



Analyzing Radiographic Image Quality

Symptom	Problem	Items to Check
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Film too light	Underexposure	<p>Incorrect exposure factors</p> <ul style="list-style-type: none">Kv too lowma too lowexposure too shortfocal-film distance too great <p>Meters not calibrated</p> <p>Timer not calibrated</p> <p>Photocell not calibrated</p> <p>Incorrect exposure settings</p> <p>Patient not centered to photocell</p> <p>Bucky timer not calibrated</p> <p>Incoming power drop</p> <ul style="list-style-type: none">Air conditioners, heaters, blowers, elevators, welders on the same circuitMain power line or transformer not properly sized
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Film too light	Underdevelopment	<p>Incorrect development</p> <ul style="list-style-type: none">temperature too lowtime too shortcombination of low temperature & short timethermometer not calibrated <p>Developer replenishment too low</p> <p>Improper mixing of concentrate</p> <ul style="list-style-type: none">concentrates added in wrong sequenceomission of concentrate(s) <p>Over diluted developer</p> <ul style="list-style-type: none">incorrect water to concentrate ratio <p>Exhausted developer</p> <ul style="list-style-type: none">chemical contamination
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Symptom	Problem	Items to Check
Film too dark	Overexposure	<p>Incorrect exposure factors</p> <ul style="list-style-type: none">Kv too highma too lowexposure too longfocal-film distance too short <p>Meters not calibrated</p> <p>Timer not calibrated</p> <p>Photocell not calibrated</p> <p>Incorrect exposure settings</p> <p>Patient not centered to photocell</p> <p>Bucky timer not calibrated</p> <p>Incoming power surge</p>
Film too dark	Underdevelopment	<p>Incorrect development</p> <ul style="list-style-type: none">temperature too hightime too longcombination of high temperature & long timethermometer not calibrated <p>Developer replenishment too low</p> <p>Underdiluted developer</p> <ul style="list-style-type: none">incorrect water to concentrate ratio <p>Developer starter not added to machine tank</p>
Film too dark	Other	<p>Accidental exposure to radiation</p> <p>Accidental exposure to light</p> <p>Film beyond expiration date</p>



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Symptom	Problem	Items to Check
Low Contrast	Kv too high	Incorrect measurement of body part incorrect estimation of tissue density Incorrect Kv setting Incorrect focal film distance Meters require calibration Incoming power surge
Low Contrast	Scattered radiation	Bucky grid not used Stationary grid not used Incorrect selection of cones No lead backing behind cassette
Low Contrast	Short exposure	Inaccurate timer setting Timer out of calibration Overload relay kicked in



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High Contrast	Kv too low	Incorrect measurement of body part incorrect estimation of tissue density Incorrect Kv setting Incorrect focal film distance Meters require calibration Incoming power drop Air conditioners, heaters, blowers, elevators, welders on the same circuit Main power line or transformer not properly sized
High Contrast	Long exposure	Inaccurate timer setting Timer out of calibration
High Contrast	Incorrect Development	Temperature too high Immersion time in developer too long



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Symptom	Problem	Items to Check
Fog	Unsafe light	Light leaks in darkroom leak around door Poor labyrinth design Bright light outside entrance Reflections from staff passing through Reflections from glossy surfaces Light leaks around pass box Safelights Bulb too high a wattage Incorrect filter Cracked filter Bleached Distance between safelight and film too close Light from IR heaters From processor totally inside darkroom From personal heater Smoking From lighted end of cigarette From lighters or matches
Fog	Stray radiation	Beyond expiration date Improper storage
Fog	Chemical	Overdevelopment Developer contamination Weak or contaminated fixer



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Fog	Film deterioration	Film beyond expiration date incorrect storage Elevated temperature Close proximity to heat source Chemical fumes High humidity Damp storage area Moist ambient air Moisture precipitation film not allowed to come into equilibrium with room temperature (hot or humid room)
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Stains	Yellowish color	Old or oxidized developer Overdevelopment Rinsing time too short old or exhausted fixer
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Stains	Cloudy	Old or oxidized developer Developer contaminated with fixer Rinsing water contamination old or partially exhausted fixer
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Symptom	Problem	Items to Check
Stains	green or purple color	Development time too short Developer temperature too low Insufficient washing Insufficient fixing
Surface artifact	White deposit	Incorrect fixer mixing High acidity Rinsing time too short Fixer contaminated by developer
Surface artifact	Runback	Fixing time too short Weak or exhausted fixer insufficient or no rinsing Dryer temperature too high
Surface artifact	Uneven drying	Dryer temperature too high Defective squeegee rollers Rinsing water contamination Restricted airflow in dryer
Surface artifact	Scratches	Rough Handling Processor guide shoe misaligned Improper chemical hardening



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Symptom	Problem	Items to Check
Transmitted light artifact	White spots	Emulsion pickoff Insufficient fixing incorrect fixer mixing low fixer replenishment rate Dirt on intensifying screens
Transmitted light artifact	White crescents	Rough handling
Transmitted light artifact	Black crescents	Rough handling
Transmitted light artifact	Static	Tree shape Low humidity synthetic clothing coupled with rubber soles Dot shape Moisture