

<b>Frederick National Laboratory for Cancer Research</b> <small>sponsored by the National Cancer Institute</small>	HPV Serology Laboratory Standard Operating Procedure	
Use and Maintenance of a Laboratory Convection Oven		
<b>Document ID: HSL_EQ_017</b>	Version 1.0	Page 1 of 12

Released by/Date Effective:

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Author Name	Title	Signature/Date

Approver Name	Title	Signature/Date

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**1. PURPOSE**

- 1.1. The purpose of this procedure is to set instructions in the proper use and handling of the convection oven.

**2. SCOPE**

- 2.1. This procedure applies to the HPV Serology Laboratory located at the Advanced Technology Research Facility, Room C2007.

**3. REFERENCES**

- 3.1. Thermofisher Heratherm convection oven user manual
- 3.2. HSL\_EQ\_017.01: Convection Oven Use and Maintenance Form
- 3.3. HSL\_GL\_001: Waste Disposal at the Advanced Technology Research Facility
- 3.4. HSL\_GL\_002: Equipment Qualification and Calibration in the HPV Serology Laboratory
- 3.5. HSL\_GL\_003: Good Documentation Practices for the HPV Serology Laboratory
- 3.6. HSL\_GL\_007: Reagent and Chemical Expiry in the HPV Serology Laboratory
- 3.7. HSL\_GL\_008: Laboratory Flow and Gowning Procedures for the HPV Serology Laboratory
- 3.8. HSL\_GL\_009: HPV Serology Laboratory BSL-2 Procedures
- 3.9. HSL\_GL\_010: Control and Request of Documents in the HPV Serology Laboratory

**4. RESPONSIBILITIES**

- 4.1. The Research Associate, hereafter referred to as analyst, is responsible for reviewing and following this procedure.
- 4.2. The Scientific Manager or designee is responsible for training personnel in this procedure and reviewing associated documentation.
- 4.3. The Quality Assurance Specialist is responsible for quality oversight and approval of this procedure.

**5. REAGENTS, CHEMICALS AND EQUIPMENT**

- 5.1. Thermofisher Heratherm Convection Oven (Model # 51028125 or equivalent)
- 5.2. Cavicide (Warehouse, Cat # 79300360)

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- 5.3. Ster-ahol (VWR, Cat # 14003-358 or equivalent)
- 5.4. Wypalls paper towel (Warehouse, Cat # 79300335 or equivalent)
- 5.5. NIST Calibrated Thermometer (VWR, Cat # 89218-002 or equivalent)

**6. HEALTH AND SAFETY CONSIDERATIONS**

- 6.1. Proper safety precautions should be taken while working in a laboratory setting. This includes, but is not limited to, proper protective equipment such as lab coats, safety glasses, closed-toe shoes, and non-latex gloves.
- 6.2. Refer to the respective SDS when working with any chemicals.
- 6.3. Refer to “HSL\_GL\_001: Waste Disposal at the Advanced Technology Research Facility” regarding waste disposal processes at the ATRF.

**7. DEFINITIONS AND ICONS**

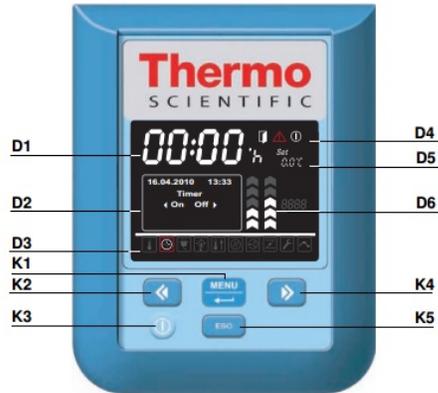
Term	Definition
ATRF	Advanced Technology Research Facility
HPV	Human Papillomavirus
HSL	HPV Serology Laboratory
SDS	Safety Data Sheets
SOP	Standard Operating Procedure

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Feature	Item	Function
	D1	Display pane showing a permanent readout of the actual temperature in the work space either in °C or °F (depending on the user's preferences, see "Temperature Display Unit" on page 7-32). Alternatively, a flashing time entry prompt of the general format hh:mm (hours:minutes, both with two digits) appears in this place while the user is setting the oven's built-in clock.
	D2	Four-line multifunctional display pane with fields for date and time, a display area for the specific options of the selected menu item, detailed alarm messages with alarm codes, progress indicators for continuous processes (for example, program-controlled temperature ramping), etc.
	D3	Menu bar with iconized representations of adjustable parameters. A red border is used to highlight the current menu item, as selected using the <b>Menu</b> (K1) and arrow buttons <b>Left</b> (K2) and <b>Right</b> (K4). Brief descriptions of the individual menu items are given in table 7-3 below. <b>Note</b> If a menu item cannot be selected, then the function it represents is not part of the equipment configuration of your unit.

Icon	Item	Function
	K1	<b>Menu/Enter button</b> <b>First key press:</b> Activates the menu, highlighting the first menu item with a red border. <b>Second key press:</b> Selects the currently activated menu item (as highlighted by the red border), depending on the currently selected function, pressing this button enables entries with item D2, D5 or D6. <b>Third key press (once a setting has been changed):</b> Confirms a previous entry or selection.
	K2	<b>Left button</b> <b>After the first press of the Menu/Enter button:</b> - Moves the selection in the menu (see item D3) to the next icon on the left. <b>Once a menu item has been selected:</b> - Decreases an adjustable parameter value - for example, the temperature set value in D5 or the fan speed level at D6. Holding this button depressed for a few seconds changes the selected value in quick run mode. - Moves the selection in the multifunctional display pane at D2 to the next option on the left - for example, from the <b>Off</b> state of the timer to <b>On</b> .
	K3	<b>On/Off button</b> Holding this button depressed for 2 seconds switches the oven off. The display window goes out, except for the readiness indicator icon in the status display area at item D4. The temperature display pane D1 provides as dimmed readout of the work space temperature, provided that the temperature exceeds 50 °C (122 °F).
	K4	<b>Right button</b> <b>After the first press of Menu/Enter button:</b> - Moves the selection in the menu (see item D3) to the next icon on the right. <b>Once a menu item has been selected:</b> - Increases an adjustable parameter value - for example, the temperature set value in D5 or the fan speed level at D6. Holding this button depressed for a few seconds changes the selected value in quick run mode. - Moves the selection in the multifunctional display pane at D2 to the next option on the right - for example, from the <b>On</b> state of the timer to <b>Off</b> .
	K5	<b>Escape button</b> Returns to the previous level of the menu or standard display. Upon exiting from the current menu item the user may be prompted to save any previously made settings.

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## 8. OPERATION

8.1. Switching the oven ON/OFF:

8.2. Switching ON:

8.2.1.1. In the display window on the front panel the readiness indicator icon (D4 on the display area) is illuminated.

8.2.1.2. Keep the On/Off button depressed for two seconds. An initialization routine will be run after the oven has been powered up. Once initialization has been completed, the display will light up and the current work space temperature will appear in the temperature display pane (D1 on the display area). The oven is ready for use now.

8.3. Switching OFF:

8.3.1.1. Keep the On/Off button depressed for two seconds. The display window goes out, except for the readiness indicator icon (D4 on the display area) and a residual heat temperature readout in case the work space temperature is still higher than 50°C/122°F. The oven is switched off now.

8.3.1.2. If required, unplug the AC power plug to power down the oven completely.

8.4. Setting the Temperature:

8.4.1. Press the **MENU** (K1) button to activate the menu bar, then press the **LEFT** (K2) button to select the “**Temperature**” icon and press **MENU** (K1) button to confirm.

8.4.2. In the flashing settings pane “Set”, press the **RIGHT** (K4) or the **LEFT** (K2) button to adjust a new temperature set value, then press the **MENU** (K1) button to confirm your settings.

8.4.3. The display returns to its default mode. The actual temperature measured in the work space and shown in the temperature display area starts to change until it reaches the newly adjusted set value.

8.5. Using the Temperature Set Value to Speed Up Cool-Down

8.5.1. At the end of the drying or heating process, press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button select the “**Temperature**” icon and press the **MENU** (K1) button to confirm.

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8.5.2. In the flashing settings pane “Set”, press the **LEFT** (K2) button to lower the temperature set value to 50°C (122°F), then on to 0°C (32°F) in one additional step. When the display reads 0°C (32°F), press the **MENU** (K1) button to confirm your settings.

8.5.3. The display returns to its default mode. The actual temperature measured in the work space and shown in the temperature display area starts to drop, showing the progress of the cool-down process.

## 8.6. Setting the Timer:

### 8.6.1. Presetting the Countdown Timer

8.6.1.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the “**Settings**” icon and press the **MENU** (K1) button to confirm.

8.6.1.2. Press the **RIGHT** (K4) to button to switch to the “Timer” menu item and confirm the selection with the **MENU** (K1) button.

8.6.1.3. Press the **RIGHT** (K4) or the **LEFT** (K2) button to preselect the “**Countdown**” timer as the mode of your choice, then press the **MENU** (K1) button to confirm the selection.

8.6.1.4. The display returns to its default mode.

### 8.6.2. Setting a Countdown Timer ON:

8.6.2.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the “**Timer**” icon and press the **MENU** (K1) button to confirm.

8.6.2.2. Press the **LEFT** (K2) button to select the on timer option **On**, then press the **MENU** (K1) button to confirm.

8.6.2.3. Set the hours and minutes until the oven is supposed to turn **On** by pressing the **RIGHT** (K4) or the **LEFT** (K2) button, then press the **MENU** (K1) button to confirm.

8.6.2.4. The oven switches off. The display goes out, the “**Timer**” icon is illuminated in the menu bar with a hand rotating on its face. Additionally, the readiness indicator icon is illuminated.

### 8.6.3. Setting a Countdown Timer OFF:

8.6.3.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the “**Timer**” icon and press the **MENU** (K1) button to confirm.

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8.6.3.2. Press the MENU (K1) button to select the off timer option **Off**.

8.6.3.3. Set the hours and minutes until the oven is supposed to turn **Off** by pressing the **RIGHT** (K4) or the **LEFT** (K2) button, then press the **MENU** (K1) button to confirm.

8.6.3.4. The display returns to its default mode. In the menu bar, the Timer icon is illuminated and a is rotating on the icon's face.

## 8.7. Setting a Fixed-time ON/OFF Timer:

### 8.7.1. Presetting the "Fixed-time" Timer:

8.7.1.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the "**Settings**" icon and press the **MENU** (K1) button to confirm.

8.7.1.2. Press the **RIGHT** (K4) to button to switch to the "**Timer**" menu item and confirm the selection with the **MENU** (K1) button.

8.7.1.3. Press the **RIGHT** (K4) or the **LEFT** (K2) button to preselect the "**Absolute**" timer as the mode of your choice, then press the **MENU** (K1) button to confirm the selection.

8.7.1.4. The display returns to its default mode.

### 8.7.2. Setting a Fixed-time Timer ON:

8.7.2.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the "**Timer**" icon and press the **MENU** (K1) button to confirm.

8.7.2.2. Press the **LEFT** (K2) button to select the on timer option **On**, then press the **MENU** (K1) button to confirm.

8.7.2.3. Set the year, month, day, hours and minutes by pressing the **RIGHT** (K4) or the **LEFT** (K2) button, then press the **MENU** (K1) button to confirm.

8.7.2.4. The oven switches off. The display goes out, the Timer icon is illuminated in the menu bar with a hand rotating on its face, and the readiness indicator icon is illuminated additionally.

### 8.7.3. Setting a Fixed-time Timer OFF:

8.7.3.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the "**Timer**" icon and press the **MENU** (K1) button to confirm.

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8.7.3.2. Press the **MENU** (K1) button to select the off timer option **Off**.

8.7.3.3. Set the year, month, day, hours and minutes by pressing the **RIGHT** (K4) or the **LEFT** (K2) button, then press the **MENU** (K1) button to confirm.

8.7.3.4. In the menu bar, the Timer icon is illuminated and a is rotating on the icon's face.

8.8. Stopping a Timer:

8.8.1. Stopping an **Off** Timer Before It Expire:

8.8.1.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the “**Timer**” icon and press the **MENU** (K1) button to confirm.

8.8.1.2. Press the **MENU** (K1) button to confirm the **Yes** default selection.

8.8.1.3. In the menu bar, the Timer icon will go out. The display returns to its default mode.

8.8.2. Stopping an **On** Timer Before It Expires:

8.8.2.1. To cancel a pre-programmed “on” timer while the oven is switched off, hold the On/Off button depressed for a few seconds.

8.8.2.2. In the “Stop Timer?” prompt that appears, confirm the default selection **Yes** by pressing **MENU** (K1) button.

8.8.2.3. In the menu bar, the Timer icon will go out. The display returns to its default mode.

8.9. Turning Boost ON:

**Note:** Temperature must be set to at least 150°C/302°F to use this feature.

8.9.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the “**Boost**” icon and press the **MENU** (K1) button to confirm.

8.9.2. In the selection screen that appears, confirm the preselected option **On** by pressing the **MENU** (K1) button.

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- 8.9.3. The selected option **On** remains in the display pane for a few seconds to let you track your action.
- 8.9.4. The display returns to its default mode. The Boost icon in the menu bar is illuminated to indicate that boost mode has been activated. Once the preset temperature set value has been reached, the boost heater turns off automatically, and the Boost icon goes out.
- 8.10. Turning Boost OFF:
- 8.10.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) to button to select the “**Boost**” icon and press the **MENU** (K1) button to confirm.
- 8.10.2. In the selection screen that appears, confirm the preselected option **Off** by pressing the **MENU** (K1) button.
- 8.10.3. The selected option Off remains in the display pane for a few seconds to let you track your action.
- 8.10.4. The display returns to its default mode. The Boost icon in the menu bar is extinguished to indicate that boost mode has been turned off.
- 8.11. Turning the Fan ON:
- 8.11.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) or the **LEFT** (K2) button to select the “**Fan**” icon and press the **MENU** (K1) button to confirm.
- 8.11.2. The settings dialog shown at the left appears in the multifunctional display pane now, with the value 20% flashing.
- 8.11.3. Keep this setting or press the **RIGHT** (K4) to button as often as needed to accomplish the desired fan level, then press the **MENU** (K1) button to confirm.
- 8.11.4. The multifunctional display pane will show the current fan speed level as a percentage (20%, 40%, 60%, 80% or 100%). Additionally, the matching number of chevrons will be illuminated in the bar graph to the right.
- 8.11.5. The display returns to its default mode. The Fan icon in the menu bar is illuminated now to indicate that the fan is running.
- 8.12. Adjusting Fan Speed:
- 8.12.1. Press the **MENU** (K1) button to activate the menu bar, then press the **RIGHT** (K4) or the **LEFT** (K2) button to select the “**Fan**” icon and press the **MENU** (K1) button to confirm.

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- 8.12.2. The settings dialog shown at left appears in the multifunctional display pane now, with the current fan speed setting flashing already.
- 8.12.3. Change fan speed by pressing the **RIGHT** (K4) or the **LEFT** (K2) button, then press the **MENU** (K1) button to confirm.
- 8.12.4. The display returns to its default mode. The Fan icon remains illuminated in the menu bar.

**Note:** OMH Series and OMH-S Series ovens employ forced ventilation, that is, the fan cannot be turned off completely and will run at a variable minimum speed when a certain temperature limit is exceeded. Any attempt to return the fan speed level to 0% will be denied, as indicated by the message “**heater prot**” in the multifunctional display pane

## 9. GENERAL USE AND MAINTENANCE

- 9.1. When using oven for an assay, make entry on HSL\_FRM\_018: Convection Oven Use and Maintenance Form.
  - 9.1.1. Record Date, Initials, Temperature (in °C from NIST calibrated thermometer) and Activity Performed. “N/A” Disinfectant column if none used.
- 9.2. Quarterly Maintenance:
  - 9.2.1. Quarterly Cleaning:
    - 9.2.1.1. The convection oven needs to be cleaned every 3 months, or sooner if a spill occurs or if bacterial/fungal growth is suspected.
    - 9.2.1.2. Remove all materials from the convection oven and follow the instruction in step 8.5 for “Using the Temperature Set Value to Speed Up Cool-Down”.
    - 9.2.1.3. After the cool down process, turn the unit **Off**.
    - 9.2.1.4. Spray the internal unit with Cavicide and let it sit for at least 3 minutes prior to being wiped with a clean low-lint wipe.
    - 9.2.1.5. Spray the internal unit with Ster-ahol and wipe with a clean low-lint wipe
    - 9.2.1.6. Document that maintenance was performed on HSL\_EQ\_017.01: Convection Oven Use and Maintenance Form.
- 9.3. Annual Maintenance:

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- 9.3.1. Facilities, Maintenance and Engineering (FME) or a contracted vendor shall certify and perform annual calibration maintenance of the Convection Oven.
- 9.3.2. Document maintenance performed on HSL\_EQ\_017.01: Convection Oven Use and Maintenance Form

**10. ATTACHMENTS**

- 10.1. Not applicable

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**11. REVISION HISTORY**

Revision Start Date	Version #	Changes	Reasons
17Mar17	New	Create new SOP for the Use and Maintenance of the convection oven	Currently no SOP

Convection Oven Use and Maintenance Form

**Form ID: HSL\_EQ\_017.01**  
Associated SOP: HSL\_EQ\_017

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Equipment ID:

Annual Calibration  
Date:

Annual Calibration  
Due Date:

Date	Initials	Temperature (°C)	Disinfectant(s) Used/ Lot Number	Activity Performed / Comments
			<input type="checkbox"/> <b>N/A</b> <input type="checkbox"/> Other: <input type="checkbox"/> Cavicide Lot #: <input type="checkbox"/> Ster-ahol Lot #:	<input type="checkbox"/> N/A
			<input type="checkbox"/> <b>N/A</b> <input type="checkbox"/> Other: <input type="checkbox"/> Cavicide Lot #: <input type="checkbox"/> Ster-ahol Lot #:	<input type="checkbox"/> N/A
			<input type="checkbox"/> <b>N/A</b> <input type="checkbox"/> Other: <input type="checkbox"/> Cavicide Lot #: <input type="checkbox"/> Ster-ahol Lot #:	<input type="checkbox"/> N/A
			<input type="checkbox"/> <b>N/A</b> <input type="checkbox"/> Other: <input type="checkbox"/> Cavicide Lot #: <input type="checkbox"/> Ster-ahol Lot #:	<input type="checkbox"/> N/A
			<input type="checkbox"/> <b>N/A</b> <input type="checkbox"/> Other: <input type="checkbox"/> Cavicide Lot #: <input type="checkbox"/> Ster-ahol Lot #:	<input type="checkbox"/> N/A
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			<input type="checkbox"/> <b>N/A</b> <input type="checkbox"/> Other: <input type="checkbox"/> Cavicide Lot #: <input type="checkbox"/> Ster-ahol Lot #:	<input type="checkbox"/> N/A

Review By/Date:

QA Review By/ Date: