Competitions

The aim of this report is to provide information on the type of equipment used, reasons for selection plus feedback on how fit for purpose items were. Also included are the references to the input of other stakeholders on equipment selection and recommendations for the future where appropriate.
The report is divided by role and function. All vessels and equipment used were selected for either their requirement to meet a predetermined specification dictated by LOCOG, ISAF, IFDS, or other stakeholders and also to be fit for purpose when taking into consideration climate and geographical variances.
All vessels were coded as per the UK Maritime Coastal Agency requirements, specific to the use of each vessel, with appropriate safety equipment on board as prescribed by that use. This report does not list all of the equipment for coding and only refers to equipment on boats in the context of race management or other official function of the vessel where relevant.
The annual Sail for Gold Regatta had provided opportunity for feedback from race teams prior to sourcing the initial equipment provided by LOCOG for the 2011 Test Event and a Participation Agreement in place with the Royal Yachting Association (RYA), the sports UK Governing Body, meant that equipment could be loaned to LOCOG where exact specifications were delayed subject to confirmation at the Test Event.

Communications Afloat and Ashore
LOCOG use a Tetra radio communication system provided by Airwave. The system provided secure communications, the opportunity to create a large number of different channels (talk groups) within a fleet map and the quality of signal and sound far was superior to the VHF radios normally used.
The system was set up so that each race group had dedicated channels and other race management functions were also allocated their own channels. It was simple to change channels when needing to speak to other talk groups.
A limited number of radios were issued with additional channels that could not be listened into by other talk groups and these were used for communication between senior management involved in the delivery of the Sailing Competitions. They were also used by race officers at each end of the start line when recording boats over at the start.
A VHF system of communication was also in place to comply with Maritime Law and cater for those who did not have access to the Race Management Tetra radios. This included Press boats, VIP and Coach Boats. Duplex channels were used for these groups with repeater stations situated high on top of Portland. This meant only hand held radios were required afloat and ashore rather than needing operators located at fixed base stations.
All race courses were allocated a simplex maritime VHF channel as a backup, should there have been a failure in individual Tetra handsets or with the whole Tetra system. Tetra remained 100% reliable throughout both the Olympic and Paralympic Games.

Race Management
The 10 Sailing Medal Events at the Olympic Games were divided into 6 separate groups with each group having dedicated use of their allocated course area. The groupings were as follows:
Finn & Star, Laser & Laser Radial, Men's 470 & Woman's 470, RSX Men & RSX Women, 49er and Women's Match Racing. The latter 2 Events were sailed as individual events due to their unique nature.
Due to the need to maximise the use of the Nothe Course Area for the benefit of ticketed spectators, these groups could be further separated so that a single Event could be scheduled at specific times on this course using the Race Team whilst the other Event would wait ashore until both Events would be sailed together on another race course a little later in the day.
Each of the groups had a dedicated Race Management Team comprising of all the necessary people and equipment required to run racing for that group on any one of the 5

race areas available within the Competition Area. The aim was to maintain as much flexibility as possible with each Race Team being totally independent from one another.
The Games were scheduled over 2 weeks and this allowed for a generous competition period, whereby if on schedule it was only necessary to use a maximum of 4 course areas on a single day at peak times. This provided additional contingency for getting back on schedule without affecting other Events.
The Paralympic Events only required 2 Race Teams but they were equipped with the same equipment as per the Olympics with minor changes to flags.
Each Race Team had a dedicated Main Committee Start Boat, Pin End Start Boat, Mark Layers as required, Finish Committee Boat as required, Rescue Boats as required and an Omega Repeater Boat.

Start Boats

5 of the Start Boats were 11m Southcat's chosen for providing a wide platform relative to their length (11m LOA x 5.2m Beam) and also the opportunity to provide an additional higher platform above the wheelhouse, from which the Race Officers had good overall visibility. The Woman's Match Racing Team used a Beneteau ST34 which was more suited to this event, being smaller in both length and beam but still providing good all round visibility. They were all equipped as follows:

- **Signal Flags**. All Start boats carried a full set of International Code Flags plus Class flags and flags specifically listed in the Sailing Instructions (SI's) with spare flags where appropriate. Typical flag sizes were 900mm x 600mm and were screen printed on a woven nylon material. The material did not make a noise when flying and did not retain water. Flags were permanently attached to individual aluminium poles which were placed in short tubular holders when raised. This was in preference to using rope lanyards as it made deployment instant and far more positive. Flagpole length was typically 4-5m above the working deck of the boat.
  The Orange flag flown on the starting line post was 1.5m x 900mm, as were the Postponement, Individual Recall and General Recall Flags so that they could be seen from a greater distance and not be confused with other signals.
  The starting line post, 5m in length, was mounted on the upper deck and covered with a bright orange vinyl from the deck to just underneath the Orange flag to aid visibility. The Orange flag was hoisted using a lanyard as the start line post was permanently attached to the boat.
- **Sound Signals**. These were made by mounting 2x 24v Electronic horns on an aluminium pole 4m above the upper platform, with the horns pointing along the start line. Both horns operated off the same switch and relay, to sound simultaneously. This gave an adequate sound for all fleets. It would have been better to use horns driven by compressed air operating through an electronic valve as the sound would have been greater, although this presented problems in getting compressed air cylinders serviced, refilled and certified when operating within a secure site. This was further complicated by having to conform to regulatory obligations when using compressed air.
  The operator had a roving lead so could also act as time keeper or be in the vicinity of the time keeper depending on how the Team operated.
  The vessels own horn could act as a backup, plus hand held signal horns were also available if both other systems failed due to an electrical fault onboard.
- **Navigation Equipment**.
  - At least one chart plotter with appropriate electronic charts for Competition Area and surrounding waters.
  - Customised paper charts with specific course areas and the Competition Area clearly indicated. These were produced by the UK Hydrographical Office.
  - Class B AIS transmitter and receiver to indicate boats position in relation to other start vessels to reduce risk of overlapping course areas. A receiver was also set up in the Field of Play Management office ashore for monitoring purposes, on a PC based chart potter.
  - Battery Operated Hand Held GPS devices as back up to GPS on Chart Plotter.
  - Depth Sounder
  - VHF Radios
  - Hand bearing compasses
  - Binoculars
  - Laser Range Finders
  - Cellophane overlays for paper charts giving course orientation and leg length options for specific courses. Spreadsheets giving class specific data to assist with deciding leg lengths and number of laps in order to meet race target times.
- **Wind Measuring Equipment**. Brookes & Gatehouse plotters linked to Airmar PB200 Weather Stations were used on all start boats and Windward Mark Laying boats. The data was displayed on a rolling screen with the time sequence adjusted to individual

preference. Data was provided in real time as well as the rolling average for direction and strength for the time sequence selected. Accurate data was provided whether at anchor or drifting. Plotters were located on both the working deck and the upper platform of the start vessel, so could be seen by the Race Officers and Recorders.

- **Anchors and Ground Tackle**. All Start Boats carried a main anchor plus a spare and a kedge anchor. All had at least 30m of 10mm chain, followed by warp of sufficient length to anchor on any of the course areas where depth could vary from 5m to 25m depending on location. Additional length was also available to allow movement of the boat to reset the start line without having to relay the anchor when at the maximum depth.
  The Start boats also carried 'angels'. These were additional weights lowered down the anchor warp on a separate line, to reduce the angle of the anchor warp so that it could not catch on the keel or centreboard of a boat crossing the bow in close proximity.
- **Omega Countdown Clocks and Scoreboards.**As part of the results service all the 11m Southcat Start Boats had to carry 4 x 50kg electronic scoreboards mounted as high as possible in the forward sections of the boat. They were mounted in pairs, one on top of the other, with a pair facing outwards on either side of the boats centreline. Special framework had to be made to accommodate them and the 11m Southcat's were relatively straightforward to do this on as they are workboats. Alternative lighter clocks were provided for the Woman's Match Racing and n future it would be better if these clocks could be made available for all Start Boats due to their weight. The clocks provided a countdown feature from the Warning Signal and also gave an alternating display of the course type with number of laps and the bearing to the first mark.
  Back up traditional Course and Bearing Boards were on board every Start Boat in case of a failure of the clocks.
  Allowance also had to be made to locate 4 additional antennae that are required to receive timing and tracking signals from all over the race course and then transmit the information to shore. Adequate room is required to mount these antennae so that there is the required separation between them and any other existing antennae used for navigation, VHF radios etc.

LOCOG purchased the first start boat, to use as the prototype / development platform and this was purchased in 2009 for delivery in 2010. It was then used and worked up before the first Test Event in 2010. The remaining 4 South Cat Start Boats were rented ona long term contract to guarantee their use in both the final Test events and the Olympic Games. The systems and structures that were developed on the LOCOG boat were built as stand alone components that could be installed onto each of the rental boats to give the same platform and specification.

Pin End Start Boats

LOCOG had 5 Centre Console 8.5m Protector Ribs acting as Pin End Start Boats. The orange flagstaff was mounted well forward in the boat and again was a bright orange in colour. A grey sleeve could be hoisted to cover the flagstaff when in the proximity of a separate finish line, to avoid any confusion over identity.
All pin end boats carried 2 main anchors with chain and warp, plus 1 kedge anchor with chain and warp. They also carried 'Cherry' marks of various sizes to mark the end of an anchor line laid when acting as a starting pin end boat, so it could be retrieved easily if they were also performing a dual role as a finish pin end boat and having to move in to reduce the length of the line from one to another. This saved time, assuming there had not been a major change in wind direction, when it came to starting the next race.
'Angels' were again used to reduce the angle of the anchor warp so that it did not catch on competitor boats.
In addition to a VHF antenna all pin end boats had to have an extra antennae for transmitting the Omega positioning information and these required adequate spacing of at least a metre.

By using a fleet of 22 8.5 Mt Protectors we had the additional benefit of:

I. Extra toilets out on the race course as we strove to have more female volunteers and technical officials
II. Craft that were very seaworthy, but were essentially a rib if anyone hit them
III. Design specific as the C/console versions allow you to walk forward (essential in a pin end duty, while the Cabin Protectors give you more capacity and comfort with the additional cabin structure
IV. This fleet was essentially recycled event equipment - making a strong statement for the LOCOG sustainability aspect as well as budget relieving due to being second hand. They were bought from Americas Cup management after the last

Americas Cup in Valencia, where the organising authority sold off all of its assets (within this pool of boats there were also boats from the Alinghi Team)

V. *All Protectors were per sold in April 2012, based upon an anticipated standard post Games, with final payment and collection in September 2012 (a significant proportion of the original purchase price was realised by on selling the boats after the competition)*

Mark Laying Boats and Equipment

Change Marks with Black Stripes
7.8 Mt Mark Laying Boat

20 mark laying boats were used between the 6 race teams. They were all 7.8m Ribcraft, powered with 200HP Suzuki 4 stroke outboard engines. The consoles were mounted as far forward as possible but leaving room to move forward without difficulty. Only 2 seats were fitted, side by side, leaving the rest of space behind for storage of marks and ground tackle. 2 spare marks plus all ground tackles could easily be stored within the rib.
They had 7kg Danforth anchors plus chain and warp to anchor in any part of the Competition Area. Other equipment carried included:

- **Navigation and Wind Reading**. One mark laying boat of each race team carried a B&G plotter plus Airmar sensor. This was typically the windward mark boat. Other mark layers used a handheld device to measure wind speed and direction. Navigation was done with a Garmin hand held GPS unit and Laser range finders.
- **Sound Signals.** For course changes and signalling OCS, all boats carried a battery operated sound signal box that emitted 2 different pre programmed signals and also allowed for a manual override. They could be switched on and left allowing the crew to concentrate on other things rather than having to generate the sound signal manually. In hindsight the volume of these should be increased. Mark layers also carried small compressed air horns and small plastic trumpet horns as back up.
- **Visual Signals.** The mark laying boats were require to signal course changes as a race progressed and also display country codes of individual competitors that should leave the race course for being OCS at the start of the race. The visual signals were accompanied by sound signals as described above.
  It was decided to use magnetic boards and paper for displaying information. The boards were of sufficient size to display country codes of up to 8 countries at one time on A4 size magnetic paper, plus a class flag and X-ray or black flag. The reverse side of the board was used to display course changes using red & green with a plus or minus as required. If possible a new bearing was also displayed. The priority was to display a course change rather than OCS information, as all boats carried the equipment and could signal as directed by the Race Officer.
  Nylon flags were also carried for indicating Romeo or Oscar, Class flags and Flag M.
  All visual signals including the boards were hoisted on a flagstaff located behind the seats which also served as a towing post. The board could be orientated to face in whatever direction was required. All signal boards, flags etc were stored in a custom made bag that was interchangeable from one boat to another.
- **Omega Antenna.** The boats also had an extra antenna and battery pack to act as a repeater for the positional data coming of the marks and the competitor boats and relaying the signal back to the start boat. This was mounted on the top of the flagstaff as was the Airmar wind sensor, with sufficient space between to avoid one signal drowning out the other.
- **General.** The mark layers were requested to bring as much of their own gadgets and personalised kit as they required. Each team and individuals within a team had items they preferred to use and they felt comfortable with. Consequently no 2 boats looked the same in terms of the way they arranged their recording, positioning and communication kit on a console.
  The basic boat and all LOCOG supplied kit was standard across all mark laying boats. This included all ground tackle for marks and spares. Should there have been a breakdown it meant that any kit required from a race team not scheduled that day could be used by another team if necessary and this included the boats.

  Due to the way LOCOG purchased equipment it had an impact on the specification.

  I. The majority of Ribs were purchased with a given buy back amount already in the contract, so no disposal at the conclusion of the events
  II. The larger boats and the outboard engines were negotiated as a commercial contract with rights being assigned to the manufacturer through a Sport contract as supplied equipment.
  III. Due to these factors our ribs tended to have engines assigned by the rib manufacturer and outboard supplier that were larger than we wanted, as post games the ribs went back to the manufacture, had more seats and

equipment added to make the sellable in the market. This additional weight needed a bigger engine and hence we used larger engines than needed.

IV. *This was not an issue apart from the Jury boats, where I believe the boats choppily be no bigger the 5.9 mt and effectively if they are lightweight, low wash only need a 60 hp outboard. This lighter weight and lighter engine gives you less wash - Personally, I would specify that these are VSR 5.8R with a 60 hp outboard.*

V. *We had excellent cooperation between the LOCOG Purchasing department and Sport and despite having a centralise buying department we had very specific equipment for our needs - but we would recommend another category of specify craft for the ribs closest to the competitors - the jury.*

VI. *I surge you to read the IOC reports on purchasing written by the Sailing Managers from 2000 in Sydney to the present day.*

VII. *Due to the complex nature and quantity of equipment that is needed for Sailing, I would suggest that this process starts 4 years out from the Games. Some must be purchased and delivered for trails at the first Test Event - 2 years and then ALL equipment be in place for the final Test Event - 1 year, with a strategy in place for servicing, maintenance and storage between the events.*

Finish Boats

4 Race Teams required a dedicated finish boat and the new Beneteau Barracuda was used for this purpose as part of an agreement in place between LOCOG and Benteau, for the provision of certain boats for the Olympic and Paralympic Games.
The Barracuda has the option of a small fly bridge which allowed sighting the line for both the IRO up high and the ARO at deck level. It is possible to walk all around the wheelhouse which made for easy anchoring and retrieval.
Additional equipment was fitted by Omega including more antennae for the purpose of recording finish data and relaying the data back to the start boat.

Rescue Boats
These were all ribs of varying sizes between 5.8 & 7m all provided through the Participation Agreement with the RYA. They were equipped to a specification detailed in the Event Safety Manual for activity afloat.

Omega Repeater Boats

6 boats were used, one for each race team. 4 were Flyer 7.5's and 2 Barracudas. They were not required to anchor and only needed one antenna fitted to relay weak signals back to the start boat from wherever they were tasked to go on in the racing area. These boats only function was to station themselves as directed by Omega and provided shelter for the crew inside a wheelhouse with good all round visibility. They could be hard sided as they were not required to go alongside any other vessel.

Racing Marks, Coach Boat, Competition Boundary Marks & Ground Tackle
Crewsaver from the UK were selected to manufacture all the inflatable marks used for racing and to mark the boundaries of the Competition Area. They were competitive on price,

provided an overnight repair service if required and were less than 2hrs drive from the Sailing Venue.
The material selected was a PVC brand name Calaflex P600. It was durable, UV stable and offered a wide range of colours, many of which were conveniently close matches to LOCOG branding colours.
All inflatable marks had a separate inflatable internal bladder which was protected by the PVC outer shell.
Webbing straps were sown to the bases of the marks, attached in 6 places around the circumference and the straps were paired to act as 3 bridles linked to a swivel approximately 1m below the surface.
Consideration was given to the shape and overall dimensions of the mark in respect of ease of handling, stability, height, diameter, visibility from a distance and ability to attach graphics.
For the Racing Marks we chose cylindrical marks 1.8m in height and 1.2m in diameter. This was the maximum height we could use at a diameter of 1.2m and keep upright with a 5kg counterweight attached to the bottom of the webbing straps 1m under the water.
Each racing mark had a replacement mark for course changes. These were 1.6m in height and 1.2m in diameter. They had a black band around the upper half to distinguish them from the original mark.
All marks had a dedicated pocket on the top, made from the same PVC materials, in which the Omega tracking unit was located. The pocket protected the tracker module and being on top, was also the best location for getting a good signal.
We were asked a month before the Games to locate Olympic Broadcast Services (OBS) microphones on top of selected marks if there was filming on a specific course on a given day. There was not time to provide dedicated pockets fixed to the marks but a number of loose pockets were manufactured in the same PVC material and were tied to the appropriate mark as directed by OBS. The additional weight on top meant increasing the counterweight underneath the mark to 10kg.
All marks had their own covers, made from a grey lightweight nylon fabric. Whenever a mark was not in use, either temporarily anchored or onboard the mark laying boat, its grey cover would be on to avoid confusion for the athletes.
Ground tackle was the same for all marks and consisted of a 5kg Danforth anchor, 5m of 8mm chain and 3 lengths of 10mm multiplat line, being one length of 50m, one of 30m and one of 20m. The length of line selected was appropriate for which ever course area they were scheduled to race on and the 3 lengths covered all options.
The counterweights used under the marks were gymnasium free weights that were rubber coated. This meant they could be stowed and handled easily with minimal risk of damaging lines and boats. The rubber also served to prevent rusting of the cast iron weight.
Each mark had all of the above tackle available and the mark layers would carry all options so they could move to another course area if requested. In addition to a set for each mark they carried, they also had one complete spare set of ground tackle on board.
Our overall consideration was to ensure that marks could be laid quickly and with minimal physical effort, without the need to use mechanical equipment to raise ground tackle but were of sufficient size to be visible to athletes from a distance.
The marks used to designate the coach boat area were black in colour and 1.5m high x 1.2m diameter cylinders. They used the same ground tackle and counter weights as the racing marks but were laid by the Course Marshalls.
The Competition Boundary Marks were either 1m diameter Polyform type marks or 2.5m high trapezium shaped marks depending on where they were deployed. All boundary marks were white in colour and positioned by a contractor, using ground tackle supplied by the same contractor. They remained in position for the duration of the Events and the size of the ground tackle reflected this, with mechanical lifting gear used to raise the ground tackle at the end of the Games.

‘Super Subs’
We used 3 of our Cabin version 8.5m Protector ribs to carry out what became known as a ‘Super Sub’ role. These boats carried an assortment of spares that may be quickly required on any of the Race Management Boats referred to above.

These spares ranged from ground tackle, visual and sound signals, communication and navigational equipment and specialist tools.
They were all crewed by 2 people who were also capable of carrying out many of the race management functions such as mark laying, safety management, medical support and marshalling.
The boats were set up so that they could be substituted for any of the race management boats (apart from a Start Boat), should mechanical failure or otherwise have rendered one of the other boats inoperable. Either of the crew could have also taken the place of another crew or volunteer on any of the Race Management boats if required.

Jury & Umpire Boats

LOCOG had provided 20 x 5.85m Ribcraft ribs with either a 90HP or 140HP Suzuki outboard engine. 17 of these were permanently assigned for Jury & Umpire duties. The remaining 3 were used for FOP and Competition Management to access the Competition Area.
They all had 2 seats mounted side by side, behind a console and screen. There was a towing post behind the seats which also served to mount a flagstaff from which an identification flag and also penalty flags could be flown. Signal flags for the Jury and Umpires were stored in a cassette of plastic tubes wrapped around the base of the towing post and were easy to hand.
One consideration when selecting boats for the Jury is the amount of wash thrown up as they manoeuvre in close proximity to the athletes boats when racing. Smaller courses and closer racing is making this even more critical and the need for the Judges to be sat side by side means the rib will be of a certain minimum beam which in turn may create greater wash on a heavy rib.
ISAF believe that special consideration needs to be given to the amount of wash that Jury boats create.

Equipment Inspection Boats
LOCOG also provided 10 x 5.85m Ribcraft ribs also powered by Suzuki 90HP or 140HP but with 2 seats mounted line astern. 7 of these were assigned to the Equipment Inspection Team, one for each of the 6 groups of classes and the 7th for the Chief Measurer. There was sufficient space for the storage of spare spinnakers and gennakers in dry containers, as dictated by class rules and the Equipment Inspection Regulations.

Match Race Support & Crew Change, Laser and RSX Equipment Support
A LOCOG 8.5m Cabin Protector was used to transfer crew and carry spare parts and sails for the fleet of Elliot boats.
Lengths of 300mm diameter plastic tubing were strapped to the top of the bimini framework, in which spare sails, booms and spinnaker poles were stored. Other parts were stored below in the cabin.
2 other smaller ribs were used to assist with crew transfer and repairs afloat.
LOCOG also made available a 5.85m rib for the 2 on water support teams from the manufacturers of the supplied Lasers, Laser Radials and RSX boards. These boats did not require any specialised equipment from LOCOG other than reliable means of communication with the shore, equipment inspectors and race committee and space for a predetermined kit of spares.

Marshall Boats

Marshall Boat using the RED stop sign

Marshall boats were used to ensure all boats not actually racing or acting as part of the race management team remained in the pre assigned locations or were transiting a race area in a way that did not impact on the racing taking part in that area.

LOCOG used a combination of 8.5m Cabin Protector Ribs and smaller 5.85m ribs depending on where they were deployed. It was preferable to use the smaller ribs to manoeuvre close to the OBS and press ribs at marks and the ends of the start and finish lines. The bigger ribs were used to marshal the larger VIP and Press boats plus patrol the boundaries of the Competition Area when vessels were transiting a race course around the inside of the perimeter.
All Marshall boats were ribs in order to minimise damage in case they came into contact with other boats whilst manoeuvring at slow speeds in close proximity to other vessels.

Olympic Broadcasting Services (OBS) Boats
Prior to the Games LOCOG were not involved in the sourcing of any of the boats used by OBS for their own filming purposes. OBS contracted this out and had settled on 4 x 40' Catamarans and 11 Ribs ranging in size between 6-7.8m in length. All boats were supplied with drivers.
The 40' catamarans were heavy and inappropriate for going on the course area whilst racing was taking place. They generated too much wash and created a large wind shadow.
A smaller 8m Cheetah catamaran, with twin outboard engines, was subsequently chartered in just before the Games and was able to go onto the course area. LOCOG made available an 8.5m Cabin Protector with a rigid canopy as a substitute for another of the 40' catamarans.
Prior to the Games it had been suggested to OBS that they consider using the lightweight customised catamarans similar to those used for filming the current Americas Cup circuit racing. They generate minimal wash and can vary their speed very quickly, whilst providing a stable and low windage platform.

OBS also had 2 helicopters from which to film. These were lightweight and consequently low noise machines, fitted with remotely operated cameras located under the nose of the helicopter.
It had been established in advance of competition that they would not be allowed to fly below 500ft which also tallied with the Civil Aviation minimum altitude the OBS helicopters had to observe. At this height their noise and downdraft did not interfere with the racing in any way and were able to film as they wanted with the type of cameras used.

Rights Holder Broadcast and Photographic Press
24 x 7.5m -7.8m Ribs with drivers were chartered in by LOCOG from a single supplier for the Olympics. This provided continuity of appearance and better control over the drivers when training on the specific requirements for the Games.
10 of these ribs were under the control of OBS and were made available to Rights Holder Broadcasters. The other 14 were under the control of the LOCOG Press Operations Team and were used by the photographers and photo journalists carrying a maximum of 6 at a time.

Written Press
As part of the sole supplier agreement with Beneteau LOCOG were provided with 4 x ST44 Trawler Yachts and 1 x ST34 Trawler Yacht for Written Press. These boats could carry up to 12 passengers and provided good all round visibility from either the shelter of the main saloon or the open upper deck.
An example of a Beneteau ST 44 is below, being used as a small Olympic Family boat

VIP and Federation Boats

Beneteau also provided 2 x ST52 Trawler Yachts, a ST44 and a GT44 for use as VIP Boats. The Trawler Yachts were particularly suitable as they provided shelter for all on board when the weather was not favourable.

Accessible Boats

There were no purpose built wheelchair access able boats used during the Olympic Games. An accessible 8m Cougar Catamaran was chartered by LOCOG for the Paralympic Games and this boat would have needed to be larger if racing during the Paralympics was held on waters not s sheltered as those of Portland Harbour. The boat was converted for 3 wheelchairs at one time and more wheelchair spaces would have been preferable.

Provision of Laser and RSX Equipment for Athletes

Laser: Had a crew of 3 people available to receive the boats on delivery to site and then prepare all boats and equipment for issue to the athletes according to a predetermined schedule. The only problem this presented for LOCOG was the provision of secure storage space and a preparation area prior to equipment being issued.

RSX: Similar problem in terms of storage compounded by late arrival of RSX staff. This was in part due to the ISAF Youth Worlds taking place at the same time as equipment should have been prepared for the Games. LOCOG received all the boards and were significantly involved in the preparation of the equipment.

The Laser and RSX equipment was issued in line with a published schedule within 3 days of the Venue being open to athletes. ISAF were not present on site for several days between issuing the equipment and the start of Equipment Inspection. This is not acceptable in future, as issues regarding interpretation of Class rules and specification of issued equipment could not be resolved in a timely manner.

Equipment Inspection
Periodic meetings were held with ISAF and IFDS prior to the Games to discuss:

- Supplied Equipment
- Allocation and layout of buildings
- Equipment draws
- Schedule per class or event
- Class specific inspection equipment and where sourced
- Staffing
- Athlete Weighing
- IOC Rule 50
- Medal Race Quarantine Procedures
- Application of Games Look & Branding

With the exception of undercover space, all of the above as individual items were reasonably straightforward to resource and organise for LOCOG. However their significance to the smooth running of the Games and Paralympics is fundamental, as they impact on so many other aspects of the schedule and event management.
The whole process needs re-evaluating as there is an opportunity to reduce cost, space, time and people required.
At the moment the OCOG has to resource in such a way to allow a full measurement, for several classes at one time, of any of the equipment used by athletes at the Games or Paralympic Sailing Competitions. This is in conflict with the time permitted for individual boats to be inspected during their pre regatta inspection slot. In some Classes it is only minutes and for all classes the International Measurer only has time to check items he considers relevant to a boats performance.
Supplied equipment is inspected before it leaves the factory, issued at the Games and then re inspected several days later just before competition.

The equipment inspection process requires an extension to the schedule of at least 4 days, with all the associated costs and this does not result in an inspection process that is satisfactory or foolproof.
An extreme solution would be to place the onus firmly on the athletes to ensure their equipment complies with the rules, coupled with regular checking during the course of the event and disqualification being the ultimate deterrent when equipment rules have been infringed. In the case of supplied equipment this should be thoroughly checked and marked before it leaves the factory.
Further pressure is placed on the equipment process due to other official functions that are scheduled at the same time. The Opening Ceremonies are obvious examples of this.
The requirement to constantly improve the visual images created during competition further encroaches on the equipment inspection process. In some classes it takes longer to apply graphics to the hull and sails than is permitted for equipment inspection, so more time and an additional facility have to be allocated.
A hull with graphics applied will measure differently to one without the graphics therefore it needs to be agreed in advance whether the timetable allows for graphics to be applied before or after inspection. In the case of athlete supplied sails the graphics can only be applied after inspection. This is further complicated when some classes can measure in more than one mainsail.
Other activities going on at the inspection process are the need to police IOC Rule 50 and carry out the installation of tracking equipment on the athletes boats plus record the details of the specific units on each boat.
A final complication to the whole process was the use of onboard cameras and their impact on the measurement process. The fitting of the camera brackets prevented a critical check from being carried out on one Class and solutions had to be found at the last minute.

Olympic Broadcast and On Board Cameras
All stakeholders involved in the project of either refining previous technology or developing new technology as required, failed to deliver in time. 2 years of planning and discussion had not resolved technical issues prior to the Games, placing further burden on the Organising Committee and the schedule.
Equipment was provided for the purpose of attaching to athletes boats that was untested and could have impacted on the results of the Games due to failure. Team Leaders and athletes were unclear of the intentions of the Organising Committee and the use of the cameras.
Lack of continuity of information from previous Games and a failing a key stakeholders to communicate was the principle cause of the problem. Compromises were made to resolve issues and allow some filming from onboard cameras.

Omega Results and Timing (Swiss Timing)
Omega carried out several practical tests prior to the Games and Paralympics. Signal tests were carried out afloat over several days across the whole competition area. Partial testing using one Event took place at the 2011 Sail for Gold Regatta and a full on water test took place at the 2011 Test Event. All Classes were tracked and all equipment required for on the water installed and tested.
This also gave an opportunity for the volunteer operators required ashore and afloat to train and practice.
By the time of the Games all installation issues had been resolved and the learning's from the Test Event made for a very smooth commissioning and decommissioning of all the equipment required.
Development of the technology and equipment meant that Omega were not always able to give prior information that would have assisted preparation for the installation of their equipment on Venue and on the boats. This was further complicated by the need to engage with several other stakeholders such as OBS, where they may have been conflict with each other's technology causing loss of signal etc.

Summary
The London 2012 Olympic and Paralympic Sailing Competitions were stepping stones in the transformation going on in order to present the sport in front of live spectators and on screen both in terms of graphics and live images.
One of the greatest challenges for us was the coordination of all the technology required to do this and ensure that the impact on the race management, the athletes and the Teams was minimal. There were certain obligations placed on these groups such as signing in to the crowd, remembering to turn cameras on and off, remembering to collect trackers, obligations to the media etc, but they were fairly minor in the big picture.
Coordinating the technology and the stakeholders delivering it was far harder. The need for both the OCOG and the Federations to have people involved at an early stage who can drive the changes required and coordinate the stakeholders is critical. They need an understanding of the big picture, to understand the impact of development and change across the whole project. This applies to timescales, budget and physical resource such as buildings, boats and space and the way other areas of their organisations function.
In turn specific equipment required to deliver the Games and Paralympics, in whatever format is required, can be sourced with sufficient lead times in order to keep cost under control.

Peter Allam - LOCOG Deputy Sport Manager (i/c Equipment) 27th September 2012.
Additional comments in italics by Rob Andrews LOCOG Sailing Manager
Photos added courtesy Of the Rio Sailing Manager