Cultural and Creative Industries Development Agency
Entertainment Special Effects Licensing Authority
Guidance Notes No. 6

Risk Assessment and Method Statement for Large Scale Special Effects Scenes

For special effects scenes or pyrotechnic displays of large scale, applicants shall make arrangement to conduct a Risk Assessment and work out a Method Statement with regard to the events. These documents shall be submitted together with the application for a discharge permit to the Entertainment Special Effects Licensing Authority for consideration.

A. Risk Assessment

A Risk Assessment shall cover all operations associated with the various stages during the life cycle of the special effects materials including conveyance, storage, setting-up, discharge, handling of misfires and surplus dangerous materials. A Risk Assessment shall include three key processes:

(1) Hazard identification – for each activity, identify all the potential hazards associated with the proposed special effects materials. Consideration must be given to the actual site conditions, the equipment, vehicles, and vessels actually used, and taking note of all peculiar features, hazardous installations, overhead structures/machines, hospitals, aged homes in the vicinity.

(2) Risk evaluation – with respect to each hazard identified, evaluate the likelihood of occurrence and the consequence if it occurs. Risk is the product of likelihood of occurrence times the consequence.

(3) Risk control – for any risk high than the acceptable level, proposed mitigation measures to reduce the risk to an acceptable level.

In general, risk mitigation measures may include:

(a) Reduce the projected height of the effects.
(b) Provide sufficient clearance areas and if appropriate :
    - provide a smaller one for handling/sleeping
    - provide a larger one for the actual discharge
(c) Closely monitor the situation with qualified personnel.
(d) Provide PPE to operators, supporting personnel, performers and audience if necessary.
(e) Use more sophisticated/dedicated equipment
(f) Use fire-resistant materials
(g) Provide adequate fire fighting personnel with efficient fire fighting equipment on standby.
(h) Work out a contingency plan and by-pass certain effects if necessary
(i) Take other appropriate precautionary measures
(j) Amend the work procedures or reduce the scale of the effects if the risk cannot be mitigated to an acceptable level, even if all the mitigation measures would have been implemented.

Given in the Appendix is part of a listing of the activities and the corresponding risk control measures associated with the staging of pyrotechnic displays at sea. It should be noted that this listing is not comprehensive and is given here as a guidance only. Applicants are required to produce a full Risk Assessment report covering all the hazards associated with all the activities that may be encountered, taking account of the actual conditions of the site, the special effects materials used, and the work procedures adopted.

B. Method Statement

A Method Statement is a detailed description of work procedures for accomplishing all tasks and activities required for staging a special effects event. The Method Statement should be worked out having regard to the actual site conditions and the actual resources to be employed (i.e. the actual vehicles/vessels and the minimum number of special effects operators/assistants to be employed, etc.).

C. Relation between Risk Assessment and Method Statement

The procedures mentioned in the Method Statement should tie in with those discussed in the Risk Assessment, especially those referring to the deployment of resources or measures to mitigate the risks. In fact, from the results of a Risk Assessment, we should be able to identify the areas that need to be addressed in details in the Method Statement.

In view of the inter-relationship mentioned above, it is therefore essential that the Risk Assessment and the Method Statement should be submitted to this Authority at the same time. It is no point for this Authority to comment on either document, without referring to the other document.

Besides, if the applicant subsequently decides to change the work procedures or use alternative resources to accomplish a particular activity, the applicant should review the Risk Assessment to verify if the results are still applicable to the proposed changes. (This Authority's approval is required prior to implementing any changes to the work procedures.)

The Method Statement submitted by an applicant will be treated as part of the licensing conditions and will be attached to the relevant permits. Consequently, it will have a binding effect on the holder of the permit and other concerned parties (such as the licensed special effects operators). It is therefore compulsory for the holder of the permit and all concerned parties to comply with the Method Statement, in addition to the terms and conditions specified in the permits.

Entertainment Special Effects
Licensing Authority
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Appendix

Entertainment Special Effects Licensing Authority
Notes for Conducting a Risk Assessment

As a guidance, the following steps may be taken in preparing a Risk Assessment report:

(1) Examine in details the activities associated with the proposed work.
(2) For each activity, work out the work procedures having regard to the actual site conditions, and the materials and resources to be employed.
(3) List out all the activities and work procedures in a logical manner to form a Method Statement.
(4) From the Method Statement, identify all the potential hazards associated with each activity and the work procedures.
(5) For each hazard, evaluate the likelihood of occurrence and the consequence.
(6) Consider risk control measures to mitigate the risk.
(7) Repeat steps (4) to (6) for the next activity.

Given below as an example is part of a list of activities associated with the staging of pyrotechnic displays in the harbour. It should be noted that this listing is not comprehensive and is given here as a guidance only. Applicants are required to produce a full Risk Assessment report covering all the hazards associated with all the activities that may be encountered, taking account of the actual conditions of the site, the special effects materials used, and the work procedures adopted.

Activity	Risk Control
A. Loading/unloading of PSEM at WDGA – Take note of all factors including: • type of vessel • type to NEQ of PSEM • inclement weather • distances to other vessels • risk to aircraft is low	Risk control measures may include: • no smoking/naked flame • supervised by licensed SEOs • handled PSEM with care • avoid damages to carton boxes • all EM/fused heads shunted in the factory • adequate fire fighting equipment readily available • adequate clearance distances to other vessels • stop work during thunderstorms or inclement weather

Activity	Risk Control
B. Stowage of PSEM at WDGA – Take note of all factors including: • type of vessel • type and NEQ of PSEM • conditions on board • security issues • distances to other vessels • risk to aircraft is low	Risk control measures may include: • no smoking/naked flame • security guard and licensed SEO on board (round the clock) • no use of walkie talkies or mobile phone in the cargo hold • PSEM separated from other dangerous good • adequate fire fighting equipment readily available • adequate clearance distances to other vessels
C. Setting-up of PSEM at WDGA – Take note of all factors including: • details of the vessel to be used • the type and amount of PSEM • the nos. of pontoons • sufficient working areas on board • overhead structures and dangerous features (including generators and engine) • inclement weather • mounting of PSEM in correct positions and inclination angles • distance to other vessels • risk to aircraft is medium	Risk control measures may include: • no smoking/naked flame • all activities performed by licensed SEOs/SEAs • adequate fire fighting equipment readily available • no use of walkie talkies or mobile phone in the vicinity • reduce the no. of pontoons in a barge • PSEM will not be placed near engine/ generators/overhead structures, etc. • double check the positions and inclinations of all pyrotechnic devices • shunt all EM/fuseheads immediately after installation • stowage of surplus PSEM in other vessels • cover all pyro devices with tin foil papers or other acceptable materials • employ tug/guard boats to maintain the required clearance area (subject to Marine Department's requirements)

Activity	Risk Control
D. Test of Circuits hooked up with PSEM – Take note of all factors including: • risks to vessels and aircraft • safety of SEO/SEA and the crew on board • inclement weather • distance to other vessels	Risk control measures may include: • work out the required duration for circuit testing (say 20 minutes) • agree with CAD a time window (say 1500 to 1600 hours) during which the circuit testing may be conducted • Conduct circuit tests within the specified time window, and inform CAD at the start and end of the test • Employ tug/guard boats to maintain the required clearance areas
E. Conveyance of the installed PSEM to the firing venue – Take note of all relevant factors.	List out all appropriate risk control measures.
F. Anchoring/Sleeping at the firing venue – Take note of all factors including: • underlying cables/tunnels • safe handling of pontoons • barge/pontoon at the correct positions • inclement weather • distance to other vessels	List out all appropriate risk control measures.
G. Firing of the PSEM – Take note of all factors including: • barge/pontoons at the correct positions • safety of crew members/ SEO/SEA/spectators • risks to vessels and aircraft • nuisance to the public including noise, toxicity of fumes and by-products	Risk control measures may include : • proper anchorage of barge/pontoons • monitor the positions of all barge/pontoons regularly • reduce the no. of SEO on board • provision of shelters for SEOs and crew members on board • monitor wind speed and direction • provide sufficient SEO/SEA/spotters on shore to monitor the situation • employ guard boats to maintain the required clearance area

Activity	Risk Control
• inclement weather • distance to other vessels	• bypass certain effects or the whole show if necessary • use PSEM that will not produce toxic by-products • Agree with CAD the maximum projected height of effects and the time of discharge. • Inform CAD at the start and end of the display • close contact with the Police, Marine Dept., Fire Services Dept. and other concerned departments
H. Checking/handling of Misfires and Unused PSEM – Take note of all relevant factors.	List out all appropriate risk control measures.
I. Labelling of PSEM – Take note of all relevant factors.	List out all appropriate risk control measures.
J. Other relevant activities – List out all other relevant activities and take note of all factors.	List out all appropriate risk control measures.