



Quality Assurance for Airfield Maintenance



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About Me

- 24 years in aviation industry
- Safety Management System & Quality Assurance Program Manager since 2007.
- Calgary Airport Authority 2010-2023
- Developed SMS and QA programs through the phased implementation process for both airlines and airports.
 - 1st 705 airline in the Prairie and Northern Region to have an accepted SMS
 - 1st airport in Canada to undergo receive SMS certification

Agenda

1. Canadian Aviation Regulations for QA
2. Application to Airfield Maintenance Programs
3. Early Implementation of QA
4. Quality Assurance vs Quality Control
5. Building QA Programs for Airfield Maintenance
6. Auditing Under Quality Assurance
7. Use Quality Assurance to Improve Your Maintenance Programs

TC QA For Airports – A Very Brief Timeline



2009

Introduction of Safety Management System regulations for Airports, including requirement for a Quality Assurance Program

2011

Quality Assurance Program documentation submitted to TC for review

2012

Phase 4 SMS Implementation – Quality Assurance Program operational

302.503 (1) The quality assurance program required under paragraph 107.03(g) in respect of an applicant for, or a holder of, an airport certificate shall include a process for quality assurance that includes periodic reviews or audits of the activities authorized under a certificate and reviews or audits, for cause, of those activities.

(3) The holder of an airport certificate shall establish an audit system in respect of the quality assurance program that consists of the following:

(c) checklists of all activities controlled by the airport operations manual;

Early QA Program Development

“audits of the activities authorized under a certificate”

“checklists of all activities controlled by the airport operations manual”

If you were not already a Quality Assurance pro, how would you build your program?

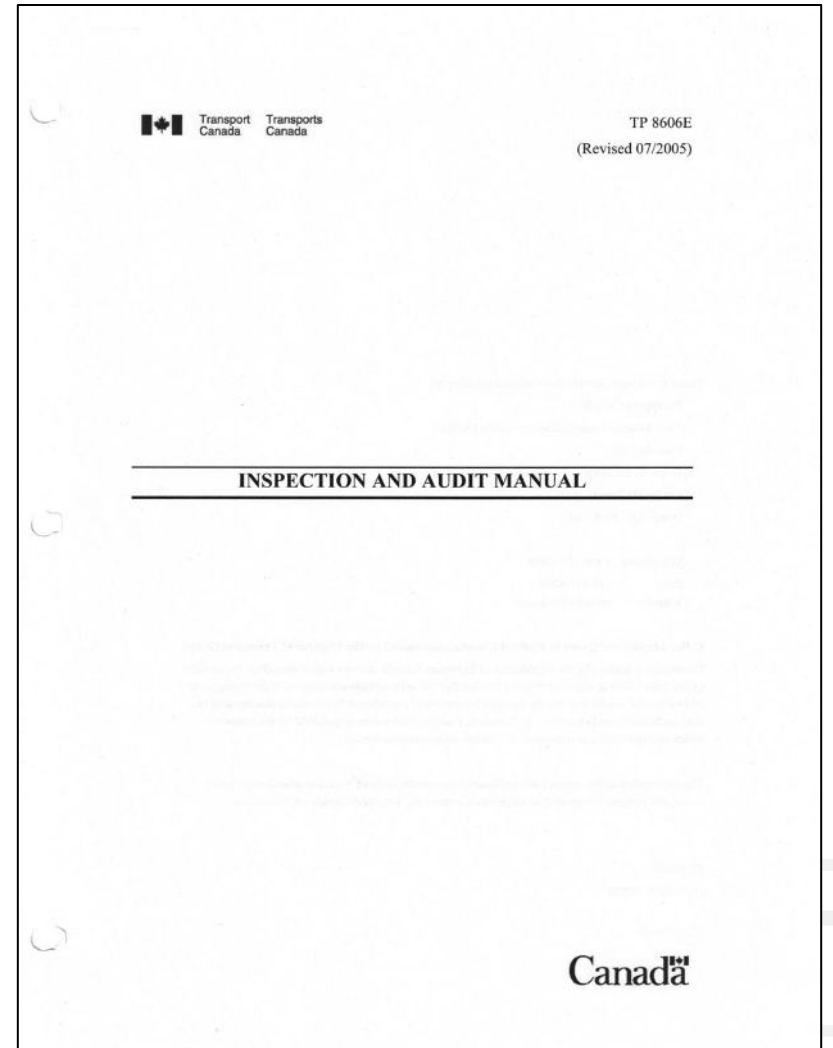
Early Program Development

Replicate the Transport Canada Airport Audit Program

- Checklists from TC's own system (NASD)
- Line-by-line review of infrastructure against TP312 and CARs

Result:

Transport Canada Approved QA Program



Quality Control (QC) vs Quality Assurance (QA)

Quality Control – Product Focus

- Inspect the elements under review for compliance with the regulations
- Pass/Fail evaluation only
- A picture of the state of compliance on ONE day



Quality Control (QC) vs Quality Assurance (QA)

Quality Assurance – Process Focus

Quality assurance (QA) can be defined as a set of activities designed to ensure that a product or service meets the specified requirements and quality standards.

This involves the establishment of standards and procedures, the monitoring of processes and the implementation of corrective actions when necessary.

Quality Control (QC) vs Quality Assurance (QA)

Quality Assurance – Process Focus

- Document the Process
- Verify that the process is being used
 - A properly designed and executed process should always result in an output that is compliant with the regulations.
- Validate that the desired outcomes are achieved (QC)

Examines HOW the work is done, as well as the final product

Application to Airfield Maintenance Programs

“audits of the activities authorized under a certificate”

(4) An airport operations manual shall contain

(d) an enumeration of the facilities and services provided and the measures in effect at the airport, including

(i) movement area maintenance services,

- Airfield Paint Markings Maintenance
- Wildlife Management Program
- Friction Testing / Rubber Removal
- Pavement Management Program
- Site Self Inspection Program
- Winter Maintenance Program (SNIC)

Program Documentation – High Level Items

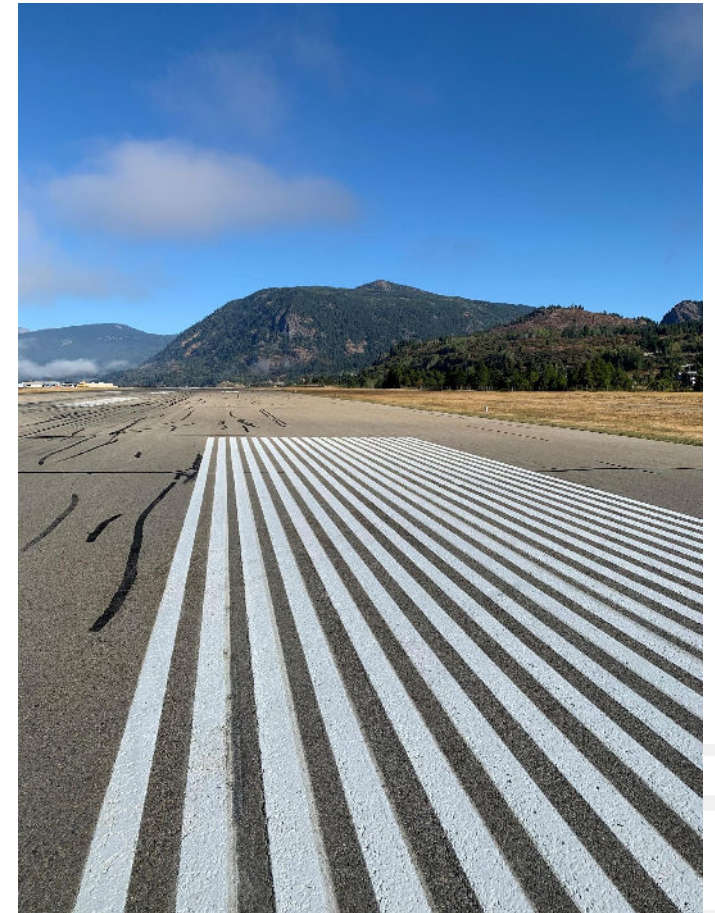
Define and Describe the Work

Identify the Standards to be Met

Document the Resource Requirements

Document Program Priorities

Document Training Requirements



Program Documentation – Processes and Procedures

Processes and Procedures that describe the intent and the activities of an airfield maintenance program.

WHAT needs to be done

WHO is responsible for the activity

WHEN should it be done

WHICH records are created in the process



Airfield Maintenance Program Documentation

What is your current process?

- even if it's not documented, there is a process

Simple vs Complex

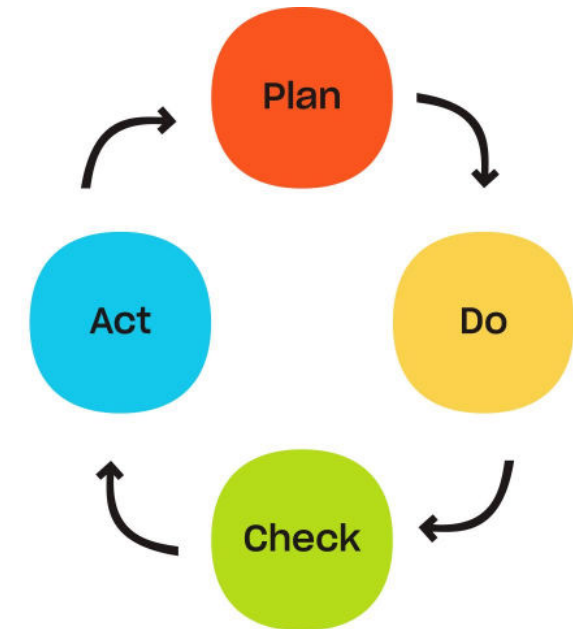
- Will reflect the complexity and size of your airport and operation



Keys to Successful Implementation

Don't change the basics - If your on-field product is good (QC), your process probably works

1. Document your process
 - a) Identify applicable standards (ex. TP312 5th)
 - b) Interview staff, conduct observations
 - c) Add elements that address challenges currently experienced by field staff
 - d) Identify required training
2. Run the Program
3. Audit the Program
4. Adjust the Program
 - a) Review the audit findings issued
 - b) Investigate for systemic causes implement corrective actions
 - c) Review the season with field staff
 - d) Update the processes to address the issues



Quality Assurance Auditing– Common Items

1. Review Program Documentation Against Regulations
2. Identify internal processes
 1. Documentation reviews
 2. Inspections or evaluations
 3. Assigned work tasks
 4. Training requirements
 5. Records created
3. Records requests and staff interviews to verify processes in use
4. Review related SMS reports

Quality Assurance Auditing– Process Validation

Visual Aids Maintenance Program

- Inspections logged
- Scheduled maintenance completed

Airfield Paint Markings Program

- Marking condition evaluations
- Seasonal review meeting minutes



Quality Assurance Audit Roadmap

Initial Audit (*as per 302.503 (3)(a)*)

- On-Field Validation (QC)
- Full asset review against standards
 - Measure and evaluate installed elements
- Establish compliance baseline for your airport



Subsequent Audit Validation Activities (3-year cycle)

Visual Aids

No value added by re-measuring the same assets

- Edge lights have not moved
- Signs remain fixed in place

Verify changes made since last review

- Corrections made due to previous findings
- New infrastructure installed since last audit

Validate lighting serviceability levels



Quality Assurance Audit Roadmap

Airfield Paint Markings

- Line placement and width previously verified
- Look for:
 - Overspray outside of tolerances
 - Marking edge variations
 - Paint coverage level and condition
 - Fade-through



Audit Findings for Quality Assurance

Focus on the Process

The Airfield Paint Markings Program failed to maintain markings to the applicable standards.

Example: Threshold marking Runway 29 (photo #1)



Corrective Action Plans (CAPs) for Quality Assurance

Focus on the Process

Requires the Program Manager to discover WHY the marking was not refreshed to the standard.

Short Term CAP:
Repaint the marking

Long Term CAP:
Modify the process to capture the issued identified in the Root Cause Analysis



Corrective Action Plans (CAPs) for Quality Assurance

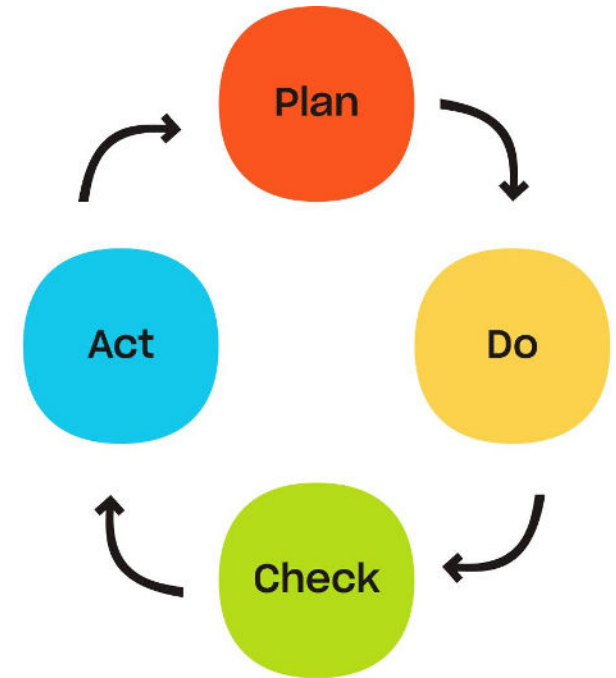
Root Cause Analysis for Process-focused Findings

1. Does a process exist for this function?
2. Was the process followed?
3. Can the process be modified to capture or prevent a similar issue?

Developing Airfield Maintenance Programs - Summary

1. Capture your existing processes (Plan)
2. Run the program (Do)
3. Audit the program (Check)
4. Revise the program (Act)

This does not happen in a single audit cycle



Leverage QA For Your Program

New Infrastructure / Restoration Programs

- Request QA to conduct an Acceptance Audit

Development of Corrective Actions

- Ask QA to review your process changes before implementation

Executive Attention

- QA findings and corrective actions **MUST** be reported to the Accountable Executive
- Opportunity to present a business case for program improvements

Quality Assurance – Final Thoughts

Don't fear the audit process

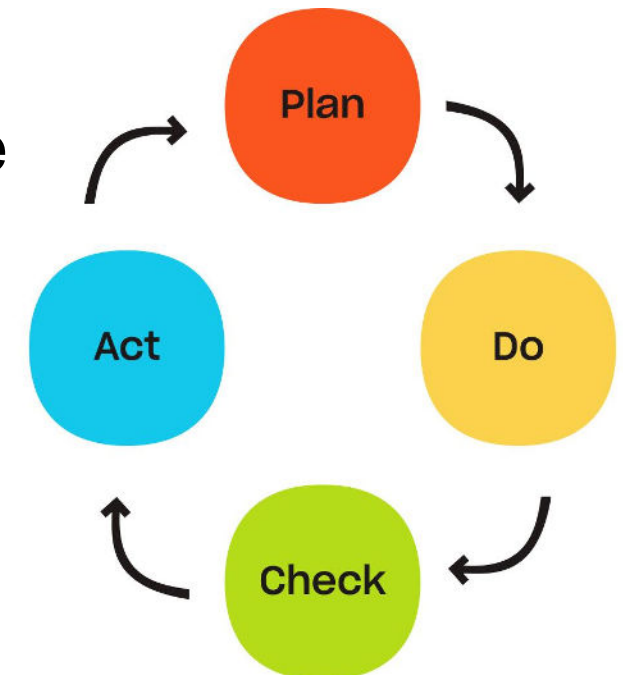
- It's an opportunity for *internal* review and improvement of your program

Follow the Lead

- New regulations for Winter Maintenance (2020) provide blueprint for creation of process documentation

QA is a Collaboration

- It only works when Program Owners and Auditors work together



Questions?

