SMS Best Practice Submission			
ANSP	NAV CANADA	Date of submission	August 2023

SoE Study Area	SA1: Safety Culture Transversal Area: Safety Performance Monitoring
Best Practice Title	Safety Culture Measures of Success
In use since	2023 (FY2023)
ANSPs using this practice	NAV CANADA

Background

Safety culture surveys began at NAV CANADA in 2000 with the goal to evaluate the strength of and to continuously improve safety culture; subsequent national surveys were held in 2005 and 2011. In 2016, targeted regional surveys began to support SMS Assessments by determining local issues or concerns that Safety and Quality members could follow-up directly with employees or managers. Prior to 2018, all the data received from a safety culture survey was calculated and compared manually, using MS Excel: This took a considerable amount of time and effort. In 2019, MS Power BI was used to create the Safety Culture Survey Dashboard. This allowed for an analysis to be conducted quickly and comparisons of other results to be easily obtained with the click of a few buttons.

In 2021, it was decided that a national survey would be conducted, as there had not been a national survey since 2011. The safety culture survey questions were reviewed by a committee of Safety and Quality members and some questions were rewritten. The results of the national survey determined action plan items to help improve safety culture at NAV CANADA.

In 2024, it was decided that another national safety culture survey would be conducted. This time the questions were aligned to use the same 16 questions that AustroControl and Skyguide used in 2021 (AustroControl will also use them in 2024 for a comparison to our results). An additional six questions were added for NAV CANADA to ask targeted questions.

The Review

No formal measures of success were determined prior to this project. The survey results were the main way the health of safety culture at NAV CANADA was measured.

The main challenges of using only a point-in-time survey to determine the health of the safety culture are (a) comparing 'apples to apples' and (b) ensuring the data obtained accurately represents the population. For example, with respect to (a), each time a survey is conducted, the groups are not always the same, i.e., the creation of the Corporate Planning and Performance department in 2021: This department did not exist for the 2021 survey, but did for the 2024 survey. Comparison results were not available this new department, which makes it challenging to accurately use the data of past and current surveys. For (b), historically, survey response rates in the regions are lower than the support function groups (groups based out of Head Office) at NAV CANADA. Also, smaller groups, such as Safety and Quality, require a much higher response rate to obtain the minimum response ratio to ensure the information accurately represents the opinion of the population. The further the demographic information is broken down, the less accurate the information becomes, unless the minimum response ratio is obtained. The smaller the population, the closer to census is required to accurately represent the group.

Survey results were measured by comparing them to past data where possible. As this was not always possible, the Safety Climate Index was created to give an idea of how positive, negative, or neutral the respondents were in their answers allowing an assessment that is independent of the survey questions asked from one survey to the next. The Safety Climate Index gives an idea of how many respondents (shown in percentage) generally answered positively, negatively, or neutral. The

Safety Climate Index is another way success of the Program can be measured, but it is still based on the point-in-time survey.

Once action items for the survey were determined, the activity tracker was used to track the action and the intended result from the action. The information would be compared at the next survey to see if an improvement was made or not. The action tracker is another way success of the Program can be measured.

Safety Culture Measures:
The Safety Culture Program (SCP) Indicators of Effectiveness, which are a combination of all the identified measures of success, were developed and broken into two categories: Process Measures and Outcome Measures. Process measures and outcome measures were each assigned a weighted percentage to obtain a total health score of the SCP. The score will be presented in percentage, which will be calculated and reported on annually.

Process measures were identified as processes that are required to occur to obtain the outcome measures. The identified process measures are:

1. Process Measures (25%)
1.1 Compliance to Safety Culture Survey schedule:
Method: Measure monitors if surveys are performed as per schedule
Target: Complete surveys as per planned schedule
1.2 Action items are determined from Safety Culture Survey (SCS):
Method: Analysis of survey triggers the creation of action items
Target: At least 1 action item determined for each Operations, Technology, Safety and Quality, and all organizational groups (all Company) for each internal survey cycle. For the external survey, once the first one has been completed, how to integrate it into this measure will be determined.
1.3 Safety Culture-related Unit Risk Registry (URR) entries are named:
Method: Review of the URR identifies safety culture-related registers
Target: At least 1 URR related to SC is identified
1.4 Completion of SMS Assessments:
Method: Measure monitors if SMS Assessments are performed as per plan relating to safety culture
Target: Complete SMS Assessments as per planned schedule

2. Outcome Measures (75%)
2.1. Positive Safety Climate Index:
Method: answers to survey questions range from 1 (most negative) to 5 (most positive). For each respondent, calculate the average score for all questions. A respondent is then tagged as a "Positive Respondent" if the average value is >3.5. The Positive Safety Climate Index is the percentage of respondents that fall under the "Positive Respondent" category for each Operations, Technology, Safety and Quality, and Support Function group
Target: Achieve at least 75% Positive Respondents
2.2. Minimum Response Ratio Achieved:
Method: Analysis of the survey respondent information will be used to determine if the minimum response ratio was achieved in each Operations, Technology, and all Company.
Target: Achieve the calculated minimum number of respondents for each category at a 90% confidence level and 5% margin of error
2.3. Proportion of Successful Action Items:
Method: Action Items contain a description of what a successful outcome looks like. This may include improvements to specific questions over time (e.g., expect an increase in positive answers for question X within 2 surveys)
Target: 100% of Action Items meet desired (documented) successful outcomes
2.4. CANSO SMS Maturity Level for Safety Culture Study Area:

Method: Review of annual CANSO SMS Standard of Excellence Maturity level for safety culture study area
Target: Achieve at least Level D
2.5. Completed Safety Culture URR Actions:
Method: Action Items contain a description of what a successful outcome looks like
Target: 100% of Action Items meet desired (documented) successful outcomes
2.6. Five Safety Culture Elements
2.6.1. Reporting Culture:
2.6.1.1. Percentage of Positive Responses for Reporting-Related Survey Questions:
Method: percentage of respondents that answered questions related to reporting (internal survey: Q7, Q8, Q9); external survey: TBD; question as either 'Agree' or 'Strongly Agree'
Target: At least 75% for each Operations, Technology, and Support Function
2.6.1.2. Profile of NC-RAT Severity:
Method: Calculate the number of ATS OIs for each NC-RAT Severity. E's are events of no safety impact, C's are events that were managed within the safety margin; B's are events that were not managed within the safety margin but the controller/specialist still had the ability to influence the outcome; A's are events that were not managed within safety margin and the controller/specialist no longer had the ability to influence the outcome. The theoretical profile is that we should see more Es than Cs, and so forth if there is a strong reporting culture.
Target: Number of E events > Number of C > Number of B > Number of A (Annual)
2.6.1.3. Distribution of IFR-IFR LOS Achieved Separation:
Method: Calculate the number of IFR-IFR LOS for each 10% range of Achieved Separation (the highest achieved separation between vertical and horizontal). Then, evaluate the N% peak
Target: N% peak should not be below 90%
2.6.1.4. Percentage of IFR-IFR LOS Manual vs. Automatic Reporting (future):
Method: Calculate the difference between the number of IFR-IFR LOS reported manually compared to those automatically reported
Target: At least 75% of automatically reported LOS are reported manually
2.6.2. Just Culture:
2.6.2.1. Percentage of Positive Responses for Just Culture-Related Survey Questions:
Method: percentage of respondents that answered questions related to just culture (internal survey: Q2, Q3, Q6, Q9); external survey: TBD; question as either 'Agree' or 'Strongly Agree'
Target: At least 75% for each Operations, Technology, and Support Function
2.6.2.2. Just Culture Training (future):
Method: calculate % of employees, supervisors, and managers that have completed the required just culture training as per the training plan
Target: 100% for each category of training
2.6.2.3. Adherence to Just Culture Principles (future):
Method: Calculate (annually) the number of instances where the Just Culture Policy has not been adhered to
Target: Downward trend in inappropriate applications of Just Culture
2.6.2.4. Just Culture-Related Study Areas in CANSO SMS Maturity:
Method: Review of annual CANSO SMS Standard of Excellence Maturity level for just culture study area
Target: Achieve at least Level D
2.6.3. Learning Culture:
2.6.3.1. Percentage of Positive Responses for Learning Culture-Related Survey Questions:
Method: percentage of respondents that answered questions related to learning culture (internal survey: Q11, Q13); external survey: TBD; question as either 'Agree' or 'Strongly Agree'
Target: At least 75% for each Operations, Technology, and Support Function
2.6.3.2. Mandatory SMS Training Completion:
Method: calculate % of employees and managers that have completed the required SMS as per the training plan
Target: 100% compliance with training plan

2.6.3.3. Percentage of Units with SMS Follow Ups:
Method: review number of units with SMS Follow Ups identified in NC-SIS
Target: At least 75% of units have 1 SMS Follow Up
2.6.3.4. Percentage of Investigations with positive contributions (future):
Method: Reviewing the investigation reports produced by Safety and Quality to determine positive contributions identified
Target: At least 50% of investigations identify positive contributions
2.6.4. Informed Culture:
2.6.4.1. Percentage of Positive Responses for Informed Culture-Related Survey Questions:
Method: percentage of respondents that answered questions related to informed culture (internal survey: Q10, Q12); external survey: TBD; question as either 'Agree' or 'Strongly Agree'
Target: At least 75% for each Operations, Technology, and Support Function
2.6.4.2. Sharing of Lessons Learned (future):
Method: Lessons learned that are captured are shared nationally to help share information
Target: TBD
2.6.4.3. Sharing of Best Practices (future):
Method: Identified best practices are to be shared nationally to help learn from each other
Target: TBD
2.6.5. Flexible Culture:
2.6.5.1. Percentage of Positive Responses for Flexible-Related Survey Questions:
Method: percentage of respondents that answered questions related to flexible culture (internal survey: Q14, Q15); external survey: TBD; question as either 'Agree' or 'Strongly Agree'
Target: At least 75% for each Operations, Technology, and Support Function
2.6.5.2. Experience Survey Results Show Improvement:
Method: The NAV CANADA Experience survey will run in FY2024. Data from FY2023 survey will be compared to the FY2024 results and improvements should be noted for questions related to trust, culture, and leadership
Target: At least 10% improvement noted in each category
2.6.5.3. SMS Assessment determines Excellence (future):
Method: SMS Assessments assess the level of safety culture through interviews which results in an assigned level
Target: Excellence for the category of Safety Culture is determined

Continuous Improvement
As noted, the current SCP Indicators of Effectiveness consist of indicators that can be measured today along with proposed future measures that require further work to determine how best to implement them. Additionally, as work progresses on these indicators, there will be lessons learned and challenges encountered, that may require further adjustments. Therefore, over time these indicators will continue to evolve to assure that the appropriate measures for the success of the SCP are put in place.

Of note, a recent, but informal survey, of some CANSO member ANSPs (e.g., LVNL, AirServices, NATS, Hungarocontrol) highlighted that they have not yet progressed beyond using basic safety culture survey results. They appreciated the link to five foundational elements and expressed great interest in learning more about our approach.

NAV CANADA has recently shared the measures of success with the FAA, DFS Germany, and Airways New Zealand. In sharing the information and as they personalize it, NAV CANADA has asked that they share any additions they make so that we may better improve our measures.

By submitting this document, your organisation is willing for the proposed Best or Good Practice to be shared with other ANSPs.

For Optimised Practices, this document should be sent together with the SoE in SMS questionnaire, to: soe_2023@eurocontrol.int

Submissions for consideration as Good Practices may be sent by the above date. They may also be identified during the survey interview sessions with the survey team, following which a Good Practice submission document will be requested.