



Standard Operating Procedures

REV-241227

What's inside?

Introduction	4
Rationale.....	5
Scope.....	5
Revision.....	5
Background.....	6
Overview	7
Definitions	8
General Conventions	9
Environmental Monitoring.....	10
[E1] Temperature (Water)	11
[E2] Temperature (Air)	12
[E3] Salinity	13
[E4] Dissolved Oxygen.....	14
Routine Maintenance	15
[R1] Duty/Standby switch over (make-up pumps).....	16
[R2] Duty/Standby switch over (air blowers).....	17
[R3] Cleaning filter baskets.....	18
[R4] Cleaning protein skimmer cups	19
Husbandry	20
[H1] Artemia Hatching.....	21
[H2] Euthanasia.....	22
[H3] Gut-loading reptile & amphibian food	23
Filter Backwashing.....	24
[B1] Ocean tank	25
[B2] Recirc	26
[B4] Ray tank	27
[B5] Subs.....	28
[B6] Whitewater	29
[B7] Snake	30
[B8] African Dwarf Crocodile	31
[B9] Quarantine (LQ1)	32
Safety Checks	33
[C1] Crab-Eating Macaque (Recall).....	34
[C2] Crab-Eating Macaque (Exhibit Return)	35

[C3] Asian Short Clawed Otter.....	36
[C4] Dwarf African Crocodile	37

DRAFT

Introduction

DRAFT

Rationale

The procedures laid down in this document have been established to ensure a high standard of husbandry across all Sealife Adventure Zooquarium operations, to aid consistent provision of training, and to ensure a good understanding of all husbandry-related procedures.

Scope

The Standard Operating Procedures (SOP) in this folder were written by Joe Lavery (public aquarium consultant, Josxph Limited) on behalf of Miller Leisure Ltd for Sealife Adventure Zooquarium (hereafter referred to as "SAZ").

All husbandry staff involved in the day-to-day operation of the aquarium must be made aware of this document as part of their initial training, and are subsequently responsible for familiarising themselves with its contents on a regular basis. Senior leaders within the department must also ensure that husbandry staff are familiar with the operating standards.

Information in this document may complement, supplement and/or amplify standards published by the British and Irish Association of Zoos and Aquariums (BIAZA) and other bodies. In the event of a conflict or contradiction between any of the information or procedures contained herein and information published by official industry sources, the official information shall be considered authoritative.

Whilst this document is aimed at reducing the likelihood of an emergency situation arising, husbandry staff are reminded that in the event of an emergency or in case of any other situation requiring immediate remedial action, such action should be taken as is required to avert that situation worsening; this may include deviation from standard procedure.

Revision

This document is reviewed and updated on an on-going basis, with the revision code found on the cover page with the following nomenclature based on the last revision: REV-YYMMDD.

Should any reader of this document notice errors, wish to propose changes, or provide feedback, submissions should be made to the Curator who will take the appropriate action.

Distribution

This document must be made available in full to any aquarist or husbandry staff member on request, with printed copies kept in both the displays office and in any service area where reference of this document is required.

Background

DRAFT

Overview

The Standard Operating Procedures (SOPs) in this document are designed to eliminate ambiguity and provide operators with clear, step-by-step instructions for performing specific tasks. Each SOP consists of a series of detailed actions necessary to complete the procedure safely, efficiently, and consistently. Where a procedure requires additional processes, such as topping up a tank after backwashing, the operator will be directed to the relevant SOP for the secondary procedure. These cross-references ensure all related tasks are completed in the correct order without omitting critical steps.

To ensure clarity, any action involving the operation of a switch, control, or other input will begin with the phrase *“Using the...”*, followed by a precise description of the equipment or control being operated. Specific terminology, such as *selector switch*, *mains isolation switch*, or *multiport valve*, are used consistently to prevent confusion and ensure the operator knows exactly what is required.

This document uses a standardised format to present instructions clearly and concisely. Key conventions include the use of numbered steps to indicate sequential actions and bold text for critical terms or equipment. Where verification of an action is required, steps will use the term *“Confirm action...”*, instructing the operator to check specific outcomes (eg pressure or flow). This document also includes a *definitions* and a *general conventions* section to provide additional background and to explain the reasoning behind operational best practices.

Operators are strongly encouraged to read this manual in its entirety before beginning any procedure to familiarise themselves with the overall structure, key terms, and conventions. Understanding the rationale behind the instructions will ensure procedures are executed safely and correctly. This is particularly important when working with systems involving live animals, electrical components, and pressurised water, where errors in the execution of an operational procedure can have serious consequences.

Furthermore, this document assumes the operator has a baseline understanding of the facility's equipment, its layout, and the specific systems being referenced. It is recommended that operators undertake appropriate training and seek clarification from supervisors if any aspect of the equipment or procedures is unclear. Familiarity with the *General Conventions* and *Definitions* sections will provide the context for all procedures outlined in this document.

Finally, if a situation arises that is not covered by the SOPs or if unexpected outcomes occur, operators should immediately halt the procedure, assess the situation, and report it to the appropriate person. This consistent feedback from operators is crucial for keeping SOPs up-to-date and relevant to the facility's evolving needs.

Definitions

Action – A specific step or instruction within a procedure that must be followed to achieve the desired outcome. Actions are sequential and must be performed exactly as described.

Confirm Action – A verification step requiring the operator to ensure that an action has been successfully completed. This typically involves observing a measurable outcome, such as checking for pressure or confirming flow.

Deviation – Any variation from the specified procedure, which may only occur in emergencies or unforeseen situations requiring immediate action to prevent harm or further damage. Deviations must be reported and documented as soon as possible.

End of Procedure – A statement denoting that all required steps for the procedure have been completed, and that no further actions are necessary.

Operator – Any individual trained and authorised to carry out the procedures described in this document. Operators are responsible for understanding and adhering to the SOP.

Procedure – A structured series of actions or steps designed to achieve a specific objective in a consistent and controlled manner.

Secondary Procedure – A related procedure that may need to be performed in conjunction with the primary procedure, such as topping up a tank after backwashing. These are cross-referenced within the main SOPs.

Blind Count – A method of independently counting animals or items. The results are then compared to ensure accuracy and eliminate confirmation bias.

Monitoring – The ongoing observation of system parameters, such as pressure, flow rate, or temperature, to ensure proper functioning during and after a procedure.

Cross-Check – A verification process in which a second individual confirms that an action or condition is correct, typically used in safety-critical situations eg primate exhibit checks.

General Conventions

To ensure safe, effective, and consistent operations, the following general conventions must always be observed when completing any of the procedures outlined in this document.

Water changes must always be completed slowly & carefully to avoid stress or shock to animals. Since the incoming seawater is estuarine, it is essential to top up tanks slowly to prevent sudden changes in temperature, pH, or salinity. Gradual addition allows for natural acclimation, and water parameters should be checked throughout the process.

Valve operation requires care to protect system integrity and prevent damage. When closing valves, always do so slowly to avoid any “water hammer” effect, which can damage pipes and equipment. Additionally, when operating multiple connected valves, always open the next valve before closing the current one to maintain flow and prevent “dead heading”.

Blind counts are essential for accurate animal safety checks and must be carried out independently by each operator involved. Both individuals should count animals without communicating during the process to prevent confirmation bias. Once counts are complete, the totals should be compared, and any discrepancies discussed and resolved collaboratively.

Electrical safety is especially critical when working with aquatic systems. Always isolate power using the mains isolation switch before any maintenance or any interaction with electrical equipment. After completing the procedure, confirm that power has been properly restored to all necessary components before resuming normal operations.

System monitoring is an integral part of all procedures and ensures that the equipment is functioning correctly. After completing a task, always check that sand filters, pumps, and other components are operating under the correct pressure. Additionally, observe flow rates to ensure they are stable and meet expected operational parameters as indicated.

Incident reporting must be completed promptly in the event of unexpected outcomes during a procedure. If an issue arises, stop all operations immediately to assess the situation, notify the appropriate person without delay, and then document all relevant details, including what occurred and the corrective actions taken.

Communication and coordination are critical when a procedure involves more than one operator. Any adjustments to the procedure must be communicated promptly to all team members involved.

Environmental Monitoring

DRAFT

[E1] Temperature (Water)

This procedure describes the process of taking the temperature of a water body using the temperature feature on the dissolved oxygen probe.

1. Fully immerse the probe of the DO meter into the exhibit being tested
2. Wait for the temperature value reported by the DO meter to stabilise
3. Record the temperature value in the appropriate place
4. Remove the probe from the water
5. Rinse the probe in freshwater, then carefully clean and dry the DO probe

END OF PROCEDURE

[E2] Temperature (Air)

This procedure describes the process of measuring the air temperature using a laser thermometer.

1. Ensure the laser thermometer is clean and working.
2. Identify the area where the air temperature is to be measured,
3. Hold the thermometer at the recommended distance specified by the manufacturer.
4. Point it at the surface in the area to be measured.
5. Press the trigger to activate the laser.
6. Gently move the laser in a tight circular motion to avoid interference from hot or cold spots.
7. Read the temperature displayed on the thermometer screen.
8. Record the temperature value in the appropriate place.

END OF PROCEDURE

[E3] Salinity

This procedure describes the process of measuring the salinity of system water using a refractometer.

1. Using a pipette, draw a sample of water from the exhibit being tested.
2. Place a few drops of the collected water onto the refractometer glass plate.
3. Gently close the refractometer lid, ensuring there are no air bubbles.
4. Point the refractometer at a light source, ideally an overhead room light.
5. Look through the eyepiece and identify the border between the blue and white fields.
6. Read the salinity (in ppm, right side of the gauge) at this border.
7. Record the salinity value in the appropriate place
8. Clean the glass plate in freshwater, then carefully dry it

END OF PROCEDURE

[E4] Dissolved Oxygen

This procedure describes the process of measuring the dissolved oxygen of system water using a dissolved oxygen meter.

1. Fully immerse the probe of the DO meter into the exhibit being tested
2. Gently stir the probe in the water to prevent air bubbles influencing the reading
3. Wait for the value reported by the DO meter to stabilise
4. Record the dissolved oxygen value in the appropriate place
5. Remove the probe from the water
6. Rinse the probe in freshwater, then carefully clean and dry the DO probe

END OF PROCEDURE

DRAFT

Routine Maintenance

[R1] Duty/Standby switch over (make-up pumps)

This procedure describes the process of switching between make-up pumps 1 and 2

1. Using the mains isolation switch, isolate the UV steriliser from power
2. Using the selector switch on the control panel, switch off the pump that is being de-activated
3. Using the mains isolation switch, isolate the pump that is being de-activated from power
4. Close the inlet/outlet valves on the pump that is being de-activated
5. Open the inlet/outlet valves on the pump that is being activated
6. Using the mains isolation switch, provide power to the pump that is being activated
7. Using the selector switch on the control panel, switch on the pump that is being activated
8. Confirm action by checking that both sand filters have pressure
9. Using the mains isolation switch, provide power to the UV steriliser

END OF PROCEDURE

[R2] Duty/Standby switch over (air blowers)

This procedure describes the process of switching between air blowers 1 and 2

1. Locate the pressure gauge on the air supply pipe, and note the pressure
2. Locate the "air blower" selector switch on the control panel
3. Rotate the switch from its current position (pointing left, or right) to the centre
4. Pause for 1 second
5. Rotate the switch from its current position to the opposite side (now pointing right, or left)
6. Confirm action noting that the pressure gauge is showing air pressure

END OF PROCEDURE

[R3] Cleaning filter baskets

This procedure describes the general process for removing, cleaning, and replacing pump filter baskets.

1. Switch off and isolate any ancillary equipment eg. UV sterilisers, heaters, etc
2. If necessary, use the selector switch on the control panel to switch off the pump
3. Using the mains isolation switch, isolate the pump
4. Close the inlet/outlet valves on the pump
5. Use a tool to remove the basket cover
6. Remove the filter basket and clean it thoroughly
7. Replace the basket cover and hand tighten
8. Open the inlet/outlet valves on the pump
9. Using the mains isolation switch, provide power to the pump
10. If necessary, use the selector switch on the control panel to switch on the pump
11. Confirm action by checking that the pump basket fills with water
12. Switch on and provide power to any ancillary equipment eg. UV sterilisers, heaters, etc

END OF PROCEDURE

[R4] Cleaning protein skimmer cups

This procedure describes the general process for removing, cleaning, and replacing protein skimmer collection cups for standalone protein skimmers.

1. Deactivate the venturi pump by unplugging it
2. Switch off the supply pump, or close the supply valve if water is supplied from elsewhere
3. Remove the collection cup, empty any liquid inside, and clean it thoroughly
4. Replace the collection cup
5. Open the inlet/outlet valves on the pump
6. Using the mains isolation switch, provide power to the pump
7. If necessary, use the selector switch on the control panel to switch on the pump

END OF PROCEDURE

Husbandry

DRAFT

[H1] Artemia Hatching

This procedure describes the process for hatching Artemia nauplii using the Artemia hatcher.

1. Fill a clean, dry hatcher with filtered saltwater to the recommended level.
2. Add 8 grams of Artemia cysts to the hatcher.
3. Using the air valve, ensure good aeration and mixing to keep the cysts in suspension.
4. Using the heater control valve, ensure the temperature is set to 25-28°C.
5. Provide continuous bright light above the hatcher for the duration of the hatching process.
6. Wait 24 hours.
7. Once hatching is complete, open the drain valve and decant the nauplii into a collection cup.
8. Using the magnetic stirrer, gently swirl it around the collection cup to remove the cysts.
9. Rinse the nauplii in fresh water using a fine mesh strainer to remove residual salt and debris.
10. Feed the Artemia nauplii immediately or transfer them to a suitable holding tank.

END OF PROCEDURE

[H2] Euthanasia

This procedure describes the process of administering MS222 to teleosts under direction from a veterinarian

1. Weigh the required amount of MS222 as specified by the veterinarian.
2. Dissolve the MS222 in an appropriate volume of tank water in a clean container
3. Ensure the solution is thoroughly mixed.
4. Adjust the pH of the MS222 solution to match the exhibit where the animal is being held.
5. Use a suitable buffering agent to stabilise the pH if necessary.
6. Gently transfer the animal to the container with the prepared MS222 solution.
7. Observe the animal continuously for 10 minutes.
8. Confirm action by ensuring there are no gill movements or other visible indicators of life.
9. Complete any necessary post mortem examinations and/or take histological samples.
10. Dispose of the MS222 solution in accordance with waste management protocol.
11. Dispose of the animal in accordance with waste management protocol.

END OF PROCEDURE

Note: This procedure must only be carried out under the direct instruction and authorisation of a veterinarian. The concentration of MS222 will be provided by the veterinarian at the time of authorisation. Ensure all equipment is cleaned and disinfected thoroughly after use.

[H3] Gut-loading reptile & amphibian food

This procedure describes the process of gut-loading feeder invertebrates for reptiles and amphibians.

1. Select the feeder invertebrates as specified in the diet plan.
2. Place the chosen feeder invertebrates into a separate container.
3. Add 5 grams of DK Insect Gut Loader powder (or paste) to the container.
4. Provide access to fresh water for the entire 48-hour gut-loading period.
5. To ensure maximum intake of the supplement, do not add any other food to the container.
6. Wait 48 hours.
7. On the day of feeding, remove the gut-loaded invertebrates from the container.
8. Using 0.5 grams of DK Insect Gut Loader or Nutribol, lightly dust the feeder invertebrates.
9. Ensure the dusting is minimal to avoid clogging the spiracles of the feeder invertebrates.
10. Feed the gut loaded feeder invertebrates to display as required.

END OF PROCEDURE

DRAFT

Filter Backwashing

[B1] Ocean tank

This procedure describes the process of backwashing any one of the ocean tank sand filters 1-3.

1. Select a sand filter to be backwashed (hereafter referred to as sand filter X)
2. Using the alarm switch, temporarily disable the flow switch alarm for sand filter pump X
3. Using the selector switch on the control panel, switch OFF sand filter pump X
4. Close the inlet/outlet valves on sand filter pump X
5. Using the multiport valve, set the sand filter to "backwash"
6. Open the sand filter waste valve
7. Open main plant room waste valve
8. Open the inlet/outlet valves on sand filter pump X
9. Using the selector switch on the control panel, switch ON sand filter pump X
10. Wait X minutes
11. Using the selector switch on the control panel, switch OFF sand filter pump X
12. Close the inlet/outlet valves on sand filter pump X
13. Using the multiport valve, set the sand filter to "rinse"
14. Open the inlet/outlet valves on sand filter pump X
15. Using the selector switch on the control panel, switch ON sand filter pump X
16. Wait X minutes
17. Using the selector switch on the control panel, switch OFF sand filter pump X
18. Close the inlet/outlet valves on sand filter pump X
19. Using the multiport valve, set the sand filter to "filter"
20. Close the sand filter waste valve
21. Close main plant room waste valve
22. Open the inlet/outlet valves on sand filter pump X
23. Using the selector switch on the control panel, switch ON sand filter pump X
24. Confirm action by checking that the sand filter has pressure
25. Using the alarm switch, re-enable the flow switch alarm for sand filter pump X
26. If necessary, top up the Ocean Tank (see "[M9] Topping up the Ocean Tank")

END OF PROCEDURE

This procedure describes the process of backwashing any one of the recirc sand filters 1-2.

1. Select one sand filter to be backwashed (hereafter referred to as RSF / pump X)
2. Using the alarm switch, temporarily disable the flow switch alarm for RSF pump X
3. Using the selector switch on the control panel, switch OFF RSF pump X
4. Close the inlet/outlet valves on RSF pump X
5. Using the multiport valve, set the RSF to "backwash"
6. Open the sand filter waste valve
7. Open main plant room waste valve
8. Open the inlet/outlet valves on RSF pump X
9. Using the selector switch on the control panel, switch ON sand filter pump X
10. Wait X minutes
11. Using the selector switch on the control panel, switch OFF sand filter pump X
12. Close the inlet/outlet valves on RSF pump X
13. Using the multiport valve, set the RSF to "rinse"
14. Open the inlet/outlet valves on RSF pump X
15. Using the selector switch on the control panel, switch ON RSF pump
16. Wait X minutes
17. Using the selector switch on the control panel, switch OFF RSF pump
18. Close the inlet/outlet valves on sand filter pump X
19. Using the multiport valve, set the RSF to "filter"
20. Close the sand filter waste valve
21. Close main plant room waste valve
22. Open the inlet/outlet valves on RSF pump X
23. Using the selector switch on the control panel, switch ON RSF pump X
24. Confirm action by checking that the sand filter has pressure
25. Using the alarm switch, re-enable the flow switch alarm for RSF pump X

END OF PROCEDURE

[B4] Ray tank

This procedure describes

- Check the level of the pit and fill if required before the backwash
- Open sand filter bypass
- Close 3 sand tower valves
- Turn sand filter pump switch off
- Move multiport to backwash
- Open waste valve
- Turn sand filter pump switch on then **WAIT 6 minutes**
- Turn sand filter pump switch off
- Move multiport to rinse
- Turn sand filter pump switch on then **WAIT 1 minute**
- Turn sand filter pump switch off
- Move multiport to filter (complete one full 360 degrees turn before leaving on filter)
- Turn sand filter pump switch on
- Check the sight glass (near the multiport) and close the waste valve when it is free of water
- Open 3 sand tower valves
- Close the sand filter bypass valve (watch the movement in the sand towers – bubbles and sand movement)
- Allow the Ray Bay to fill and ensure the pit is monitored and topped up

This procedure describes

- Half open small makeup valve (to the left of the sump)
- Open displays makeup valve
- Ensure the sump is full
- Turn UV off (grey electrical box)
- Turn heater off (red switch)
- Turn pump off (check which one)
- Close pump valve (above pump)
- Move multiport to backwash
- Open waste valve
- Open pump valve
- Turn pump on then **WAIT 4-6 minutes (4mins minimum – monitor the sump level)**
- Turn pump off
- Close pump valve
- Move multiport to rinse
- Turn pump on then **WAIT 40 seconds-1 minute**
- Turn pump off
- Close pump valve
- Move multiport to filter (complete one full 360 degrees turn before leaving on filter)
- Open pump valve
- Turn pump on
- Turn heater on
- Turn UV on
- Allow the sump to fill then close displays makeup valve and close small makeup supply valve next to sump

[B6] Whitewater

This procedure describes the process of backwashing the Whitewater sand filter

1. Using the mains isolation switch, isolate the UV steriliser from power
2. Using the mains isolation switch, switch off pump 2
3. Using the multiport valve, set the sand filter to "backwash"
4. Open the sand filter waste valve
5. Using the mains isolation switch, switch on pump 2
6. Wait X minutes
7. Using the mains isolation switch, switch off pump 2
8. Using the multiport valve, set the sand filter to "rinse"
9. Using the mains isolation switch, switch on pump 2
10. Wait X minutes
11. Using the mains isolation switch, switch off pump 2
12. Using the multiport valve, set the sand filter to "filter"
13. Close the sand filter waste valve
14. Using the mains isolation switch, switch on pump 2
15. Confirm action by checking that the sand filter has pressure
16. Using the mains isolation switch, provide power to the UV steriliser
17. If necessary, top up the Whitewater system (see "[M9] Topping up the Whitewater sump")

END OF PROCEDURE

[B7] Snake

This procedure describes the process of backwashing the Snake sand filter

1. Using the mains isolation switch, isolate the UV steriliser from power
2. Using the mains isolation switch, switch off the sand filter pump
3. Using the multiport valve, set the sand filter to "backwash"
4. Open the sand filter waste valve
5. Using the mains isolation switch, switch on the sand filter pump
6. Wait until the waste balance tank is 2/3 full
7. Using the mains isolation switch, switch off the sand filter pump
8. Using the multiport valve, set the sand filter to "rinse"
9. Using the mains isolation switch, switch on the sand filter pump
10. Wait until the waste balance tank is full
11. Using the mains isolation switch, switch off the sand filter pump
12. Using the multiport valve, set the sand filter to "filter"
13. Close the sand filter waste valve
14. Using the mains isolation switch, switch on the sand filter pump
15. Confirm action by checking that the sand filter has pressure
16. Using the mains isolation switch, provide power to the UV steriliser
17. If necessary, top up the Snake tank (see "[M9] Topping up the Snake tank")

END OF PROCEDURE

[B8] African Dwarf Crocodile

This procedure describes the process of backwashing the Crocodile sand filter

1. Using the mains isolation switch, isolate the UV steriliser from power
2. Using the mains isolation switch, switch off the pump
3. Using the multiport valve, set the sand filter to "backwash"
4. Open the sand filter waste valve
5. Using the mains isolation switch, switch on the pump
6. Wait X minutes
7. Using the mains isolation switch, switch off the pump
8. Using the multiport valve, set the sand filter to "rinse"
9. Using the mains isolation switch, switch on the pump
10. Wait X minutes
11. Using the mains isolation switch, switch off the pump
12. Using the multiport valve, set the sand filter to "filter"
13. Close the sand filter waste valve
14. Using the mains isolation switch, switch on the pump
15. Confirm action by checking that the sand filter has pressure
16. Using the mains isolation switch, provide power to the UV steriliser
17. If necessary, top up the Croc pool (see "[M9] Topping up the Croc pool")

END OF PROCEDURE

[B9] Quarantine (LQ1)

This procedure describes the process of backwashing the LQ1 sand filter

1. Using the control panel, temporarily disable the flow switch alarm for the sand filter pump
2. Using the control panel, switch off the UV steriliser from power
3. Using the control panel, switch off the pump
4. Using the multiport valve, set the sand filter to "backwash"
5. Open the sand filter waste valve
6. Using the control panel, switch on the pump
7. Wait X minutes
8. Using the control panel, switch off the pump
9. Using the multiport valve, set the sand filter to "rinse"
10. Using the control panel, switch on the pump
11. Wait X minutes
12. Using the control panel, switch off the pump
13. Using the multiport valve, set the sand filter to "filter"
14. Close the sand filter waste valve
15. Using the control panel, switch on the pump
16. Confirm action by checking that the sand filter has pressure
17. Using the control panel, switch on the UV steriliser from power
18. Using the control panel, re-enable the flow switch alarm for the sand filter pump
19. If necessary, top up LQ1 (see "[M9] Topping up LQ1")

END OF PROCEDURE

DRAFT

Safety Checks

[C1] Crab-Eating Macaque (Recall)

This procedure describes the process for cross-checking safety checks during recall of the Crab-Eating Macaques

1. Observe while all water bottle locks in pens 2 & 3 are secured
2. Observe while the airlock doors in pens 2 & 3 are closed and locked
3. Complete cross-check to confirm that the airlock doors in pens 2 & 3 are closed and locked
4. Observe while internal slides 1-4 are unlocked & opened
5. Ring the recall bell, and wait for all animals to come into pens 2 & 3
6. Request closure of slide 1
7. Wait for slide 1 to be closed
8. Request closure of slide 2
9. Wait for slide 2 to be closed
10. Request closure of slide 3
11. Wait for slide 3 to be closed
12. Request closure of slide 4
13. Wait for slide 4 to be closed
14. Wait while the animals in pens 2 and 3 are counted
15. Count the animals in pens 2 and 3
16. Compare the blind animal counts and confirm that both counts match the group size
17. If both counts do not match the group size, return to [15]
18. If both counts do match the group size, proceed to [19]
19. Observe while internal slides 1-4 are locked
20. Complete cross-check to confirm that internal slides 1-4 are locked
21. Unscrew slide 6 handle to remove walkway obstacle hazard

END OF PROCESS

[C2] Crab-Eating Macaque (Exhibit Return)

This procedure describes the process for cross-checking safety checks during the return of the Crab-Eating Macaques to the main exhibit

1. Observe while all water bottle locks in pen 1 are secured
2. Observe while the airlock doors in pen 1 are closed and locked
3. Complete cross-check to confirm that the airlock doors in pen 1 are closed and locked
4. Observe while internal slides 1-4 are unlocked & opened
5. Wait for all animals to move into pen 1
6. If access will be restricted to pen 1, proceed to [7]; otherwise, proceed to [22]
7. Request closure of slide 1
8. Wait for slide 1 to be closed
9. Request closure of slide 2
10. Wait for slide 2 to be closed
11. Request closure of slide 3
12. Wait for slide 3 to be closed
13. Request closure of slide 4
14. Wait for slide 4 to be closed
15. Wait while the animals in pens 2 and 3 are counted
16. Count the animals in pens 2 and 3
17. Compare the blind animal counts and confirm that both counts are zero
18. If either count is greater than zero, return to [15]
19. If both counts are zero, proceed to [20]
20. Observe while internal slides 1-4 are locked
21. Complete cross-check to confirm that internal slides 1-4 are locked
22. Unscrew slide 6 handle to remove walkway obstacle hazard

END OF PROCESS

[C3] Asian Short Clawed Otter

This procedure describes the process for cross-checking safety checks of the Otter enclosure

1. Observe while pump hatch is closed and locked
2. Observe while overflow river outlet hatch is closed and locked
3. Observe while the inner airlock door is closed and locked
4. Complete cross-check to confirm that the inner airlock doors is closed and locked
5. Observe while the Otters in the enclosure are counted
6. Count the otters in the enclosure
7. Compare the blind animal counts and confirm that both counts match the group size
8. If both counts do not match the group size, return to [5]
9. If both counts do match the group size, proceed to [10]
10. Observe while the outer airlock door is closed and locked

END OF PROCESS

[C4] Dwarf African Crocodile

This procedure describes the process for cross-checking safety checks of the Dwarf African Crocodile enclosure

1. Observe while the inner airlock door is closed and locked
2. Complete cross-check to confirm that the inner airlock doors is closed and locked
3. Observe while the Dwarf African Crocodiles in the enclosure are counted
4. Count the Dwarf African Crocodiles in the enclosure
5. Compare the blind animal counts and confirm that both counts match the group size
6. If both counts do not match the group size, return to [3]
7. If both counts do match the group size, proceed to [8]
8. Observe while the outer airlock door is closed and locked

END OF PROCESS