



Ministry of Agriculture and Lands

Integrated Land Management Bureau

Crown Registry and
Geographic Base Branch

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for
Aerial Photographic
Products

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1.0 Record of Amendments

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1	Gord Fish, APLS	5	Section 3.1.1 updated for new B&W paper name	Ron Johnson, Manager, APLS	PDF signed by Ron Johnson	March 11, 2005
		9	Section 3.2.3 updated for new Colour paper name			
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		13	Section 5.2 updated for new Colour duplicating film type			
2	Al Spring, APLS		Ministry name change	Ron Johnson, Manager, APLS	PDF signed by Ron Johnson	July 8 th , 2005
3	Gord Fish APLS	5	3.1.1 Added 'photographic'; Changed accepted paper type to Agfa; added InkJet for archival reproductions.	Gord Fish		30 March, 2007
		9	3.2.3 Added 'photographic'			
		10	4.1.1 Added 'photographic'; <u>Shall</u> changed to may; added Inkjet enlargements			
		11	4.2.1 Added InkJet for reproductions; changed <u>shall</u> to may.			
4	Alan Spring	11	4.2.2 Added photographic Branch name change	Andy Calarco, Manager APDI	PDF signed by Andy Calarco	April, 2008

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**Province of British Columbia
Ministry of Agriculture and Lands
Crown Registry and Geographic Base Branch**

SPECIFICATIONS FOR AERIAL PHOTOGRAPHY PRODUCTS

April, 2008

2.0 GENERAL:

These specifications supersede all previous specifications.

The term 'Branch' when used herein shall mean Crown Registry and Geographic Base Branch of the Ministry of Agriculture and Lands in the Province of British Columbia.

For the purpose of these specifications, the word 'shall' indicates a mandatory requirement and 'should' indicates a desirable requirement.

The Branch shall be the final authority on acceptance or rejection of submitted imagery.

All aerial photography products delivered to the Branch shall meet or exceed the following specifications:

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3.0 CONTACT PRINTS:

Prints shall be free from dust, imperfections and scratches. All contact prints shall include; the fiducials and camera recording instruments reproduced as legibly as possible.

Prints shall contain a minimum of light or dark border 'bleed-in' effect in the imagery.

3.1 Black and White Prints

3.1.1 Unless otherwise agreed upon:

- Monochromatic photographic prints shall be printed on a resin coated (RC) type Aerial paper such as Agfa Rapidtone Multicontrast Paper M2 (semi matte) or equivalent.
- Graded or multi-grade papers with a minimum amount of contrast ranges 1 - 4 shall be utilized with a maximum of electronic dodging along with processing in such a manner as to reproduce maximum negative information as well as an aesthetically pleasing print within the stated density and contrast parameters.
- Kodak Type 885 Developer shall not be utilized when processing print imagery for Ministry of Forest's requests due to this developer's inherent low contrast effect on image detail.
- Reproductions from digital imagery files may be produced on semi-matte or lustre base paper and must meet the same density parameters and dodging requirements as photographic reproductions.

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3.1.2 Black and white prints shall meet the residual thiosulphate and thionate levels so as not to exceed the stain designated on patch 3 of the Kodak Hypo estimator when used in conjunction with Kodak Hypo Test Solution HT-2.

3.1.3 Electronic contact printer 'masking' shall be selected and adjusted in order that 'dark bleed-in' or 'light halo' does not affect the print image area and also to ensure the instruments and fiducials are reproduced legibly.

3.1.4 Image Densities:

- BENCHMARK reflection density parameters (excluding specular reflections, water, and snow), for B & W contact prints and enlargements are included with each group description.
- Image Densities, (including D. Average readings), shall be measured using a Densitometer calibrated to Branch Specifications.
- The D. Diff (Density Difference) is a mathematical value derived by subtracting the D. Min. reading from the D. Max. reading.
- Note - D. Max. and D. Min. readings at the specified density range extremes could result in a D. Diff. value outside the specified range
- D. Average (Density Average) is an average of Densitometer readings taken from at least two "non-shaded"- forested areas on the print imagery.
- Density readings/values shall be within the specified parameters.

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3.1.5 PRINT CATEGORIES – B&W print user/clients have been separated into 3 main groups:

1. GENERAL PUBLIC - Consists of persons or companies looking for aerial photographs with as much general information reproduced as possible unless specifically requested otherwise.

Group 1 - D. Min. = . 30 +/- .20 (roads, sandbars, clearings)
D. Max. = 1.20 +/- .20 (shadows)
D. Diff. = 1.10 +/- .25
***D. Average = . 60 to .80**

2. TRANS.& HIGHWAYS/ENERGY MINES & PETROLEUM RES. - These professionals usually demand maximum reproduction of rock and soil detail such as roads, shoulders and rock outcroppings within glaciers.

Group 2 - D. Min. = . 30 +/- .10 (roads, shoulders, rocks)
D. Max. = 1.20 +/- .15 (shadows)
D. Diff. = . 90 +/- .20
***D. Average = . 60 to .80**

3. MINISTRY OF FORESTS (Inventory and Silviculture) - These professionals demand specific detail reproduction of trees in order that they may 'type' deciduous, coniferous, etc. and require prints that have higher contrast than groups 1 and 2.

Group 3 - D. Min. = . 20 +/- .10 (sandbars, roads, rock)
D. Max. = 1.30 +/- .10 (rock / tree shadows)

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D. Diff = 1.20 +/- .10
***D. Average = .60 to .80**

3.2 Colour Prints

3.2.1 Unless otherwise agreed upon:

- Colour prints, and films shall be viewed with lighting at 5000 Kelvin as the standard.
- Colour prints shall be exposed with maximum electronic dodging and processing in order to best render an image with corrected colour balance and maximum colour contrast. Aerial colour prints shall match the 'benchmark' colour print sample(s) in both colour rendition and density within the following parameters:
 - Colour shall be within +/- 02.5 factor of any one of the 'subtractive primary colours'. Filter pack and exposure manipulation is required to maintain these colour parameters within a single roll of film as well as different films within the same operation, to compensate for valley smoke and smog haze and changes in height, terrain, area, and time of photography.
 - Density shall be within +/- 5% of benchmark sample based on log 'E' Exposure control.
 - Colour prints from different films for any single requisition shall match each other within the above specifications as close as possible, even though terrain, height, and area may be different.
 - RED ENHANCED colour prints for Forests shall be within the same parameters as above. - Usual rule of thumb for these is (05) to (10) more Red in the print. (Suggested Guideline: This cannot always be

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attained by just pulling (05) to (10) Red from the printing filter pack, some other filter manipulation is sometimes required to arrive at the requested Red enhancement - i.e. often an extra (02.5) to (05) Yellow might have to be removed from the pack as well.)

- Print samples should be submitted to the Branch for approval prior to completing a Red Enhanced request.

- In the case of colour prints to be produced from 'new flying' that have not yet had 'benchmark prints ' produced by the Branch, the contractor shall match to 'benchmark' prints of same or similar area of previous year's aerial photography, and/or examples included as contract exhibits.
- Reproductions from digital imagery files may be produced on semi-matte or lustre base paper and must meet the same parameters and dodging requirements as photographic reproductions.

3.2.2 Electronic contact printer 'masking ' shall be selected and adjusted in order that 'dark bleed-in ' or light 'halo ' does not affect the print image area and also to ensure the instruments and fiducials are reproduced legibly.

3.2.3 Colour photographic prints shall be printed on Kodak Supra Endura N - surface papers. Prior to use, the Branch must approve any other brand or type of colour paper.

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4.0 PRINT ENLARGEMENTS:

Enlargements shall be free from dust, imperfections and scratches. Full frame enlargements shall include the fiducials, and the film and negative numbers reproduced as legibly as possible.

Enlargements shall contain a minimum of light or dark border 'bleed-in' effect in the imagery.

4.1 Black and White Print Enlargements:

4.1.1 Unless otherwise agreed upon:

- Monochromatic photographic enlargements shall be printed on a resin coated (RC) type Aerial paper such as Agfa Rapidtone Multicontrast Paper M2 (semi matte) or equivalent.
- Enlargements from digital imagery may be produced on semi-matte or lustre base paper and must meet the same density parameters and dodging requirements as photographic reproductions.
- Graded or multi-grade papers with a minimum amount of contrast ranges 1 - 4 shall be utilized with a maximum of electronic and/or hand dodging along with processing in such a manner as to reproduce maximum negative information as well as an aesthetically pleasing print within the stated parameters.

4.1.2 Monochrome enlargements shall meet the thiosulphate and thionate levels so as not to exceed the stain designated on patch 3 of the Kodak Hypo estimator when used in conjunction with Kodak Hypo Test Solution HT-2

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4.2 Colour Print Enlargements:

4.2.1 Unless otherwise agreed upon:

- Colour enlargements shall be exposed with maximum electronic and/or hand dodging and processing in order to best render an image with corrected colour balance and maximum colour contrast.
- Enlargements from digital imagery may be produced on semi-matte or lustre base paper and must meet the same density parameters and dodging requirements as photographic reproductions.
- Aerial colour enlargements shall match the 'benchmark' colour print sample(s) in both colour rendition and density within the following parameters:
 - Colour shall be within +/- (0.25) factor of any one of the 'subtractive primary colours'. Filter pack and exposure manipulation shall be required to maintain these colour parameters within a single roll of film as well as different films within the same operation in order to compensate for valley smoke and smog haze and changes in height, terrain, area, and time of photography.
 - Density shall be within +/- 5% of benchmark sample based on log 'E' exposure control.
 - Colour enlargements from different films for any single requisition shall match each other within the above specifications as close as possible, even though terrain, height, and area may be different.

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- RED ENHANCED colour enlargements for Forests shall be within the same parameters as above. - Usual rule of thumb for these is (05) to (10) more Red in the print. (Suggested Guideline; This cannot always be attained by just pulling (05) to (10) Red from the printing filter pack, some other filter manipulation is sometimes required to arrive at the requested Red enhancement - i.e., often an extra (02.5) to (05) Yellow might have to be removed from the pack as well.)
 - Print samples should be submitted to the Branch for approval prior to completing a Red Enhanced request.

4.2.2 Colour photographic enlargements shall be printed on Kodak Supra Endura N - surface papers. Prior to use, the Branch must approve any other brand or type of colour paper.

4.2.3 Colour enlargements shall be viewed with lighting at 5000 Kelvin as the standard.

5.0 FILM DIAPOSITIVES:

Film diapositives shall be free from dust, chemical stains, film imperfections and scratches.

All diapositives shall contain a minimum of light or dark border 'bleed-in' effect in the imagery.

A time delay of 3 to 6 seconds must elapse between closing the printer lid and exposure to allow trapped air to escape.

Individual film diapositives shall be enclosed within poly bags prior to delivery.

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5.1 Black and White Film Diapositives

Monochromatic diapositives for plotter specifications shall be exposed and processed to reproduce a maximum diffuse density of 1.30 and a minimum of 0.30 within +/- 0.10 unless otherwise specified.

Monochromatic diapositives for orthophoto specifications shall conform to the diffuse density limits stated in the client request. In the absence of client specified density parameters, the maximum diffuse density shall be 1.10 and the minimum shall be .20 within +/- .05

Monochromatic diapositives shall be printed on (25.4cm x 25.4cm) Kodak Aerographic Duplicating Film, Type 4425, or equivalent.

Monochromatic diapositives shall meet the residual thiosulphate and thionate levels so as not to exceed the stain designated on patch 2 of the Kodak Hypo Estimator when used in conjunction with Kodak Hypo test solution HT-2

5.2 Colour Diapositives

Colour diapositives shall be printed on (25.4cm x 25.4) Kodak Duraclear RA Film, Type 4004, or equivalent.

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A time delay of 3 to 6 seconds must elapse between closing the printer lid and exposure to allow trapped air to escape.

Colour diapositives shall be viewed with lighting at 5000 Kelvin as the standard.

Colour diapositives shall be exposed in order to best render imagery with corrected colour balance and maximum colour contrast while retaining an aesthetically pleasing result.

6.0 BLACK AND WHITE DUPLICATE NEGATIVES:

- Duplicate negatives shall be used for an interim part of the process to attain a product that could not be produced from the negative original, and shall be destroyed immediately after this purpose was served.
- Duplicate negatives shall be printed on Kodak Aerographic Direct Duplicating Film 2422, or equivalent, and shall be free from dust, imperfections and scratches.
- Duplicate negatives shall be printed and processed in such a manner as to reproduce negative diffuse densities in the range of 0.10 (D. Min.) to 1.70 (D. Max.). The D. Max minus the D. Min shall be greater than 0.40

7.0 PROCESS LAB EQUIPMENT:

- Process lab equipment shall be regularly maintained and cleaned.

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- Equipment shall be correctly calibrated and recalibrated when appropriate. Copies of most recent calibration reports shall be supplied to the Surveys and Resource Mapping Branch.

7.1 Enlargers

Enlargers shall be capable of print and film enlargements up to 10X onto 91.4cm x 91.4cm maximum size for black and white and 76.2cm x 76.2cm for colour. The enlarger shall have the capability to adjust the negative stage in order to produce a 10X part enlargement from the edge of a 25.4cm roll film aerial negative.

7.2 Printers

Contact and strip printers shall be electronic dodging log 'E' brand or equivalent.

Printers shall be set up and masked in order to produce adequately exposed and dodged imagery with a minimum of border bleed in effect.

7.3 Processors

Processors should be motor driven, roller transport design with metered chemical replenishment, and shall be set up within manufacturer specifications. Processor chemistry shall be within control limits and

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monitored on a regular basis.

8.0 AERIAL FILM STORAGE AREA:

8.1 Storage Requirements

Processed aerial film in sealed containers shall be stored in a dust free environment within a temperature range of 10 to 21 Degrees Celsius and at a relative humidity of 30% to 50%

8.2 Construction Requirements

The vault shall be constructed of a double layer of 5/8" 'Fireguard' gyproc on metal studs, or equivalent, with an eighty (80) minute 'burn time' rating.

8.3 Fire Alarm

A twenty-four (24) hour externally monitored fire alarm system is required.

9.0 COPYRIGHT:

The Province of British Columbia copyright Logo (provided by the Branch) shall appear on all contact prints produced from Branch films.

10.0 MISCELLANEOUS:

If the Company logo or name is to be included on any of the aerial photo products covered in the agreement, then it shall appear only in the rebate area or on the back of the print.

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11.0 PENALTIES:

Penalties for damage caused to leased air films through handling by the contractor or his representative(s), will be assessed as follows:

11.1 LIGHT DAMAGE - minor abrasions and/or stains that may be reproduced in printing which could hasten deterioration of the film.....\$25.00 / frame

11.2 MODERATE DAMAGE - scratches, gouges, crimps, and/or stains that will interfere with production of an aesthetic looking product and cause further deterioration of the film.....\$50.00 / frame

11.3 SEVERE DAMAGE - tears, folds, gouges and/or stains that render all or a major portion of the frame permanently damaged.....\$100.00 / frame

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