

## OPERATOR QUALIFICATION CHECKLIST

### C-41 Film Development (SOP-FILM-002, Rev B)

|            |  |                 |                                                       |
|------------|--|-----------------|-------------------------------------------------------|
| Operator   |  | Observer        |                                                       |
| Date       |  | Run             | <input type="checkbox"/> 1 <input type="checkbox"/> 2 |
| Film stock |  | Roll # in batch |                                                       |

#### How to use this checklist

The observer watches the operator perform a complete live run and marks each behavior Pass or Fail as it happens. Do not coach during the run unless a safety risk occurs; stop the run immediately for any safety failure.

**Pass criteria:** all ★ critical items (shaded) must pass. Up to one non-critical error is allowed if the operator catches and corrects it. The oral check must be 4/4. **Qualification requires two consecutive passing runs.**

#### Performance checklist

| #                                                       | Observable behavior                                                                                                    | SOP ref.        | Pass                     | Fail                     | Notes |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|--------------------------|-------|
| <b>A. Safety and PPE</b>                                |                                                                                                                        |                 |                          |                          |       |
| ★ 1                                                     | Wears nitrile gloves and safety glasses before handling any chemistry                                                  | §5              | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★ 2                                                     | Keeps cords and outlets clear of the water bath; touches sous-vide controls only with dry hands                        | §5              | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 3                                                       | Works with ventilation on; keeps bottles capped when not pouring                                                       | §5              | <input type="checkbox"/> | <input type="checkbox"/> |       |
| <b>B. Pre-Process Setup</b>                             |                                                                                                                        |                 |                          |                          |       |
| ★ 4                                                     | Checks the Process Log roll count and states the correct developer time from Table 1 before starting                   | Step 1, Table 1 | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 5                                                       | Sets the sous-vide to 39.0 °C and places all chemistry and rinse water in the bath                                     | Step 2          | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★ 6                                                     | Confirms developer is 38.0 °C ± 0.2 °C using the independent thermometer, not the sous-vide display                    | Step 3          | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 7                                                       | Confirms bleach and fixer are within 32–38 °C                                                                          | Step 3          | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 8                                                       | Pre-measures correct volume per reel into labeled cylinders (290 mL 35mm / 500 mL 120)                                 | Step 4          | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 9                                                       | Checks the changing bag for light leaks before opening film                                                            | Step 5          | <input type="checkbox"/> | <input type="checkbox"/> |       |
| <b>C. Film Loading</b>                                  |                                                                                                                        |                 |                          |                          |       |
| 10                                                      | Starts 35mm film on the reel in normal light (leader retriever) or completes all loading in darkness (cassette opener) | Steps 6–7       | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 11                                                      | Loads film without kinks; wraps do not touch; handles film by edges only                                               | Steps 7–9       | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★ 12                                                    | Seals the tank with the center column in place before restoring light                                                  | Step 10         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| <b>D. Pre-Heat and Develop (critical control point)</b> |                                                                                                                        |                 |                          |                          |       |
| 13                                                      | Pre-heats the loaded tank with 38 °C water for 3 minutes, then discards                                                | Step 11         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★ 14                                                    | Pours developer in one continuous pour (under 5 s) and starts the timer when the pour is complete                      | Step 12         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 15                                                      | Taps the tank to dislodge air bubbles                                                                                  | Step 13         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★ 16                                                    | Agitates per pattern: continuous for 15 s, then 4 inversions every 30 s; returns tank to bath between agitations       | Step 14         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★ 17                                                    | Returns developer to its bottle at the target time (pour-out under 10 s)                                               | Step 15         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 18                                                      | Records the roll count against the developer batch                                                                     | Step 15         | <input type="checkbox"/> | <input type="checkbox"/> |       |

| #                                                | Observable behavior                                                                                                              | SOP ref.    | Pass                     | Fail                     | Notes |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------------------|-------|
| <b>E. Bleach, Fix, Wash, Stabilize</b>           |                                                                                                                                  |             |                          |                          |       |
| ★<br>19                                          | Pours chemistry in the correct order: developer → bleach → fixer (no bottle mix-ups)                                             | Steps 12–17 | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 20                                               | Bleaches with continuous agitation for 0:45; returns bleach to its bottle                                                        | Step 16     | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 21                                               | Fixes for 1:30 with the specified agitation; returns fixer to its bottle                                                         | Step 17     | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 22                                               | Washes at 32–39 °C for 3:00 or 7 fill-and-dump cycles                                                                            | Step 18     | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 23                                               | Removes lid and center column, then soaks in stabilizer for 1:00; does not rinse afterward                                       | Steps 19–20 | <input type="checkbox"/> | <input type="checkbox"/> |       |
| <b>F. Drying, Inspection, Waste, and Records</b> |                                                                                                                                  |             |                          |                          |       |
| 24                                               | Hangs film by clips in a dust-free area without wiping the emulsion side                                                         | Steps 21–22 | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★<br>25                                          | Inspects dry negatives on a light source and correctly classifies the result (Accept or Hold) using the defect table             | §9          | <input type="checkbox"/> | <input type="checkbox"/> |       |
| ★<br>26                                          | Collects exhausted chemistry in labeled waste containers (developer kept separate from bleach/fix); pours nothing down the drain | §10         | <input type="checkbox"/> | <input type="checkbox"/> |       |
| 27                                               | Completes the Process Log entry: date, film, roll count, measured temperature, developer time, result, deviations                | §11         | <input type="checkbox"/> | <input type="checkbox"/> |       |

### Oral knowledge check (after the run)

| # | Question (answer key in <i>italics</i> )                                                                                                                                 | Correct                  | Incorrect                |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| 1 | This will be the 8th roll in this developer batch. What is the developer time? <i>3:45 (Rolls 7–9)</i>                                                                   | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | The sous-vide display reads 38.0 °C, but your thermometer reads 37.6 °C. What do you do? <i>Do not start. Wait until the thermometer reads 38.0 ± 0.2 °C.</i>            | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Your negatives come out thin with faint edge markings. Name two likely causes. <i>Any two: low developer temperature, short developer time, developer past capacity.</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | Why can't used bleach and fixer go down the drain? <i>They contain dissolved metals, including silver; they go to hazardous waste.</i>                                   | <input type="checkbox"/> | <input type="checkbox"/> |

### Result and sign-off

|                                        | Run 1                                                    | Run 2                                                    | Qualified?                                               |
|----------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
| All ★ items passed                     | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Non-critical errors (max 1, corrected) |                                                          |                                                          |                                                          |
| Oral check (4/4 required)              | ___ / 4                                                  | ___ / 4                                                  |                                                          |
| Observer signature / date              |                                                          |                                                          |                                                          |

*A failed run is followed by targeted retraining on the missed items, then a new two-run qualification.*