SubRacing Series (SRS) – Requirements for Running a Successful Event

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Table of Contents

1. Summary 2
2. Management Structure 2
3. Overarching Documentation 3
4. Local Documents and Procedures 5
5. Diving 6
6. Logistics 7
7. Event / Race Control 8
8. Access Control – Competitors and General Public 9
Annex A - Example Management Structure 10
Annex B – Example Covered Area 11
Annex C – Versadock 12
Annex D – Race Control Commands To Competitors via Underwater Speaker 13

Discussion Document

1. Summary

This document is intended to give an overview of the documentation and associated safety and control mitigations which will be required to be generated to support the safe delivery of the 2027 SubRacing Series event in Arinaga Gran Canaria and any subsequent venues which are selected to host future events.

The documents will detail the management structure for SRS together with the responsibilities and accountabilities of individuals and how the safe control and delivery of the events will be demonstrated.

The controls will naturally divide into two categories;

- those required for overall control of any event location such as a Safety Management Plan, general Risk Assessment, support vessels, First Aid, logistics etc.
- those that are site dependent which will take into account any control requirements from the local authorities and hazards introduced by the venue's location etc.

The SubRacing Series should be looking to set the standards for future submarine racing based upon best practices, where available, or producing the standard expected in the same way that MotoGP and F1 sets the standards for their sports.

In this way consistency can be maintained from event to event and the high level documents can be used to assess a location's suitability to hold an event.

This is a live document which will be updated to include lessons learnt from events and in essence is based upon the mantra of

Say what we do, do what we say.

Discussion Document

2. Management Structure

It is essential that the management structure is clearly defined with roles and responsibilities / accountabilities detailed to demonstrate control of the event. Important roles to identify are:

Race Director / Controller – overall responsibility for safe delivery of the event and has overall control. Will authorise restart after any safety stop is called.

Health, Safety and Environment Advisor (HSEA) – Professional HSEA to provide advice and guidance of compliance with all aspects of Health Safety and the Environment pertaining to the event. Reviews, approves and signs off all safety documentation for the event.

Diving Contractor / Co-ordinator – Responsible for the safe delivery of all diving operations during the event. Also produces or checks diving risk assessments and dive plans covering the event.

The structure chart used for the European International Submarine Races (eISR) at Haslar in 2024 is shown in Annex A.

INSERT OVERARCHING OBJECTIVES (Our Safety Anchors?)

1. Nobody involved in the event gets injured in any way.

   Nobody who attends the event (ie spectators, VIP's, local officials) suffers an injury due to our facilities or activities
2. In the event of any injury, accident, illness or threat to life we take robust steps to first deal with the incident and have appropriate plans and facilities to apply remedies (ie Rescue, First Aid) or evacuate the casualties.
3. The submarines taking part are designed to avoid severe injury to participants and spectators in the event of collision, accident, malfunction or deterioration.
4. Logistical activities such as surface boat operations, moving of submarines, storage are completed under appropriate supervision
5. 'Environmental Safety' means we validate that the race areas we use are free from contaminents or dangers to participants or staff; and secondly that we put (or leave) nothing in the water that can cause short or long term environmental change or damage.
6. 'auditability' - It must be possible to follow chains of documents to show all safety steps were considered or followed

Security

Competencies - Safety training and communication

Boundaries

List the main boundaries for the events

Max depth

Max Speed

Minimum age for pilots

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However, we also need to have a key objective that balances the need for activities to have risk to be interesting, with safety controls. (We cannot make the racing environment bland and uninteresting).

Finally … does SECURITY fit in the safety plan ? is it something like 'To ensure the safety of assets, equipment , data and resources, a Security plan will be needed for each location (includes things like on-site/overnight security, Data Security, GDPR) If not where do we put a Security plan ?

Discussion Document

3. Overarching Documentation

The overall event documentation set details the higher-level processes and management control chain that the SRS must have in place to demonstrate that there is robust management and clearly defined responsibilities within the structure. These documents will also provide evidence to potential sponsors and competitors that the event has been planned with safety in the forefront.

Event Processes and Policies

As a business it is usual to have some standard policies in place which show commitment to good practices. There should be:

- Health and Safety Policy detailing the management's commitment to ensuring safe practices are implemented and maintained.
- Environmental Policy detailing commitment to protect the environment

These are usually one side of A4 and signed by the person responsible within the organisation for ensuring compliance within the organisation – usually at director level.

Below these comes the more proscriptive documents which detail how the SRS will deliver safe and compliant events.

Event Management Plan – gives a detailed description of how the event will be managed and who is responsible for the aspects of delivery.

Event Emergency Evacuation Plan – gives an overview of how the organisation will deal with any incidents which could occur during the event; detailing the minimum requirements for first aid cover, fire cover, number of diver medics, number of safety boats, maximum distance to a decompression chamber, maximum distance to local Accident and Emergency hospital etc.

Event Diving Control Documents – Dive Plans and Dive Risk Assessments covering the diving operations being undertaken. These documents must be produced by the Diving Contractor / Co-ordinator who have domain expertise in this area.

General Risk Assessment – details the main risks that are generated through the operational side of the event (crowds, access control etc) and mitigations that will be implemented to mitigate them.

Safety Procedure - Incident Investigation Procedure – falls out from above and details how the SRS will monitor and improve safety through investigation and recommending improvements to process etc to ensure a continual improvement process is in place – forms part of safety culture demonstration.

Environmental Impact Assessment – showing how SRS propose to mitigate the impact of the event on the environment, from minimising fossil fuel use to noise pollution. Normally produced by a qualified Environmental Assessor.

Event Records

These documents provide the auditable record that checks and briefings have been conducted and would be essential to have in the event of an incident.

Records of Safety Briefings – All SRS support personnel and competitors must receive safety and operational briefs prior to commencing any operations associated with the event. All persons must sign to say they have received the briefings.

Safety Checks on Submarines – Scrutineering Record Sheet detailing the build and safety requirements, crossed referenced to the rule book and signed off by the scrutineering team. Also records the successful demonstration of ability for the operators to escape in the event of an incident, briefings to safety divers and successful deployment of the Emergency Buoy.

Verification of Competitor Diver Qualification and Experience – Records that the divers have the required qualification and experience as detailed in the race regulations. For eISR divers were also required to demonstrate their competency to the Dive Co-ordinator and any who could not undertake basic evolutions were prevented from diving until they were able to.

These documents provide the auditable record that these checks and briefings have been conducted and would be essential to have in the event of an incident.

4. Local Documents and Procedures

These documents describe the controls and mitigations to control the local risks which are identified at each event location. They will cover local access and egress routes, launch procedures, fire or other evacuations, decompression chamber and hospital locations etc.

Local Event Management Plan – details how delivery will be controlled at the event. Where and how will submarines be delivered to the event site, control of access to event area by general public, transport of equipment to pit area, where race control is to be located, where model storage / pit area is, how submarines are to be moved and launched/recovered, access / egress of divers to water, control of diving and in water operations, safety boat control.

Local Event Emergency Plan – details what to do in the event of an incident during the event. Location of nearest hospital and decompression chamber, how to contact them and the local emergency services and who should do it, local community liaison representative, local first aid and firefighting support, muster points and mustering procedure.

Local Event Specific Risk Assessment – details the risks, and mitigations to control them, which are identified for the local event area – Arinaga has fall from height risk on the launch ramp for example. Only records the deltas from the overarching risk assessment.

Discussion Document

Local Safety Brief – suggest a PowerPoint presentation be produced covering all general aspects of the event controls with a small annex to cover any local aspects.

Local Logistics Plan – details the local arrangements for the import, transport to site, unloading / loading, storage and movement of boats to and from the launch point. The location of the Race Control cabin and Dive Control position

5. Diving

Any diving incident has the potential to become critical in a short space of time. Therefore it is essential that the safety teams are professionally qualified and ideally have worked together before to allow a fast, coordinated response to any incident or injury. Professional teams will have diver medics who can deal with underwater injuries and will have training and experience of dealing with them. Whilst this will incur costs it will also demonstrate to competitors and sponsors that safety is being given high priority.

The team should be controlled by a dive contractor / co-ordinator who will have domain knowledge and be responsible for producing the dive plans and risk assessments covering the event.

SRS will be responsible for undertaking due diligence checks to ensure that the dive team are suitably qualified and experienced (SQEP) to undertake the work.

Competitor Dive Control

A system will need to be implemented to monitor the number of divers in the water at any time with checks made on bottle pressures on entry to and exit from the water. There were a number of incidents at Aringa where dive bottle pressures on exiting were below the minimum limit of 50Bar stated in the rulebook.

Segregation of Dive Bottles

A system must be implemented to ensure that fully charged and empty or part used bottles are clearly segregated. Pre-dive checks on bottles will also be in place to prevent near empty bottles entering the water.

Support Boats

The event will require a number of safety boats to ensure the safety of the competitors and to monitor and prevent incursions into the race arena during racing. These will have dedicated roles to ensure safety is not compromised.

Boat helms must have a recognised qualification to ensure that safety standards are maintained. For eISR, boat helms held RYA Level II Powerboat qualifications.

Arena perimeter patrols will monitor for intrusions into the racing space and either remove the trespasser or advise race control to abort the race on safety grounds.

Race support (safety) boats will be permanently positioned over the in water pit and start line to monitor preparations for racing and two additional boats will provide rescue support and track individual submarines as they progress around the arena.

Discussion Document

Well thought out race support boats are essential to ensure safe control and rescue of stricken submarines and divers. Support boats will need to be faster than those previously used, if the submarines are able to reach 10kts, have clear visibility of racing area and propeller guards fitted. There must be sufficient cover to protect the safety team from the heat (all being well) or rain and damp. They should have low freeboard or an access platform to facilitate recovery of divers to the boat for transfer to shore if required.

Through water and through air communication systems must be available on all support boats including the dive contractor / co-ordinator if based on the water.

Consider whether electric boats should be used to reduce environmental impact.

6. Logistics

Delivery of Submarines and Ancillary Equipment To Race Pit Area

Ideally the travel crates should be unloaded from their transit containers at the point of delivery on the island and transferred to a flat bed vehicle fitted with a HIAB or open sides for access by Forklift Truck (FLT) for offloading at the event arena.

Offloading at the event location should be as close to the race area as possible to minimise need for local lift and shift. Assumed that transit crates will be moved to the pit area and unloaded there under cover.

Offloading area must be flat and hard surfaced to provide a stable base for FLT or HIAB operations. This will minimise risk of dropping a vessel which is both embarrassing and potentially expensive to repair.

Pit Area

With the anticipated larger number of teams competing at the SRS event it will not be practicable to have all the equipment unpacked and repacked at the start and finish of the racing day and moved to a storage area. Therefore, the pit area needs to be secure to allow for overnight storage of vessels and support equipment.

Crate storage – crates to be stored in the pit area to allow equipment to be stored in them and locked. Teams to be advised of the size of the pit area allocated to them to allow them to build appropriately sized transit crates.

Power supplies – assuming that the teams will have electrical equipment and tools, provision for mains power will be essential, together with appropriate electrical Residual Current Protection (RCD) for outdoor use. Consideration will need to be made for 110v and 240v ac supplies to cater for teams from around the world.

Also consider whether additional lighting will be needed to allow work at beginning and end of day or if natural daylight levels reduce due to adverse weather conditions.

Covered area – protection from the elements and secure storage of equipment overnight.

Fire Extinguishers – Requirement for teams to have extinguishers suitable for the type of battery they are using.

Standard CO_2 and water extinguishers for other fire types. SRS supplied.

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Sufficient space must be allowed to safely move vessels to and from launch area within the pit area and enable safe evacuation in the event of an incident.

Potential covered area as used at an event in Arinaga in 2024 is shown in Annex B.

Movement To and From Launch Area and Launch and Recovery of Vessels

Ideally the pits, transit route and launch area should be under full control of the SRS event allowing the route to the launch area to be kept clear. If this is not possible then provision should be made to allow isolation of the route from the general public during the transit of vessels to prevent any third party injuries. This will require additional marshals to install and remove temporary barriers.

Vessels should be transported on either custom built trolleys designed and certified by the teams or a standard design provided by SRS. Either type must be able to be towed on a fixed bar to allow a motorised tug vehicle to facilitate access to the water. Maximum weight limit for trolley and vessel will need to be specified to ensure launch vehicle has sufficient capability.

Diver and Boat Operator Access to Water

Consideration should be given to providing a safe access and egress route for divers and boat operators to and from the water to remove potential slip hazards as identified on the slipway at Arinanga. Potential solution would be a Versadock® type pontoon from the steps out into the bay. This would allow boats and submarines to be tied up when required and make access to them easier – see Annex C.

Identification of Local Suppliers of Safety Equipment

Provision of safety equipment such as barriers and pontoons will need to be sorted in advance with requirements based upon the findings of the local Risk Assessment produced following the preliminary site visit conducted in advance of the event.

Sponsor's Display Area

Designated area for sponsors to place display stands and for SRS to sell merchandise.

7. Event / Race Control

Control of Race Arena – Above and Below Water

Race Control

Race Control Room – designated cabin with clear view of above water race arena, video feeds from all safety cameras covering in water pit / marshalling area and arena to supplement safety boats and above and underwater communication systems.

Public Address system to allow public announcements to be made and advice given to teams.

Large screen outdoor television to display safety information, race video and position tables.

Communications Protocols

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All persons using communication systems must be briefed on the protocols to ensure clear messaging particularly in the event of an emergency. This should cover designated call signs for individuals, boat helms, competitor vessels on the race course and race control.

EISR race commands for controlling competitor submarines and divers are reproduced at Annex D.

8. Access Control – Competitors and General Public

Safety / security barriers are essential to ensure that the general public are kept segregated from hazardous areas and also to maintain safety for competitors and event staff within the controlled area – for example remove the fall at height hazard on the Arinaga slip way.

Many types are available, and an example is shown in Annex E. These can usually be hired locally to reduce shipping costs.

General public can gain access to the pit area in controlled numbers and local segregation of the equipment can be maintained using a simple rope or tape barrier system, see Annex E.

Competitors should be logged in each morning and their movement in and out of the pits monitored using a status board. Ad-hoc visitors will sign in on a separate sheet and be monitored in a similar manner.

9. Security

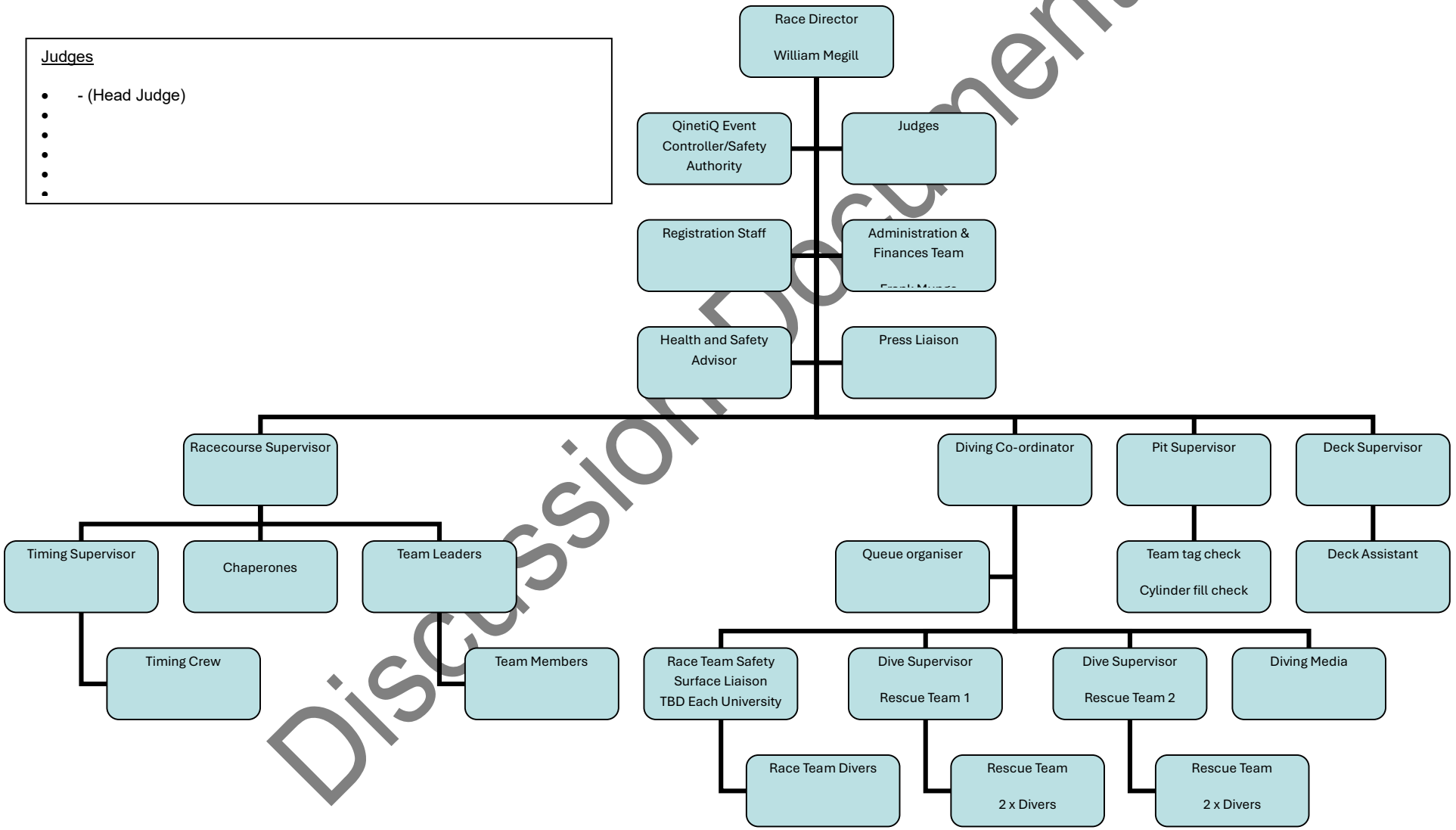
In light of the potential value of equipment within the SRS event area, it would be prudent to arrange local security to secure the site overnight.

Discussion Document

Annex A - Example Management Structure

Judges

- - (Head Judge)
-
-
-
-
-



Discussion Document

Annex B – Example Covered Area

Annex C – Example of Versadock Installation

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Annex D – Race Control Commands To Competitors via Underwater Speaker

*Boat name

*** GET READY**	**- Prepare to race**
*** MOVE TO SET**	**- Go to set box**
*** MOVE TO START**	**- Go to start box**
*** REPORT**	**- Report status via SLO**
GO GO GO	**- Start race**
*** STOP STOP STOP**	**- Stop activity and surface**
*** CENTRE**	**- Go to rotating arm**
*** RECOVER**	**- Recover boat to pits**
*** QUEUE**	**- Go to pits – Back of queue**
SAFETY SURFACE	**- Safety divers only - surface**
ALL SURFACE (or KLAXON)	**- All surface and return to shore**

Discussion Document

Annex E – Example Safety Barrier

Water Filled Barrier

Tensile Belt Barrier