TSC Category	Productivity and Innovation					
TSC	Engineering Problem Solving					
TSC Description	Apply the eight disciplines methodology for systematic problem solving including root cause analysis, failure mode effect and analysis, containment actions, and corrective actions and preventive actions in accordance with organisational systems and processes					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
				AER-SYS-4011-1.1	**AER-SYS-5011-1.1**	**AER-SYS-6011-1.1**
				Implement eight disciplines (8D) methodology to identify and resolve engineering problems in a structured manner	Conduct root cause analyses and risk assessments to identify corrective and preventive actions to engineering problems	Establish problem management strategies, protocols and mechanisms to prevent recurrence of engineering problems
Knowledge				• Main components of the 8D problem-solving methodology • Inductive tools for problem description including '5 Why', 'Repeated Why' and 'Is / Is Not' • Deductive tools for problem description including affinity diagram and fishbone / Ishikawa diagram • Product and process flow diagrams • Documentation requirements and protocols in 8D and Failure mode and effects analysis (FMEA)	• Definitions and process flow of key components of eight disciplines (8D) problem-solving methodology • Relevant tools, processes and technologies to facilitate problem identification, investigation, analysis and resolution • Root cause analysis (RCA) tools • Product and process flow diagrams • Risk assessment techniques • Failure mode and effects analysis (FMEA) process, tools and applications • Corrective and preventive actions (CAPA) • Factors affecting the effectiveness of different corrective actions	• Industry best practices and standards in problem management • Critical processes and key touchpoints throughout the lifecycle of engineering problems • Impact of engineering problems on business and stakeholders • Application of key components in problem management using eight disciplines (8D) Problem investigation and diagnosis techniques and methodologies • Problem prioritisation and sizing techniques, methodologies and parameters • Implementation of controls and systems to sustain the solutions
Abilities				• Prepare and plan for the 8D process • Collect information on the symptoms of the problem using symptoms checklist • Identify the need for an emergency response action • Describe and quantify the technical problem using inductive and deductive tools	• Identify team members and stakeholders to resolve identified problems • Recommend interim containment actions • Conduct RCA by review product and process flow diagrams to locate the root cause of problems • Perform risk assessment • Apply FMEA to identify and assess actual and	• Manage technical problems throughout their lifecycle • Establish problem management protocols and standards • Introduce organisation structures, processes and infrastructure to guide prevention, resolution and minimisation of problems and effects

Effective Date: February 2020, Version 1.1

				• Implement interim containment actions • Verify root cause through data collection • Create relevant diagrams relating to product and process flow to support FMEA • Implement project plans for solutions • Maintain 8D reports and FMEA documentation	potential failures in product and process designs • Decide corrective actions for identified failure modes • Develop execution and project plans for solution implementation • Verify effectiveness of permanent corrective actions • Monitor documentation and tracking of problems encountered and resolved	• Prioritise and categorise problems according to their severity, frequency or potential implications • Develop strategies to pre-empt potential problems from occurring • Develop root cause theories • Recommend permanent corrective actions • Endorse solutions to minimise reoccurrences of similar problems • Establish controls plan to manage product and process risks as indicated in the industry standard