

The background image shows the Space Shuttle 'Independence' mounted on top of a Boeing 747 aircraft. The shuttle is white with black thermal tiles and has 'Independence' and 'United States' written on its side. The 747 is white with blue stripes and has the NASA logo on its tail. The scene is outdoors on a wet, reflective surface, possibly a parking lot or tarmac, with a black metal fence in the foreground. The sky is overcast.

Widespread and Systematic Change

White Paper

How NASA Is Assessing and Improving Its Culture and Safety Climate

Over the past couple of decades leaders have come to recognize that a critical factor in determining performance outcomes is the culture of the organization. It places limits, explains successes and failures, and points to opportunity. NASA faced this issue head-on when the Columbia Accident Investigation Board found organizational causes for the Space Shuttle tragedy that occurred in February 2003. The board's report said that in order to fly the Space Shuttle safely, NASA must address not only identified technical issues but also a broken safety culture. Specific and compelling data was cited documenting the link between NASA's culture and the Space Shuttle accident. The result was that NASA engaged DEKRA to help the agency develop a process for changing its culture in ways that are systematic, measurable, and replicable.

This article outlines the steps that NASA took to address its culture and safety climate. This first part describes the initial assessment process and its findings; the second, discusses the intervention strategy, both at the senior leadership and site levels. The final part presents six-month results from the three NASA centers that implemented the initiatives.

Assessment of the Current Situation

Our first efforts were to understand the current culture and climate at NASA in order to recommend focus areas for improvement. By culture, we mean the shared values and beliefs of an organization, commonly described as "the way we do things here." By climate, we mean the prevailing influences on a particular area of functioning (such as safety) at a particular time. This assessment was accomplished through a review of previous work, a survey of NASA employees, and a program of interviews.

The DEKRA Safety Climate and Culture Survey

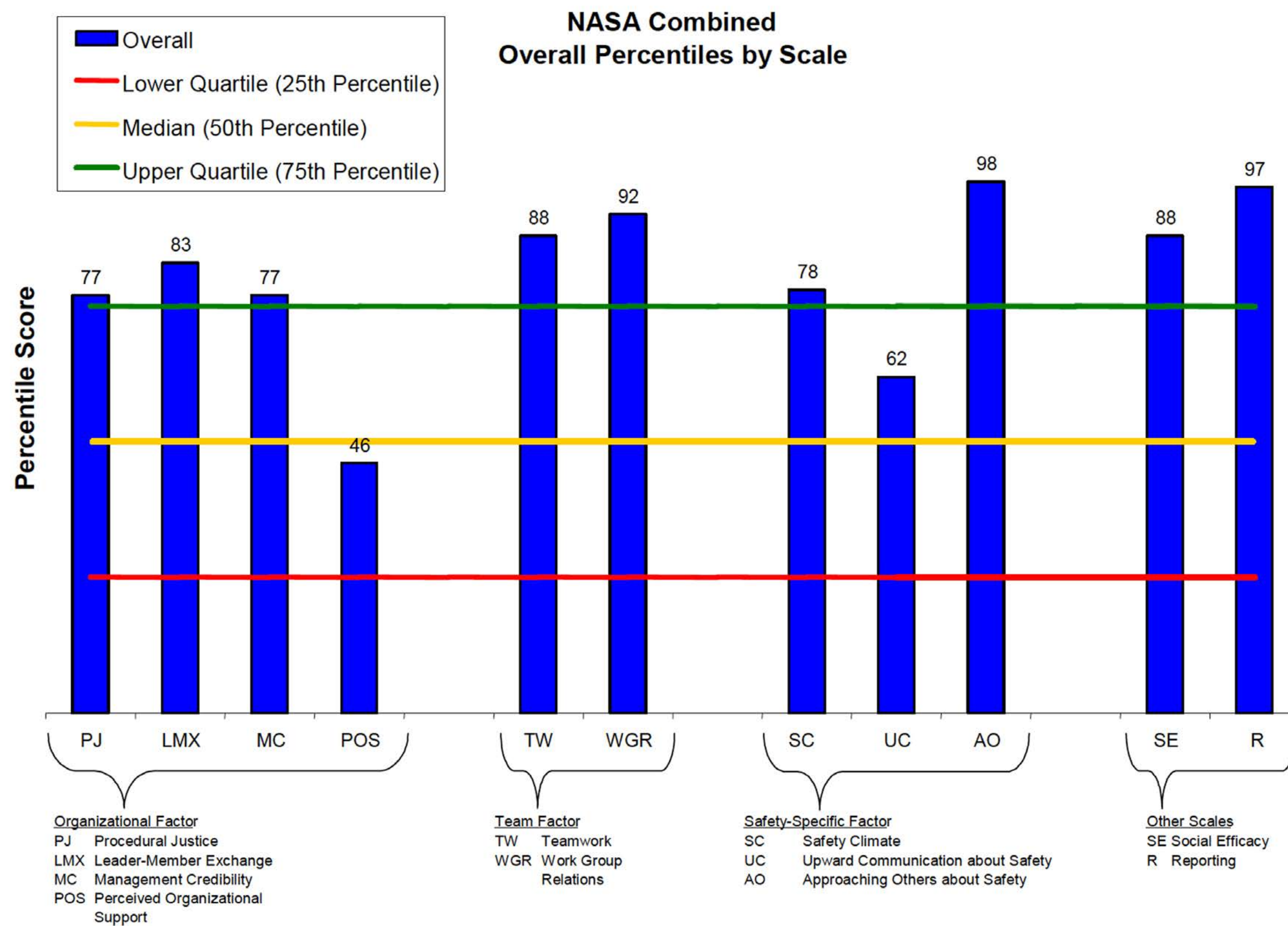
A specially modified version of the web-based DEKRA Safety Climate and Culture Survey was administered to all NASA employees at all 11 NASA locations. This yielded an overall response rate of 45.2%, a comparable result from previous NASA culture surveys. The DEKRA Safety Climate and Culture Survey measures the underlying determinants of organizational culture and safety climate.

These factors include:

1. Procedural justice
2. Leader member exchange
3. Management credibility
4. Perceived organizational support
5. Workgroup relations
6. Teamwork
7. Safety climate
8. Upward communication
9. Approaching others

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Figure 1



In addition to the basic scales, the survey was supplemented with NASA-specific questions. Agencywide response is shown in Figure 1. The percentiles in this figure reflect a comparison of NASA results with a normed database.

Agencywide, NASA scored well in relation to other organizations in the database on most of the scales comprised in the survey. These results indicated that, as a generality, there was effective team functioning at the local level with employees who have the ability and inclination to speak up to peers.

The two scales where NASA scored lowest were Perceived Organizational Support (POS) and Upward Communication (UC). POS measures perceptions about the

organization’s concern for the needs and interests of employees. Individuals’ perceptions of organizational concern for them influence beliefs about the organization’s values for safety, which in turn affects employees’ willingness to raise safety concerns.

UC measures perceptions about the quality and quantity of upward communication about safety concerns.

Lower scores on Perceived Organizational Support and Upward Communication indicated areas for particular focus during the culture-change effort. Senior management, and the behaviors that they stimulate through the management chain, influences these factors. These factors are also strongly influential on the culture in ways that relate directly to mission safety.

Interview Findings

To help provide context for the survey results, interviews were conducted with more than 120 people at NASA Headquarters, the Glenn Research Center, and the Johnson

Space Center. At each location, individual interviews were conducted with members of the senior management, and group interviews were conducted with representative groups of individual contributors, as well as supervisors and managers.

Interviews disclosed a strong sense of dedication and commitment to the agency’s work; however, frustration was identified. During the interview program, it was discovered that there were impediments to speaking up at NASA. This was consistent with the Upward Communication Survey results and indicated

that there were non-managers within NASA who felt that open communication was impeded. In addition, there was variability in the leadership and management skill level of individuals in management and supervisory positions.

Conclusions

The NASA culture that was described in the assessment reflected a long legacy of a can-do approach to task achievement but did not yet fully reflect the agency's stated values of safety, the NASA family, excellence, and integrity. The assessment reflected an organization in transition, with many ongoing initiatives and lack of a clear sense of working levels of "how it all fits together."

In summary, we identified an opportunity to strengthen the culture's integrity by helping NASA become an organization that lives its values.

Interested in assessing and improving your organizational culture and safety climate? Connect with us



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