

Minnesota Department of Health

Radiation Control, X-ray Unit

Crossover Worksheet

Facility Name		Date
Film Type		Operator

New Emulsion #				
Film #	Low Density Step #	Mid Density Step #	High Density Step #	Base + Fog
1				
2				
3				
4				
5				
Avg				
Average Density Difference: DD is HD - LD =				

DD = Density Difference
 HD = High Density
 LD = Low Density
 MD = Mid Density

Old Emulsion #				
Film #	Low Density Step #	Mid Density Step #	High Density Step #	Base + Fog
1				
2				
3				
4				
5				
Avg				
Average Density Difference: DD is HD - LD =				

MD difference between new and old film (New MD - Old MD)	
DD difference between new and old film (New DD - Old DD)	
Base + Fog difference between new and old film (New - Old)	

	Mid Density	Density Difference	Base + Fog
Old operating levels			
Difference between new and old film			
New operating levels			

Crossover Worksheet Example

New Emulsion # 24578				
Film #	Low Density Step # 10	Mid Density Step # 11	High Density Step # 13	Base +Fog
1	0.49	1.25	2.39	0.18
2	0.50	1.23	2.43	0.18
3	0.49	1.26	2.40	0.17
4	0.53	1.28	2.41	0.18
5	0.49	1.28	2.43	0.18
Avg	0.50	1.26	2.41	1.08
Average Density Difference: DD is HD - LD = 1.91				

Old Emulsion # 23456				
Film	Low Density	Mid Density	High Density	Base
1	0.46	1.27	2.33	0.17
2	0.48	1.30	2.30	0.17
3	0.46	1.27	2.28	0.18
4	0.48	1.28	2.32	0.17
5	0.47	1.31	2.35	0.18
Avg	0.47	1.29	2.31	0.17
Average Density Difference: DD is HD - LD = 1.84				

MD difference between new and old film (New MD - Old MD)	+0.03
DD difference between new and old film (New DD - Old DD)	+0.07
Base + Fog difference between new and old film (New - Old)	+0.01

	Mid Density	Density Difference	Base + Fog
Old operating levels	1.34	1.90	0.17
Difference between new and old film	-0.03	+0.07	+0.01
New operating levels	1.31	1.97	0.18



Radiation Control, X-ray Unit
 625 North Robert Street
 PO Box 64497
 St. Paul, Minnesota 55164-0497
 651-201-4545
www.health.state.mn.us/xray
health.xray@state.mn.us