Entertainment Sound Specialists

AT JANUARY 2020 : METHOD STATEMENT AND RISK ASSESSMENT FOR THE SUPPLY OF GENERAL PURPOSE SOUND REINFORCEMENT SYSTEMS FOR LIVE ENTERTAINMENT : BY PHIL McDANIEL

METHOD STEP	SIGNIFICANT HAZARD	WHO IS AT RISK?	LOW, MEDIUM, HIGH RISK	EXISTING MEASURES TO MINIMISE RISK
PRE EVENT PREPARATION				
Whoever initially takes the enquiry fills in a pre-printed 'Event Sheet' which prompts for all basic essential information				
If thought necessary, a site meeting is arranged.				
Upon confirmation of the enquiry, a senior partner in ESS checks for any missing information which may be relevant to safety, efficiency and provision of quality service. If there is missing information, the client is contacted. If the client cannot supply the information directly, their recommendation is sought as to which third party to pursue in order to obtain these details. Check the event details to ensure that there is safe and convenient equipment access to the venue. If there is not then further enquiries are made to seek alternative arrangements or the provision of extra ' local crew' .				
Logistical decisions are made by senior partners with regard to the equipment to be used on the event, the number of ESS crew to use, number and weight capacity of vehicles required as well as schedules for the movements of people and vehicles. Normally a statement of equipment to be used or 'tech spec' is sent to the client for their reference.				

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Freelance sound engineers and technicians are contacted to book their services for the event. These personnel have all experienced a period of induction with the company.				
In the days running up to the event or series of events, the engineers come to the office to peruse the event information, make planning charts and prepare the equipment assigned to the job.				
Typical event planning by event-specific personnel consists of the following basic tasks: Check event information to ensure that the venue power supply is appropriate and sufficient for the equipment ear-marked for the event. Check the requirements of individual performers or artists and prepare an input channel list and stageplan sheet to allow correct provision of cables, powered equipment , microphones, on-stage monitors and other hardware such as microphone stands and sub-hired equipment. Check venue location and planned event timings to pre-empt any oversights which may lead to the schedule on the day running behind. Also the best route and arrangements for meeting and loading can be made.				

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The preparation of equipment includes the following basic tasks: Create any equipment racks as designed for the event Inspect all electrical equipment to ensure that it is safe and appropriate for the job planned for it. Stock trunks with adequate numbers of cables and hardware for the job including spares to allow for replacement of items, which become defective on site. All items to be sent to site are visually inspected for damage. If there is any doubt about any item it is tested before being placed in a trunk or racked up. All electrical equipment and cables must bear a PAT test sticker, which is 'in-date'. Test equipment for good audio performance. Normally this involves setting up the equipment in the configuration planned at the event and operating it at reasonable sound levels at home base.	Strain or injuries from manual handling of equipment at home base.	ESS Technicians	LOW	• All heavy equipment is labelled 'X' number people lift to avoid unexpected strains. • ESS 'Moving and lifting equipment' workshop training.
	Hearing damage	ESS Technicians	LOW	• Noise at Work information in the ESS 'Working for ESS' induction handbook. • Industrial standard Ear Plugs are available free in the workshop..
	Shock from electrical equipment	ESS Technicians	LOW	• PAT TEST • Visual inspection prior to test.

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LOADING / UNLOADING AT BASE OR VENUE				
For each job assign designated driver or drivers. These people are directly responsible for the safe and professional loading of equipment within it				
Check all relevant equipment racks and trunks bear production labels on which the following information is written for the show: Description of equipment Name of production Date job goes out How many standard person lift the trunk or rack is. Case number (where relevant for equipment manifest)				

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Load equipment into or out of vehicles. Previously prepared load-lists are consulted.	Slipping on or falling off aluminium ramp.	ESS TECHNICIANS. VENUE STAFF.	LOW	Ramps have rough anti-slip surface. Vertical tail-lift available as alternative.
	Crushed toes under tail-lift plate. Hands or limbs caught in moving equipment.	ESS TECHNICIANS. VENUE STAFF.	LOW	ESS 'Loading and unloading trucks' training workshop. Steel toe caps required via ESS induction handbook.
	Equipment rolling off tail-lift	ESS TECHNICIANS. VENUE STAFF. PUBLIC.	LOW	• When the tail-lift is ready to go up or down the operator calls out 'lift moving' and waits for acknowledgement. • ESS 'Loading and unloading trucks' training workshop. • Lift Operator supervising. • Locking wheel brakes. • Tail-lift vertical flaps.
	Strain or injuries from manual handling of equipment.	ESS TECHNICIANS. VENUE STAFF.	LOW	ESS Lifting and Moving equipment workshop.
	Wood or metal splinters or lacerations from burrs.	ESS TECHNICIANS. VENUE STAFF	LOW	Personally supplied work-gloves required via ESS induction handbook.
Exercise reasonable caution when moving equipment in public places or in corridors / blind spot locations.	Collision of moving equipment on wheels and people.	ESS TECHNICIANS. VENUE STAFF. PUBLIC.	LOW	ESS Lifting and Moving equipment workshop.
After finishing the load, an 'idiot check' is carried out to double check for 'left-behind' equipment.	Trip or bump hazard from unmarked forgotten equipment to unaware passers by.	VENUE STAFF. PUBLIC.	LOW	Use of loadlists. 'Idiot check' rule via issue of ESS induction handbook.

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All equipment within the vehicle is stacked evenly.	Movement of load causes vehicle instability during transit. When rear door opened at venue, unstable equipment falls out of vehicle. Equipment falling within vehicle while stacking.	ESS DRIVER AND PASSENGERS AND PUBLIC ROAD USERS. ESS TECHNICIANS. VENUE STAFF. PUBLIC. ESS TECHNICIANS. VENUE STAFF.	LOW LOW LOW	• Most Cases designed to tip off wheels. • Non tip cases have locking wheels • Ratchet straps and/or load bars to secure loose equipment. • ESS 'Loading and unloading trucks' training workshop. Non sober people working with ESS removed from loading / unloading site. Driver supervises load / unload. ESS 'Loading and unloading trucks' training workshop.

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RIGGING / DE-RIGGING ON SITE				
Upon arriving at the venue, our staff will introduce themselves to the venue or event manager.				
The configuration of both the maximum possible and also the expected audience is reviewed.				
Any fire exits or routes are identified.				
The source of Sound power supply is identified and therefore the likely location of our main Sound Power Distribution.				
The relevant responsible person is consulted to determine what the local sound level restrictions are and to determine any special problems the venue may have with regards to sound levels and sound curfews.				
The positions for the stacking of any loudspeaker cabinets are determined.				
The positions of any flying points for flown loudspeaker cabinets are determined.				
The positions for both Front-of-house and Monitor Audio consoles and equipment racks is determined.				
The best path for the audio multicore and FOH power cables is determined and checked.				
The stage area is investigated taking into account any rake, use of House Tabs or Iron safety curtains.				
Necessary or desirable access routes on and off stage are identified.				
Next the designated ‘local crew’ or in-house loading crew are contacted.				

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The planned route for equipment access to the venue is checked for obstacles and problems.				
A safe, legal and convenient place for the vehicle or vehicles to unload is determined.				
All equipment to be used in the venue is unloaded according to safe working practises.	SEE 'LOADING / UNLOADING AT BASE OR VENUE'	SEE 'LOADING / UNLOADING AT BASE OR VENUE'	LOW	SEE 'LOADING / UNLOADING AT BASE OR VENUE'
If necessary, the vehicle is removed to a designated parking place.	Load-in point is sometimes using or adjacent to Fire exit. Danger of blocking exits.	All	LOW	Driver aware of fire exit following earlier check.
Cases and boxes are distributed to be near their point of use.	Trip or bump hazard from unmarked forgotten equipment to unaware passers by.	VENUE STAFF. PUBLIC.	LOW	When in public place – group boxes safely together – keep gangways clear ; via ESS 'Lifting and moving equipment' training workshop.
The FOH sound engineer supervises the building and orientation of any loudspeaker cabinet stacks.	Falling cabinets or cables.	ESS TECHNICIANS. VENUE STAFF. PUBLIC.	LOW	• ESS does not build stacks in open-to-public area. • Ground-stacks only built or moved in manufacturers approved fashion. • Ground stacks are always secured with any or all of these solutions: stabilisers, ratchet straps, or integral rigging hardware. • Ground stacks are never moved or re-orientated once built, unless using a Dolly or device specifically designed for the safe execution of such • If a move without this equipment is necessary, then the entire stack is de-rigged and rebuilt in the new location or orientation

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The FOH sound engineer does secondary checks that qualified riggers install flying points and motors and primary safety steels in the correct positions for the hanging of flown loudspeaker cabinet stacks.	Falling cabinets or cables.	ESS TECHNICIANS. VENUE STAFF. PUBLIC.	LOW	• When equipment being ' flown' above, avoid area beneath or wear hard hats; via ESS 'Lifting and moving equipment' training workshop. • FOH engineer acts as supervisor. • Qualified riggers used for installing fixed points and pick-up points. • All ESS crew involved in handling any rigging equipment are trained to do a visual check for SWL markings and for obvious defects.
The FOH sound engineer supervises the hanging of the relevant loudspeaker flybar on manual or motorised chain hoists which are attached to the flying point already installed. A steel safety rope with sufficient length to attach the flybar to the motor is also employed in a manner which means it does not take any load unless the main support fails.	Flybar falling or swinging	ESS TECHNICIANS. VENUE STAFF	LOW	• ESS does not fly stacks in an active public area. Avoid area beneath or wear hard hats; via ESS 'Lifting and moving equipment' training workshop. • FOH engineer acts as supervisor. • Qualified riggers used for flying.

The FOH sound engineer supervises the connection of individual cabinets to the flybar using specifically tested fly chains or smaller flybars. Once a complete hang is connected the flybar is raised up so the cabinets hang clear of the ground. The orientation and safety of the connections are double checked. Once verified the entire hang is flown out to working height.	A moving construction may strike unaware working personnel	ESS TECHNICIANS. VENUE STAFF	LOW	• FOH engineer acts as supervisor. • Qualified riggers used for flying. • 'Truss Moving!' is called out clearly before moving the flybar regardless of whether all staff appear to be aware or not.

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The cabinets may be run up with test sound signals to check the coverage of the flown hang. If necessary the hang is brought down again to working level and adjusted. The same procedure is followed as before prior to the hang being flown out to working height again.	A moving construction may strike unaware working personnel	ESS TECHNICIANS. VENUE STAFF	LOW	• FOH engineer acts as supervisor. • Qualified riggers used for flying. 'Truss Moving!' is called out clearly before moving the flybar regardless of whether all staff appear to be aware or not.
Once in the final working position the primary safety connection is secured to the flying point in the roof or grid. This is done by a qualified rigger. If suspended by a single fly point or motor the hang may be 'tied off' to prevent the hang from spinning. This connection carries no load and is not intended to support any weight. Simple rope may be used.	If no safety is fitted the entire hang could fall into the public / working area later, should the primary hang connection fail.	ESS TECHNICIANS. VENUE STAFF. PUBLIC.	LOW	• FOH engineer acts as supervisor. • Qualified riggers used for flying.
The FOH sound engineer supervises the layout of equipment in the FOH console position. This includes the exact position and tipping of the FOH sound console, as well as the position of any accompanying equipment racks.	Strain or injuries from manual handling of equipment.	ESS TECHNICIANS. VENUE STAFF	LOW	ESS 'Lifting and moving equipment' training workshop. Large consoles use ESS QUICKSTAND device.
The Monitor sound engineer supervises the layout of equipment in the On-stage monitoring console position. This includes the exact position and tipping of the sound console, as well as the position of any accompanying equipment racks.	Strain or injuries from manual handling of equipment.	ESS TECHNICIANS. VENUE STAFF	LOW	ESS 'Lifting and moving equipment' training workshop. Large consoles use ESS QUICKSTAND device.

One of the sound engineers works with the house crew to lay out the multicore and FOH power cables from the stage area to the FOH console position.	Strain or injuries from manual handling of equipment.	ESS TECHNICIANS. VENUE STAFF	LOW	ESS 'Lifting and moving equipment' training workshop.
One of the sound engineers works with the house crew to lay out on stage floor monitors, as well as build any larger drum-fill or side-fill loudspeaker stacks.	Strain or injuries from manual handling of equipment.	ESS TECHNICIANS. VENUE STAFF	LOW	ESS 'Lifting and moving equipment' training workshop.

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A qualified person connects the main sound power distribution to the house supply.	Electrocution.	VENUE STAFF	LOW	As arranged prior to event, qualified venue electrician used.
A check is made to ensure that the Sound Power Distribution rack is receiving the correct voltage supply in the correct configuration before any equipment has power cable laid to it. Main 30mA RCD trips are tested at this stage.				
Power cables are laid out to satellite power distribution points from which all sound and on-stage musicians' equipment are fed.	Shock due to incorrect single / three phase tail-set connection.	ESS TECHNICIANS. VENUE STAFF	LOW	As arranged prior to event, qualified venue electrician used. Voltage meters checked as in point above.
Once supplied, all equipment is checked for safe power-on operation. All amplifier gain controls are turned off at this stage	Shock from faulty equipment.	ESS TECHNICIANS. VENUE STAFF	LOW	PAT TEST. Equipment powered up at base. ESS sup-plies all RCD 30mA protected.
All loudspeaker cabinets are fed with relevant loudspeaker connections from their respective amplifiers.	Incorrect connection leading to mains / speaker interconnection.	ESS TECHNICIANS. VENUE STAFF	LOW	ESS cables all finger-touch proof. Unique connectors cannot be connected to mains. Loudspeaker voltages below 50V AC.

All signal interconnections are made between equipment racks.	Shock from faulty equipment mains to screen line.	ESS TECHNICIANS. VENUE STAFF	LOW	PAT TEST. ESS supplies all RCD 30mA protected.

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One at a time, the FOH and Monitor sound engineers will test their loudspeakers for correct connection. Once this is established they will balance frequency bandwidths, check sound dispersion throughout the venue and 'EQ' their respective systems to optimise the performance of the equipment.	Hearing damage. Involuntary jerk reactions from venue staff / public not expecting loud noise.	ESS TECHNICIANS. VENUE STAFF ESS TECHNICIANS. VENUE STAFF	LOW LOW	• Noise at Work information in the ESS 'Working for ESS' induction handbook. Industrial standard Ear Plugs are available free in the workshop.. Tests carried out by frequency bands first and at low volume. Via ESS induction technical training workshop.
The Sound multicore cable is checked for clean operation of all sound input and return channels.				
A voice communications system comprising of cable or radio fed beltpack and headphone combination is connected between FOH, Monitor and any other necessary positions. Occasionally low power loudspeakers ('shouters') are also connected at certain positions to gain the attention of backstage staff who may not be wearing the comms' headsets.	Involuntary jerk reactions from venue staff / public not expecting loud noise.	ESS TECHNICIANS. VENUE STAFF	LOW	Low power devices are used typically 5W – 30W range.
A switched microphone feed from FOH console to the stage monitor desk is connected. This allows the FOH engineer to communicate via the monitor console to any or all on stage monitoring devices. Hence the musicians or artistes can hear the FOH engineer clearly who may be positioned up to 100 metes away.	Involuntary jerk reactions from venue staff / public not expecting loud noise.	MUSICIANS / VENUE STAFF	LOW	Monitor engineer is on stage and has secondary control of talkback volume.

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Staff employed by the artists or performers lay out musician's equipment.				
Relevant microphones, direct injection boxes and any other forms of transducer are laid out and connected at this stage.				
A line test of all transducers is performed to ensure that all instruments are appearing in the correct channels.				
The FOH engineer will lead the performers their staff through a series of sound checks to set up gain structure and EQ of individual instruments.	Hearing damage	All	LOW	Noise at Work information in the ESS 'Working for ESS' induction handbook. Sound level meter on each FOH system with supervising FOH engineer.
Once each item has been checked, the planned set or some part of it is performed in order to balance the mix of instruments.				
Once complete, the equipment is partly or completely struck from the stage and any other performers will come onto stage in order to repeat the procedure. The sound engineers will record or preserve the settings for the previous artists in some way so that these settings can be reset in time for their actual performance later.	Strain or injuries from manual handling of equipment.	VENUE STAFF / ARTIST STAFF	LOW	ESS Monitor engineer or ESS systems engineer able to supervise safe entry / exit of equipment.
The order of soundcheck is in reverse to the actual order in which performers will appear on the night.				

If thought necessary the main FOH and monitor systems may be run to maximum level in order to 'load test' the power supply to ensure that it is capable of supplying adequate current during the actual performance.	Hearing damage	ALL	LOW to MEDIUM	Venue manager involved. Warnings issued. Not done while public in venue. Noise at Work information in the ESS 'Working for ESS' induction handbook. Sound level meter on each FOH system with supervising FOH engineer

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Any masking or 'dressing' of equipment to tidy up or enhance the stage set is done now.				
Before the entrance or doors to the venue is opened tot he public a check will be carried out looking for any trip hazards or similar which may endanger the public or performers.	Trip or bump hazard	ALL	LOW	GAFFA tape or cable ducting supplied by ESS to all shows.
The de-rigging of equipment happens in reverse order to the build	Falling cabinets or cables.	ESS TECHNICIANS / VENUE STAFF.	LOW	No equipment will be moved or de-stacked until the public are clear of the area affected by this work. Via ESS 'Lifting and moving equipment' training workshop.
Before de-rigging any equipment situated outdoors, adequate lighting must be in place so that no-one is working in shadow or without illumination.	Trip or drop	ESS TECHNICIANS / VENUE STAFF.	LOW	ESS staff not permitted to de-rig at all in poorly lit areas.
DE-RIGGING is the opposite of rigging and most tasks occur in reverse order to the build. All steps in the process have the same risks associated with them and the same measures are followed to reduce the risk altogether or to the lowest possible level.				

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DURING PERFORMANCE				
If our sound engineers are not actually mixing the sound balance themselves they will remain to assist and supervise.	Hearing damage	All	LOW	Noise at Work information in the ESS 'Working for ESS' induction handbook. Sound level meter on each FOH system with supervising FOH engineer ESS engineers are directly responsible to the venue staff originally consulted re sound level ceilings.
If local EHO officers are present, our engineers will introduce themselves and request a direct line of communication, preferably a radio link. During the performance they will be kept informed if sound ceilings are either approached or exceeded.	Hearing damage	All	LOW	Feedback from EHO and venue staff independently responsible for Health and Safety during the show.
In the 'changeover period' between artists performances, the FOH engineer will lead 'line checks' to ensure that microphones have been returned to the relevant positions and settings at which the initial sound check was performed.				
During performance fluids such as beer or water may be spilled or thrown by the public onto electrical equipment either on stage or in the FOH working position.	Electric shock. Sudden darkness.	All	LOW	• All sound equipment is protected by RCD trips which will disconnect the power feed instantaneously and prevent fatal or harmful electric shock. • All ESS crew carry personal 'maglites' or torches to illuminate working areas in the event of stage lighting failure.

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EVENT FOLLOW UP				
On return to home base, all equipment is 'de-prepped'. Any damaged, reported, or suspected faulty equipment is taken out and placed in a repair and test area for further investigation.				
All event information is returned to the office to be filed for future reference re any repeat work with venue, client or individual artistes.				
Our Client Account manger will contact the client of each job completed to glean any client feedback.				
Any suggestions as to how ESS may improve it's service or create a better impression to the client and public are noted and discussed during regular operations meetings.				
Notes and information passed back by ESS engineers are noted to allow us to tackle a unique or difficult venue in a more informed way the next time round.				