

QUALITY ASSURANCE/QUALITY CONTROL DOCUMENTATION SERIES

TITLE **QUALITATIVE 8 MM TIME-LAPSE MOVIE FILM REVIEW**

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AUTHORIZATIONS

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1.0 PURPOSE AND APPLICABILITY

This technical instruction (TI) describes qualitative review procedures for 8 mm time-lapse movie film. This TI is referenced in SOP 4420, *Scene Monitoring Qualitative Data Reduction*, and specifically describes:

- Film review to determine observed meteorological conditions.
- Film review for preparation of comprehensive anomaly discussions.

2.0 RESPONSIBILITIES

2.1 PROJECT MANAGER

The project manager shall:

- Provide overall coordination of the film review process.
- Provide technical assistance if required, in the interpretation of time-lapse images during the film review process.
- Review all film documentation for completeness and accuracy.

2.2 DATA ANALYST

The data analyst shall:

- Perform initial 8 mm film qualitative review.
- Prepare qualitative review tables.
- Coordinate with research scientist regarding review results.
- Oversee preparation and finalize qualitative review discussions.

2.3 RESEARCH SCIENTIST

The research scientist shall:

- Perform secondary 8 mm film qualitative review.
- Coordinate with data analyst regarding review results.
- Prepare initial qualitative review discussions.

3.0 REQUIRED EQUIPMENT AND MATERIALS

Equipment and materials used in reviewing 8 mm time-lapse movie film include:

- Processed 8 mm time-lapse movie film rolls

- 8 mm movie projector
- Time-Lapse Camera Visibility Monitoring Status/Assessment Sheets
- Master Log sheets
- Supplemental meteorological data (if available)

4.0 METHODS

This section includes the following two (2) subsections:

- 4.1 Review for Observed Conditions
- 4.2 Preparation of Discussions

4.1 REVIEW FOR OBSERVED CONDITIONS

All 8 mm film undergoing qualitative review is manually reviewed by the data analyst using an 8 mm movie projector. It is recommended that original 8 mm film be reviewed. Review of 8 mm film transferred to videotape is also possible, however, loss of image resolution and overall quality is likely to occur in any second-generation film or video product. The objectives of the review are to document the chronological sequence, daily meteorological conditions and patterns, and detect the presence of any anomalies. Noted conditions are examined and compared with other views or other meteorological data (if available). An initial evaluation of the cause or causes of each anomaly is made.

An anomaly is defined as anything in the camera field of view, whether suspected to be man-caused or natural, that is visually unusual, interesting, or dynamic. Anomalies include plumes, smoke, fugitive dust, ground fog, surface or elevated hazes, and other visual discontinuities whose source is not clearly distinguishable in the field of view. For example, a visible plume from a visible stack in the same field of view is not considered an anomaly because the source can be clearly identified. A plume without an identifiable source in the field of view is considered an anomaly. In addition, clearly defined weather events such as a snowstorm are not considered visual anomalies.

Review tables are prepared listing day, weather conditions, presence of observed hazes or plumes, description of any observed anomaly (or observed plume), and general comments. The tables are prepared using Time-Lapse Camera Visibility Monitoring Status/Assessment Sheets (Figures 4-1 and 4-2), Master Log sheets (Figure 4-3), and review notes. Refer to TI 4520-5010, *Scene Monitoring Reporting of 8 mm Time-Lapse Movie Film*, for more detailed discussions of data reporting. An example of an 8 mm review table is provided as Figure 4-4.

Location _____

**TIME-LAPSE CAMERA VISIBILITY MONITORING
STATUS/ASSESSMENT SHEET**

Today's Date _____ Time _____ Operator _____

Roll # _____ Date On _____ Time On _____

Temperature _____ % Cloud Cover _____
(F) Now Max Min

Describe General
Weather Conditions: _____

Yes	No	
_____	_____	Monitoring target visible
_____	_____	Camera found in proper condition
_____	_____	Timer found in proper condition
_____	_____	Film advanced as expected
_____	_____	Film changed and film canister properly labeled
_____	_____	Lens and window clean
_____	_____	Settings verified
		Normal/Macro Switch - NORMAL
		Aperture Switch - AUTO
		Filter Switch - DAYLIGHT
		Function Switch - INTERVALOMETER
		Interval Adjustment - 60-second position (recommended)
_____	_____	Camera alignment correct
_____	_____	Operating Switch ON

COMMENTS/ACTION TAKEN _____

Supplies Needed: _____

Enclose this Status/Assessment Sheet with the 8 mm movie film and send to:



Figure 4-1. Time-Lapse Camera Visibility Monitoring Status/Assessment Sheet
For All 8 mm Camera Systems (except Minolta D-12).

Location _____

**TIME-LAPSE CAMERA VISIBILITY MONITORING
STATUS/ASSESSMENT SHEET
FOR MINOLTA D-12**

Today's Date _____ Time _____ Operator _____

Roll # _____ Date On _____ Time On _____

Temperature _____ % Cloud Cover _____
(F) Now Max Min

Describe General
Weather Conditions: _____

Yes	No	
_____	_____	Monitoring target visible
_____	_____	Camera found in proper condition
_____	_____	Timer found in proper condition
_____	_____	Film advanced as expected
_____	_____	Film changed and film canister properly labeled
_____	_____	Lens and window clean
_____	_____	Settings verified
		Normal/Macro Switch - N (Normal)
		Aperture Control Selector - A (Auto)
		Manual Filter Switch - No lamp symbol (Daylight position)
		Auto Exposure Adjustment Dial - Red mark (no adjustment)
		Operation/Effect Selector - N (Normal)
		Frame speed dial - S.F. (single frame)
		Battery Master Switch - OFF
		Intervalometer - ON
		Interval Adjustment - 60-second position (recommended)
_____	_____	Camera alignment correct
_____	_____	Operating Switch ON

COMMENTS/ACTION TAKEN _____

Supplies Needed: _____

Enclose this Status/Assessment Sheet with the 8 mm movie film and send to:


1901 Sharp Point Drive, Suite E
Fort Collins, CO 80525
Phone: 970-484-7941
Fax: 970-484-3423

Figure 4-2. Time-Lapse Camera Visibility Monitoring Status/Assessment Sheet
For Minolta D-12 8 mm Camera System.

MASTER LOG

CONTACT PERSON _____

SITE NAME AND ABBREVIATION _____

ROLL #	LOG	SENT PROC	MAILER #	BACK PROC	# POSS	# REC'D	DATE LOGGED	TIME LOGGED	PROBLEMS	EQUIPMENT CHANGE	SUPPLIES MAILED

Figure 4-3. Master Log.

Garner Hill South - Left View
Qualitative Review of 8 mm Film

GASL Roll 17

FILM DATE	WEATHER CONDITIONS	ANOMALY VISIBLE	DESCRIPTION	COMMENTS
01/24/93	Clear.	Yes*	Fog or plume.	
01/25/93	Clear.	Yes*	Fog or plume.	Sun glare on camera lens.
01/26/93	Cloudy. Westerly upper level winds.	Yes*	Blowing snow or smoke.	
01/27/93	Cloudy. Southwesterly upper level winds.	Yes*	Blowing snow or smoke.	Rain/snow on camera shelter window.
01/28/93	Cloudy. Southwesterly upper level winds.	No		
01/29/93	Cloudy. Southwesterly upper level winds.	No		
01/30/93	Partly cloudy. Southwesterly upper level winds.	Yes*	Fog or plume.	
01/31/93	Cloudy. Southwesterly upper level winds.	No		Poor visibility due to low clouds.
02/01/93	Clear.	No		Sun glare on camera lens.
02/02/93	Cloudy.	No		Poor visibility due to low clouds; scene obscured.
02/03/93	Clear.	Yes**	Fog or plume.	Sun glare on camera lens.
02/04/93	Cloudy. Southeasterly upper level winds.	No		
02/05/93	Unable to determine.	No		Camera ran out of film.

* Event is fully discussed in Technical Progress Report - Number 13 (January 1993).

** Refer to Section 2.4.5 for a complete discussion of event.

Figure 4-4. Example Qualitative Review of 8 mm Film Table.

4.2 PREPARATION OF DISCUSSIONS

Further film reviews are performed by a research scientist, using an 8 mm movie projector. Supplemental reviews focus on the anomalies previously noted and listed in the review tables. Anomalies are evaluated using supplemental meteorological data, 35 mm slides, and site documentation (if available).

It is important to note that this information is limited and that not all observed atmospheric anomalies can be clearly explained from available information. The film is viewed several times at various projector speeds to confirm the estimates of timing, duration, size, and appearance of each anomaly. Detailed discussions describing the anomaly and probable cause are constructed. Detailed discussions of the daily meteorological factors are used in conjunction with discussion of anomalies. Anomalies are classified as: 1) naturally-occurring weather patterns, 2) undetermined given the available information, 3) originating from the observed pollution source, or 4) originating from other identifiable sources.

All of the interpretations are based on a subjective evaluation of the data available. An example anomaly discussion is provided as Figure 4-5. The project manager and research scientist collaborate, review, and finalize all anomaly discussions before reporting. Refer to TI 4520-5010, *Scene Monitoring Reporting of 8 mm Time-Lapse Movie Film*, for more detailed discussions of data reporting.

Date and Time: April 20, 1993

35 mm Slide Numbers: Denali North view (DENN #3761 - 3769)

8 mm Film Roll Numbers: Denali North view (DENN #131)
Garner Hill East, Left view (GAEL #34)
Garner Hill East, Right view (GAER #34)
Garner Hill South, Left view (GASL #34)
Garner Hill South, Right view (GASR #34)

Noted Event: Blowing dust or fog.
The Garner Hill East, left view 8 mm film depicts whitish, ground-based features resembling blowing dust. The features are visible late in the morning and early afternoon.

In Class I area: No

General Weather: Healy weather observations document good visibility with clear skies. Temperatures ranged from 34°F at 0545 and 0645 to 45°F at 1615. Light to moderate southeasterly winds occurred between 0545 and 0745. Strong southwesterly winds occurred at 0945, and turned to strong southeasterly at 1145, moderate southerly at 1615, and strong southeasterly from 1745 through the remainder of the day. Data from the ambient monitoring station at DNPP are not available.

Discussion: The Garner Hill East, left view 8 mm film depicts no plume from Unit No. 1. Faint streaks resembling blowing dust or fog appear near Unit No. 1 early in the morning and travel northward. The film depicts generally clear, windy skies.

The Denali North view 8 mm film depicts cloudy skies and moderately windy conditions. The Denali North view 35 mm photographs generally clear skies and good visibility.

Conclusion: The ground-based features appearing in the Garner Hill East, left view 8 mm film are blowing dust or glacial till from the river banks. The appearance of the feature documented in the film and weather record supports this conclusion.