

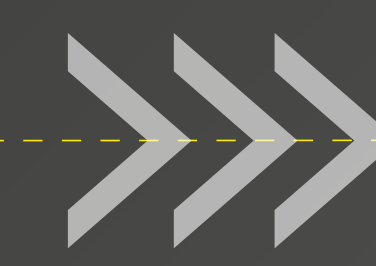
HUMAN FACTORS AND NASCAR: A CASE STUDY IN OPTIMIZING PERFORMANCE



TRAINING



TEAMWORK & COMMS



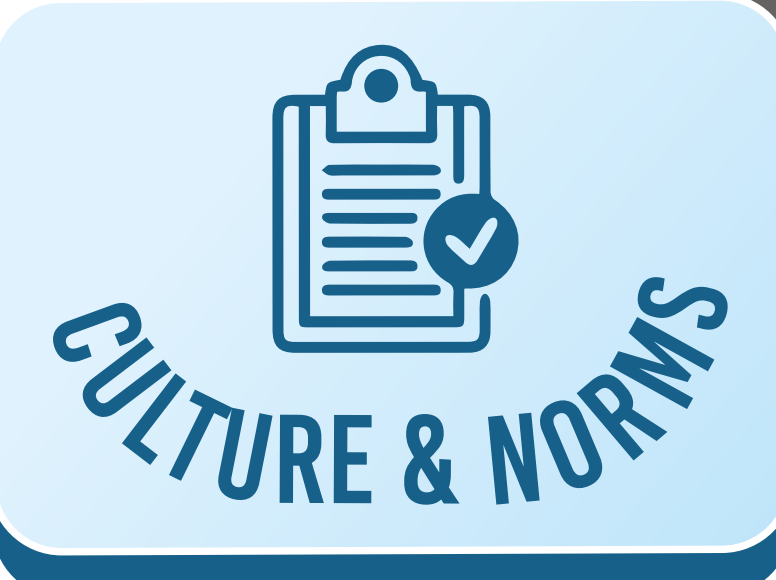
DISTRACTION



MONOTONY & AUTOPILOT



WORKLOAD



CULTURE & NORMS



TIME PRESSURE



SUPERVISION & LEADERSHIP



FATIGUE



FAMILIARITY & EXPERIENCE



SITUATION AWARENESS

JOSH IS A WHEEL GUNMAN FOR A NASCAR TEAM, ABOUT TO PERFORM THE FINAL CRUCIAL PIT STOP IN THE RACE. AFTER A LONG WEEK OF PRACTICING AND A LONG SEASON OF RACES ALMOST EVERY WEEKEND, AS WELL AS AN INCIDENT WITH A NEIGHBORING CAR ALMOST HITTING A CREW MEMBER LAST WEEK, TENSIONS ARE RUNNING HIGH. THE TEAM IS NERVOUS TO COMPLETE THIS THIRD AND FINAL PIT STOP WITHOUT MISTAKE. THE DRIVER IS FIGHTING FOR A TOP SPOT IN THE RACE AND NEEDS A CLEAN STOP TO KEEP HIS SPOT. AS THE DRIVER APPROACH'S THE PIT BOX THE TEAM PREPARES TO JUMP THE WALL WHEN THE CAR IN THE ADJACENT BOX DRIVES THROUGH THEIR BOX. THIS DISRUPTS THEIR TIMING WHICH CAUSES THE JACK-MAN TO RUSH JACKING UP THE CAR SO HE CAN GRAB THE NEXT TIRE GOING ON. JOSH IS UNAWARE OF THE JACK-MAN'S MISTAKE AND IS RUSHING TO DRILL THE TIRE ON TO GET TO THE OTHER SIDE OF THE CAR. BECAUSE OF THIS MISTAKE THE TIRE IS NOT PUT ON ALL THE WAY AND AS THE DRIVER IS COMPLETING THE NEXT COUPLE LAPS THE TIRE COMES OFF ON TRACK AND CAUSES THE DRIVER TO HAVE TO COME BACK TO THE PITS.

SYSTEMIC ISSUES

- TRAINING FATIGUE
- NO HUMAN FACTORS TRAINING
- TRAINING IN CONTROLLED ENVIRONMENT
- ZERO TOLERANCE FOR ERROR
- INADEQUATE PIT LANE REGULATIONS
- CONSTANTLY CHANGING PIT STOP REQUIREMENTS
- PRESSURE FROM "BEHIND THE WALL"
- HIGHLY MONOTONOUS ROLES
- EMOTIVE COMMUNICATION AND DECISION MAKING

TWO PATHS

PATH 1: FOCUS ON JOSH

- 1 ENSURE JOSH KNOWS WHAT HE DID IS NOT ACCEPTABLE.
- 2 MOVE JOSH TO RESERVE MEMBER NEXT RACE.

THESE OPTIONS ARE OFTEN TEMPTING, HOWEVER THEY OFTEN DO LITTLE TO ADDRESS THE UNDERLYING CONDITIONS AND ISSUES THAT ENABLED THE FAILURES ABOVE TO MANIFEST IN THE FIRST PLACE. THOSE CONDITION WILL REMAIN AND ALLOW RELATED FAILURES WITH OTHER MEMBERS IN FUTURE RACES.

PATH 2: ADDRESS SYSTEMIC ISSUES

- 1 DEVELOP AND SUSTAIN A LEARNING CULTURE VIA PSYCHOLOGICAL SAFETY.
- 2 ACCEPT MISTAKES WILL BE MADE AND ARE USEFUL FOR LEARNING.
- 3 REDUCE TRAINING TIMES IN LEAD-UP TO RACE TO REDUCE BURNOUT AND FATIGUE.
- 4 INTRODUCE JOB ROTATION FOR PIT CREW DURING TRAINING.
- 5 PUSH FOR BETTER PIT LANE REGULATIONS TO IMPROVE SAFETY.
- 6 INTRODUCE HUMAN FACTORS TRAINING AROUND THREAT AND ERROR MANAGEMENT AND INCLUDE IN EXISTING TRAINING TO INCREASE REALISM.
- 7 INTRODUCE COMMUNICATION TRAINING AROUND DELIVERING AND RECEIVING INFORMATION WITH INTENTION AND NOT EMOTION.