BUREAU OF INDIAN STANDARDS

***MINUTES***

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| **Name of the Committee** | **No. of Meeting** | **Date and Time** | **Day** | **Venue** |
| Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26 | Twenty-Sixth (27th) | 31st  May 2024  from  10:30 AM onwards | Friday | WEBEX |

**CHAIRPERSON:** Dr S. S. Thipse **MEMBER SECRETARY:** Shri Gaurav Jayaswal

**MEMBERS PRESENT:**

|  |  |  |
| --- | --- | --- |
| SL NO. | NAME OF ORGANIZATION | NAME OF MEMBER |
|  | M/s Automotive Research Association of India, Pune | Dr. S.SThipse **(Chairperson)** |
|  | M/s Ashok Leyland Limited, Chennai | Shri Faustino |
|  | M/s Automotive Component Manufactures Association of India, New Delhi | Shri Sanjay Tank |
|  | M/s Bajaj Auto Ltd. | Shri Abhay Kumar |
|  | M/s Bosch Limited, Bengaluru | Bharadwaj M Krishnamurthy |
|  | M/s Central Institute of Road Transport, Pune  R&D Organization | Shri Shubhangi Dalvi |
|  | M/s Central Institute of Road Transport, Pune  R&D Organization | Shri Mangesh pathak |
|  | M/s Indian Institute of Science, Bengaluru | Prof. R V Ravikrishna |
|  | M/s Indian Institute of Technology Ropar, Punjab | Shri Dhiraj K. Mahajan |
|  | M/s Indian Oil Corporation (R and D Centre), Faridabad | Dr. M.Sithananthan |
|  | M/s Indian Oil Corporation (R and D Centre), Faridabad | Shri Sanjeev Singh |
|  | M/s Mahindra and Mahindra Limited, Mumbai | Shri Akshay AP |
|  | M/s Mahindra and Mahindra Limited, Mumbai | Shri Ashwin S Raj |
|  | M/s Mahindra and Mahindra Limited, Mumbai | Shri Joy |
|  | M/s Mahindra and Mahindra Limited, Mumbai | Shri Shailesh Kulkarni |
|  | M/s Mahindra Trucks and Bus Division, Pune | Shri V G Kulkarni |
|  | M/s Maruti Suzuki India Limited, Gurugram | Shri Arun Kumar |
|  | M/s Maruti Suzuki India Limited, Gurugram | Shri Gururaj Ravi |
|  | M/s Maruti Suzuki India Limited, Gurugram | Shri Mayank Sharma |
|  | M/s Maruti Suzuki India Limited, Gurugram | Shri Rajesh Kumar |
|  | M/s Minda Emer Technologies Limited, Gurugram | Shri Vivek Jain |
|  | M/s Ministry of New and Renewable Energy, New Delhi | Shri Hiren Borah |
|  | M/s Ministry of New and Renewable Energy, New Delhi | Shri Rajkumar |
|  | M/s Renault Nissan Technology and Business Centre India Private Limited, Chennai | Smt. Deekshita |
|  | M/s Renault Nissan Technology and Business Centre India Private Limited, Chennai | Shri Jebin Jowhar |
|  | M/s Renault Nissan Technology and Business Centre India Private Limited, Chennai | Shri Rajendra Khile |
|  | M/s Renault Nissan Technology and Business Centre India Private Limited, Chennai | Shri Vivekraj.S |
|  | M/s Society of Indian Automobile Manufacturers (SIAM), Delhi | Dr. Sandeep Garg |
|  | M/s Swagelok Bombay (Bombay Fluid System Components Private Limited), Mumbai | Shri SachinK |
|  | M/s Tata Motors Limited, Pune | Shri P S Gowrishankar |
|  | M/s Tata Motors Limited, Pune | Shri Shailendra Dewangan |

# WELCOME ADDRESS

## **Welcome Remarks by Shri Tausif Mohammad on behalf of Head (TED)**

Shri Tausif Mohammad, Scientist D/Joint Director in Transport Engineering department, expressed his greetings on behalf of Shri Deepak Aggarwal, Head (TED) to the Chairman and members present in the 27th meeting of Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26. He requested all the members for their active participation in the committee works.

## **Opening Remarks by the Chairperson**

Dr. S.S. Thipse, Chairperson, TED 26, warmly welcomed all attendees to the meeting and urged all the members to complete their assigned tasks within the designated timeframe, in line with the progress schedule of TED 26. He emphasized the committee's significant focus on exploring alternative fuels, particularly vehicles utilizing Hydrogen, Hydrogen Natural Gas blends, ethanol blends, DME fuel, flex fuels etc. Dr Thipse also appreciated SC TED 26 for the recent publication of 18 standards related to LNG fuel system components and initiating the revision process of CNG standards. He also emphasized that now TED 26 has got the responsibility of National Mirror committee of ISO TC 197 (Hydrogen Technologies) and hence requested all members to actively participate in the ISO related works as well.

# CONFIRMATION OF THE MINUTES OF LAST MEETING

The Minutes of the 26th Meeting of Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26 held in online mode through Webex Video Conferencing Platform, on 26/09/2023 were circulated through BIS Portal.

No comments with regards to decision of committee have been received. The Committee confirmed the Minutes.

# SCOPE AND COMPOSITION OF THE SECTIONAL COMMITTEE

## The committee noted the scope given in the agenda.

## The committee reviewed its composition given in the agenda.

## **Withdrawals**

### In line with BIS Circular PNC09/18/2023-PNC-BIS dated 05/09/2023, The committee decided to withdraw the membership of following organization from SC TED 26:

| **Sl. No.** | **NAME OF THE ORGANIZATION** |
| --- | --- |
|
|  | Central Pollution Control Board (CPCB) |
|  | Delhi Transport Corporation (DTC) |
|  | GAIL (India) Limited, New Delhi |
|  | Petronet LNG Ltd. New Delhi |
|  | Prodair Air Products India Private Ltd., Pune |
|  | TVS Motor Company Ltd, Hosur |
|  | Volkswagen India Pvt. Ltd. |

### The committee however requested Member Secretary to again follow up with the govt organizations (i.e. CPCB, DTC and GAIL) for their updated Nominations. ARAI was also requested to assist BIS with Contact details of the current personnel posted in these organizations.

## **New Co-options**

### The committee discussed the New Co-option requests received for membership and decided as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Name of Organisation** | **Name of Representative** | **Remarks in Agenda** | **Decision of the committee** |
|  | Chakr Innovation Private Limited, Gurugram | Smt. Chhavi Agarwal | **-** | The committee did not accede to the co-option request of the organization. |
|  | The Energy and Resources Institute (TERI) | Dr Piyali Das,  Dr Sanjukta Subudhi | **-** | The committee agreed to co-opt TERI in SC TED 26. |
|  | M/s Apurwa Green Tech | Smt. Apurwa Shinde | The co-option request was discussed in the last meeting and as per Item 2.5.3 of the minutes of last (26th) meeting, It was agreed by the committee to put their request on Hold and invite them in the next meeting to know how they can contribute to SC TED 26. | The committee decided to grant panel membership to M/s Apurwa Green Tech for Panel 6 (*Panel for Hydrogen Fuel Cell*) and Panel 7 (*Panel for Hydrogen IC Engine*).  A decision on their co-option request for SC TED 26 will be made after evaluating their engagement and contributions within the panels. |

### The committee also decided to Co-opt following organizations in SC TED 26 :

|  |  |  |
| --- | --- | --- |
| **Sl No.** | **Name of Organization** | **Discussion / Decision** |
|  | GARC | Member Secretary was requested to follow up with SC TED 31 (*In service Vehicle Inspection, Certification and Garage Equipment Sectional Committee*) for getting Nominations from GARC. |
|  | BHEL | Member Secretary was requested to follow up with Mechanical Engineering Department (MED) at BIS for getting BHEL onboard in SC TED 26. |
|  | ISRO | Member Secretary was requested to follow up with SC TED 14 (*Air and Space Vehicles Sectional Committee*) for getting Nominations from ISRO to specifically work on Hydrogen Technologies. |
|  | CFCT, Chennai | ARAI was requested to provide the contact details of CFCT, Chennai to BIS. |
|  | ICEMA | ARAI was requested to provide contact details of ICEMA to BIS. |

### The committee also assigned the responsibility of providing contact details of new organizations co-opted into various panels under TED 26 to BIS as follows:

|  |  |  |
| --- | --- | --- |
| **Sl No.** | **Name of Organization** | **Organization who will provide the Contact Details to BIS** |
|  | SHIGAN (Quantum Technologies) | It was informed by committee members that the name of M/s CLH Gaseous Fuel Applications (P) Ltd, Gurgaon has been changed to M/s SHIGAN (Quantum Technologies). Member secretary was requested to follow up with M/s CLH for their confirmation. |
|  | Advantek Fuel Systems Pvt Ltd. | ACMA |
|  | KPIT Technologies Ltd. | ACMA |
|  | Continental/Vitesco | ACMA |
|  | Volkswagen India Pvt Ltd. | ARAI |
|  | Reliance | ARAI |
|  | NTPC | ARAI |
|  | INOX CVA | ARAI |
|  | NCL | ARAI |
|  | THERMAX | ARAI |
|  | ECMA | ARAI |
|  | AMOL CARBONS | ARAI |
|  | HPCL | ARAI |
|  | Volvo/Eicher | SIAM |
|  | INOX CVA | SWAGELOK (Shri Sachin K.) |

## **Panels Working Under SC TED 26**

### The committee in its previous (26th) meeting, reconstituted the panels working under its purview. The details of the same is given below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Panel** | **Updated Composition** | **Updated Assignments** | **Status in the 27th Meeting** | **Decision of the Committee in 27th Meeting** |
| **TED 26/P-1 : Panel for Bio-CNG/CNG/LPG** | **Panel Convener:**  Shri Ajay D Dekate, ARAI  **Members:**   1. Advantek Fuel Systems Pvt. Ltd. 2. Ashok Leyland 3. Automotive Component Manufacturers Association of India (ACMA) 4. Bajaj Auto Limited 5. Indian Auto LPG Coalition 6. International Centre for Automotive Technology (ICAT) 7. Mahindra and Mahindra Limited 8. Maruti Suzuki India Limited(MSIL) 9. Society of Indian Automobile Manufacturers (SIAM) 10. Swagelok – Bombay Fluid System components Pvt. Ltd. 11. Tata Motors Limited 12. Vanaz Engineers Limited 13. Indian Oil 14. SHIGAN (Quantum Technologies) 15. Minda Westport 16. AB Process | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* * Review of following LPG / CNG Standards :  1. **IS 15956 : 2012** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Definitions, classification and general requirements 2. **IS 15957 : 2012** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - general design requirements, performance and test methods 3. **IS 16009 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Shut off valve 4. **IS 16053 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Pressure regulator and vapourizer 5. **IS 16062 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Pressure and/or temperature sensor 6. **IS 16063 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - LPG filter unit 7. **IS 16064 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Gas mixing piece 8. **IS 16065 : 2013** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Fuel rail 9. **IS 16367 : 2017** - Road vehicles - Liquefied petroleum gas (LPG) specific equipment - Gas injector 10. **IS 16057: 2013** – LPG operated internal combustion engines - Safety and performance requirements – Specification 11. **IS 15870 : 2009—**Road vehicles - Use of compressed natural gas (CNG) fuel system in internal combustion engine vehicles - Code of practice  * Examination of ISO Ballots related to Bio-CNG/CNG/LPG * Identification of New Subject for formulation of Indian Standards in the domain of Bio-CNG/CNG/LPG | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | The committee requested ARAI to conduct the meeting of Panel 1 at the earliest to complete the pending works with Panel 1. |
| **TED 26/P-2 : Panel forHydrogen/Natural gas blends (HCNG) fuel system components** | **Panel Convener:**  Shri S J Vispute, Vanaz Engineers Limited  **Members:**   1. Ashok Leyland 2. Automotive Component Manufacturers Association of India (ACMA) 3. Bajaj Auto Limited 4. CLH Gaseous fuel Applications (P) Ltd 5. Indian Auto LPG Coalition 6. International Centre for Automotive Technology (ICAT) 7. Indraprastha Gas Limited (IGL) 8. Indian Oil Corporation 9. KPIT Technologies Ltd. 10. Mahindra and Mahindra Limited 11. Maruti Suzuki India Limited(MSIL) 12. Society of Indian Automobile Manufacturers (SIAM) 13. Swagelok – Bombay Fluid System components Pvt. Ltd. 14. The Automotive Research Association of India(ARAI) 15. Tata Motors Limited 16. Minda Westport | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* * Review of standards formulated by ISO TC 22/SC 41, ISO TC 197, and other global standards bodies concerning HCNG Components to assess their viability for adoption as National Standards. * Examining the safe blending percentage of hydrogen in natural gas and updating this value across pertinent standards such as IS/ISO 12619 and similar standards for blending of hydrogen. * Review of ISO Ballots concerning HCNG fuel system components, particularly documents from ISO/TC 22/SC 41/JWG 5  { *Joint ISO/TC 22/SC 41 - ISO/TC 197 WG: Fuel system components and refuelling connector for vehicles propelled by blends of natural gas and hydrogen*} * Identification of New Subject for formulation of Indian Standards in the domain of HCNG Fuel system components | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | The committee decided to Dissolve the Panel 2 and decided to merge its scope with Panel 7. |
| **TED 26/P-3 : Panel for Refilling connectors** | **Panel Convener:**  Dr. Sithananthan , Indian Oil Corporation Limited  **Members:**   1. Central Institute of Road Transport 2. International Centre for Automotive Technology (ICAT) 3. Indraprastha Gas Limited (IGL) 4. KPIT Technologies Ltd. 5. Mahindra and Mahindra Limited 6. Minda Westport Technologies Limited 7. Maruti Suzuki India Limited(MSIL) 8. Petroleum and Explosive Safety Organization 9. Swagelok – Bombay Fluid System components Pvt. Ltd. 10. The Automotive Research Association of India(ARAI) 11. Vanaz Engineers Limited 12. Volkswagen India Pvt. Ltd. 13. Shigan 14. TML 15. Reliance 16. NTPC | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* * Review of existing Indian standards for Refilling connectors and receptacles. * Examination of ISO Ballots related to Refilling connectors * Identification of New Subject for formulation of Indian Standards in the domain of DME / Hydrogen / LNG Refilling Connectors * Review of IS/ISO 17268 * Examination of ISO 13984:1999 “Liquid hydrogen — Land vehicle fuelling system interface” for adoption as Indian Standard. | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | The committee requested IOCL to conduct the meeting of Panel 3 at the earliest to complete the pending works with Panel 3.  The committee also requeasted Panel 3 to Examine IS/ISO 17268 as this standard fall under 5 yearly review.  The committee also requested Panel 3 to examine ISO 13984:1999 “Liquid hydrogen — Land vehicle fuelling system interface” for its adoption as Indian Standard. |
| **TED 26/P-4 : Panel for LNG** | **Panel Convener:**  Shri P S Gowrishankar, Tata Motors Limited  **Members:**   1. Ashok Leyland 2. Bajaj Auto Limited 3. Central Institute of Road Transport 4. CLH Gaseous fuel Applications (P) Ltd 5. GAIL 6. INOX 7. Indian Oil Corporation 8. International Centre for Automotive Technology (ICAT) 9. Mahindra and Mahindra Limited 10. Minda Westport Technologies Limited 11. Petronet LNG Limited 12. The Automotive Research Association of India (ARAI) 13. Vanaz Engineers Limited 14. SIAM 15. ACMA | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* * Code of Practice / Type Approval Standard for LNG run Vehicles * Review following ISO documents for safety aspects of LNG Vehicles:  1. ISO 19723-1:2018 2. ISO 19723-1:2018/Amd 1:2021 3. ISO 19723-2:2018  * Review of existing Indian standards related to LNG Fuel System Components * Examination of ISO Ballots related to LNG Fuel System Components. | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | Panel convener Shri Gowrishankar informed the committee that review work of LNG System component have been completed and the complete series of ISO 12614 (Part 1 to 18) has been adopted by SC TED 26.  The Chairman asked Panel 4 to work on a Code of Practice / Type Approval Standard for LNG Operated Vehicles.  Panel 4 was also requested to review following ISO documents for safety aspects of LNG Vehicles:   1. ISO 19723-1:2018 2. ISO 19723-1:2018/Amd 1:2021 3. ISO 19723-2:2018   Panel convener Shri P S Gowrishankar assured the committee to work on the new subjects given to the panel. |
| **TED 26/P-5 : Panel for Ethanol / Methanol / Bio-Diesel / Flex-Fuels** | **Panel Convener:**  Shri Gururaj Ravi, MSIL  **Members:**   1. Ashok Leyland 2. Automotive Component Manufacturers Association of India (ACMA) 3. Bosch 4. Hero MotoCorp 5. IISc Bangalore 6. Indian Oil Corporation 7. Mahindra and Mahindra Limited 8. Society of Indian Automobile Manufacturers (SIAM) 9. The Automotive Research Association of India(ARAI) 10. Tata Motors Limited 11. Vanaz Engineers Limited 12. Continental/Vitesco | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.)* * Examination of international standards for Fuel Injectors and Hoses and determining their viability for adoption as Indian standards * Examination of ISO Ballots related to Ethanol / Methanol / Bio-Diesel / Flex-Fuel system components | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | The chairman asked MSIL to go through the [program of work of ISO TC 28](https://www.iso.org/committee/47356/x/catalogue/p/1/u/0/w/0/d/0) and other ISO TCs sort out 4-5 relevant ISO Standards on Vehicle Components for Ethanol / Methanol / Bio-Diesel / Flex-Fuels for deliberation in the panel for adoption in India.  He also asked BIS to provide the ISO Standards chosen by MSIL to Panel 4 for study purposes. |
| **TED 26/P-6 : Panel for Hydrogen Fuel Cell** | **Panel Convener:**  Shri P S Gowrishankar, Tata Motors Limited  **Members:**   1. Ashok Leyland 2. Automotive Component Manufacturers Association of India (ACMA) 3. Bajaj Auto Limited 4. Shigan 5. International Centre for Automotive Technology (ICAT) 6. Indian Oil Corporation 7. KPIT Technologies Ltd. 8. Mahindra and Mahindra Limited 9. Maruti Suzuki India Limited(MSIL) 10. Society of Indian Automobile Manufacturers (SIAM) 11. Swagelok – Bombay Fluid System components Pvt. Ltd. 12. The Automotive Research Association of India(ARAI) 13. Vanaz Engineers Limited 14. PESO 15. Reliance 16. AB Process 17. NTPC 18. IIT Ropar 19. M/s Apurwa Green Tech | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.* * Conversion of AIS 157 to Indian Standard * Examination of ISO 19882:2018 “Gaseous hydrogen — Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers” for its adoption as Indian Standard and ISO ballots related to it. * Assessment of global standards concerning vehicles powered by hydrogen fuel cells to determine their suitability for adoption as Indian standards. * Examination of ISO Ballots related to H2 Fuel Cell vehicles * Identification of other New Subjects for formulation of Indian Standards in the domain Hydrogen Fuel cell vehicles | The Panel Convener prepared the Working Draft based on AIS 157 and submitted to BIS for internal circulation within the committee.  The Working Draft was circulated among the committee members dt. 25/04/2024 for comments after approval from chairperson, TED 26.  Subsequently, A Panel Meeting was organized by the Panel Convener dt. 17/05/2024 to discuss and resolve the comments received.  The minutes of the meeting were circulated through BIS Portal dt. 20/05/2024 and also attached at **Annex- 4** for reference. | The chairman Appreciated the work done by Shri Gowrishankar and the Panel 6 to convert AIS 157 to Indian Standard.  The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached.  The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting.  It was decided to take a final call on the matter in the next meeting.  The committee also requested Panel 6 to examine ISO 19882:2018 “Gaseous hydrogen — Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers” for its adoption as Indian Standard and ISO ballots related to it. |
| **TED 26/P-7 : Panel for Hydrogen IC Engine & Hydrogen/Natural gas blends (HCNG) fuel system components** | **Panel Convener:**  Shri Muthu Kumar, Ashok Leyland (AL)  **Members:**   1. Automotive Component Manufacturers Association of India (ACMA) 2. Bajaj Auto Limited 3. International Centre for Automotive Technology (ICAT) 4. Indian Oil Corporation 5. KPIT Technologies Ltd. 6. Mahindra and Mahindra Limited 7. Maruti Suzuki India Limited(MSIL) 8. Society of Indian Automobile Manufacturers (SIAM) 9. Swagelok – Bombay Fluid System components Pvt. Ltd. 10. The Automotive Research Association of India(ARAI) 11. Tata Motors Limited 12. Vanaz Engineers Limited 13. PESO 14. Reliance 15. AB Process 16. NTPC 17. IISc Bangalore 18. Volvo Eicher 19. Minda Westport 20. IIT Ropar 21. M/s Apurwa Green Tech | * Development of standards for hydrogen injection systems encompassing both port fuel injection (PFI) and direct injection (DI), as well as materials and safety devices compatible with hydrogen * Examining the safe blending percentage of hydrogen in natural gas and updating this value across pertinent standards such as IS/ISO 12619 and similar standards for blending of hydrogen. * Assessment of global standards concerning vehicles powered by hydrogen IC Engines to determine their suitability for adoption as Indian standards. * Review of Ballots and standards formulated by ISO TC 22/SC 41, ISO TC 197, and other global standards bodies concerning H2 ICE & HCNG Components to assess their viability for adoption as National Standards. | The Panel Convener prepared two Working Drafts based on AIS 195 for M&N Category vehicles and for CEVs and submitted the same to BIS for internal circulation within the committee.  The Working Drafts were circulated among the committee members dt. 15/05/2024 for comments after approval from chairperson, TED 26.  Subsequently, A Panel Meeting was organized by the Panel Convener dt. 28/05/2024 to discuss and resolve the comments received.  The minutes of the meeting were circulated through BIS Portal dt. 29/05/2024 and also attached at **Annex- 5** for reference. | The chairman Appreciated the work done by Shri Muthu Kumar and the Panel 7 to convert AIS 195 to Indian Standard.  He also highlighted that the scope of Panel 2 (HCNG) has now been merged with Panel 7 and requested all members of Panel 7 to actively work on HCNG-related standards as well.  The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached.  The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting.  It was decided to take a final call on the matter in the next meeting. |
| **TED 26/P-8 : Panel for Synthetic Fuels** | **Panel Convener:**  Volvo (SIAM was requested to give Contact Details of personnel from Volvo)  **Members:**   1. NCL 2. THERMAX 3. AL 4. MSIL 5. IISc 6. IIT Delhi 7. IAC 8. Vanaz 9. TML 10. Shigan Quantam 11. SIAM 12. ACMA 13. ECMA 14. AMOL Carbons 15. HPCL 16. ARAI 17. Scania | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.* * Development of standards for DME fuel system components including DME-LPG Blends * Review of international standards related to E-Fuels and Ammonia to explore their potential adoption or modification as national standards. * Review of ISO Ballots related to Synthatic Fuels * Identification of other New Subjects for formulation of Indian Standards in the domain of synthetic fuels | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | The committee decided to appoint M/s Volvo as the convenor for Panel 8 on Synthetic Fuel.  The chairman requested SIAM to provide the contact details of senior official at M/s Volvo to BIS for convenorship of Panel 8.  ARAI was also requested to provide contact details of M/s NCL, M/s THERMAX, M/s ECMA, M/s AMOL Carbons, M/s HPCL and M/s SCANIA to BIS and Panel Convener. |
| **TED 26/P-9 : Panel for Training, competence and conformity assessment** | **Panel Convener:** Dr. R. V. Ravi Krishna, IISc Bangalore  **Members:**   1. IIT Indore 2. IIT Ropar 3. ARAI 4. Other members as recommended by Convener and approved by SC TED 26 | * Finalization of the composition of Panel (*Contact details of panel members need to be communicated to BIS Secretariat for registration on the BIS Portal.* * Development of Industrial Training standards related to alternate fuels in line with developments at ISO/TC 22/SC 41/WG 9 : *Training, competence and conformity assessment* and ISO TC 197. * Review of ISO Ballots related to Industrial Training Standards | Panel details have been updated on BIS Portal.  Panel Meeting yet to be conducted by the panel convener. | Prof Ravi Krishna from IISc informed the committee that there are only 2 ISO Standards (ISO 23684:2023, & ISO 24671:2024) available from ISO TC 22 / SC 41 related to the scope of the panel and they were also related to Natural Gas only.  The committee requested the panel to examine these standards and suggest if these standards may directly be adopted for Indian Conditions.  The committee also requested the panel to work on similar standards for Hydrogen Fuel Systems as well. |
| **TED 26/P-10 : Panel on Construction Equipment Vehicles (CEVs)** | **Panel Convener :** Mr. Karthik from ICEMA  **Members:**   1. ARAI 2. ICAT 3. VOLVO Construction 4. ICEMA Members 5. BHEL | * Conversion of AIS 157a to Indian Standard * Conversion of AIS 195a to Indian Standard | - | The committee decided to create a new panel to deal with standards related to Construction Equipment Vehicles (CEVs).  The committee decided to Appoint Mr. Karthik from ICEMA as the convenor of the panel.  ARAI was requested to provide contact details of Shri Karthik from ICEMA to BIS for further follow ups.  The working panel was given the task to work on conversion of AIS 157a and AIS 195a to Indian Standards with suitable modifications as deemed fit by the panel and approved by SC TED 26. |

# ACTIONS ARISING OUT OF THE MINUTES OF THE LAST MEETING

The summary of actions taken on the minutes of previous meeting is given below:

| **Sl. No.** | **Subject** | **Background** | **Status and Decision in the previous Committee Meeting** | **Current Status** | **Decision of the Committee** |
| --- | --- | --- | --- | --- | --- |
|  | **Standards on LNG fuel system components** | The Committee agreed to allow TML to continue with the convenorship of the LNG panel.    Other members of the **LNG Panel** being following along-with GAIL, Petronet, ICAT and INOX:   * ARAI * Vanaz * Mahindra * Ashok Leyland * Minda Emer * IOC   The Committee requested Shri Gowrishankar of TML to expedite conducting the panel meeting and formulate draft documents on LNG. BIS was requested to circulate the documents received from this panel as preliminary draft to all the members for one month.  The LNG panel meeting was held at TML on 19.02.2018 under the convenorship of Shri Gowrishankar. The members discussed and deliberated on following agenda points during the meeting:   * Current regulatory framework available in India for type approval certification of LNG vehicles. * Schematic, functional layout and advantages of LNG fuelled vehicles * Review of global standards available for LNG fuel system components. * Comparison of ISO and ECE standards for each LNG fuel system components. * Adoption of best practices from ISO and ECE for drafting BIS standards.   In the last meeting, TML gave presentation on the draft document and emphasized that LNG is the future fuel for logistics transportation. The supply framework is being developed on highways.  The Chairman requested members to submit comments on p-draft and requested Member Secretary to compile all the comments and forward them to TML for incorporation.  The LNG Panel will discuss the p-draft with comments in its next Meeting and will finalize the document and will forward the same to BIS for wide circulation.  Draft documents received from the LNG panel & have been sent for circulation as given below:  Under P-draft:  (1) TED26(15806)P;  (2) TED26(15807)P;  (3) TED26(15808)P; and  (4) TED26(15937)P  Under Wide Circulation (WC):  (1) TED26(15676)W;  (2) TED26(15678)W;  (3) TED26(15681)W; and  (4) TED26(15682)W  No comments have been received on the above documents.  The Member Secretary stated that all the draft documents give reference of other draft documents for which IS number can be only b allotted after finalization. Hence, it is difficult to finalize the WC documents for printing.  The Committee examined the issue & ask the Member Secretary to finalize two documents initially & write reference documents as ‘únder development’. The committee also requested Shri Gowrishankar to look into the matter and finalize two documents at the earliest for printing.  **Status in 23rd Meeting:** A Mail has been sent to Mr. PS Gowrishankar dt. 19 March 2021 to suggest the priority for the documents.  Following response has been received :  “The formulation of Bureau of Indian Standards for LNG fuel system components are in progress under convenorship of undersigned. As of now, we have already drafted 8 BIS standards (out of 19 intended) and the same are wide circulated to TED-26 members for review and comments.    These draft standards are prepared based on best practices of International Standards ISO 12614 and ECE R110. Over the period ISO has already adopted best practices of ECE and now ISO 12614 standards are mostly aligned with ECE R110. In view of this, we propose adoption of LNG standards ISO 12614 (Part 1-19) as BIS standard with single numbering as appropriate.”  Meanwhile the Member Secretary has also followed up with publication department and the suitable IS Numbers have been sought from publication wing to finalize the documents in process.  The IS Number corresponding to the document number is attached as Annexure – 3 of the agenda of 23rd Meeting.  The committee may deliberate and decide.  **Decision in 23rd Meeting :**  The committee discussed the proposal of TML to adopt the latest ISO standards in place of old draft standards as most of the ISO documents have been revised in recent times.  It was decided to drop the eight old draft standards i.e.  Under P-draft:  (1) TED26(15806)P;  (2) TED26(15807)P;  (3) TED26(15808)P; and  (4) TED26(15937)P  Under Wide Circulation (WC):  (1) TED26(15676)W;  (2) TED26(15678)W;  (3) TED26(15681)W; and  (4) TED26(15682)W  .  The committee decided that in place of these draft standards, the latest ISO 12614 series would be adopted.  The committee authorized member secretary start process of identical adoption of ISO 12614 series under dual numbering system.  **Status in 24th Meeting:**  With approval of the chairman TED 26 via email dt. 15/06/2022, National Forewords of all 18 Parts of ISO 12614 Series have been Uploaded on BIS Portal for Wide Circulation for 60 Days. Document Number of these documents are as follows :   1. *TED/26/19851 (Identical To: ISO 12614-1:2021)* 2. *TED/26/19853 (Identical To: ISO 12614-2:2021)* 3. *TED/26/19854 (Identical To: ISO 12614-3:2021)* 4. *TED/26/19855 (Identical To: ISO 12614-4:2021)* 5. *TED/26/19856 (Identical To: ISO 12614-5:2021)* 6. *TED/26/19857 (Identical To: ISO 12614-7:2021)* 7. *TED/26/19858 (Identical To: ISO 12614-8:2021)* 8. *TED/26/19859 (Identical To: ISO 12614-9:2021)* 9. *TED/26/19860 (Identical To: ISO 12614-10:2021)* 10. *TED/26/19861 (Identical To: ISO 12614-11:2021)* 11. *TED/26/19862 (Identical To: ISO 12614-12:2021)* 12. *TED/26/19863 (Identical To: ISO 12614-13:2021)* 13. *TED/26/19864 (Identical To: ISO 12614-14:2021)* 14. *TED/26/19865 (Identical To: ISO 12614-15:2021)* 15. *TED/26/19866 (Identical To: ISO 12614-16:2021)* 16. *TED/26/19867 (Identical To: ISO 12614-17:2021)* 17. *TED/26/19868 (Identical To: ISO 12614-18:2021)* 18. *TED/26/19869 (Identical To: ISO 12614-19:2021)*   The Documents will be circulated and available for comments after HoD’s Approval.  **Decision in the 24th Meeting:**  The committee Noted.  **Status in 25th Meeting:**  All the 18 documents have completed their WC Period.  No comments have been received on them.  Hence the committee may decide to send these documents for printing.  **Decision in the 25th Meeting:**  The committee decided to send all the 18 documents for printing. | **Status in 26th Meeting:**  All the 18 documents have been sent to publication department for printing  **Decision in the 26th Meeting:**  The committee noted | All 18 standards on LNG Fuel System Components have been published as **IS 19038 (Part 1-19) :2023.**  The Committee may please note. | The committee noted. |
|  | Adoption of ISO Standards as recommended by MNRE | Ministry of New and Renewable Energy (MNRE), Government of India launched the 'National Green Hydrogen Mission' and under this mission, MNRE had constituted a working group (WG) consisting of representatives from relevant Ministries, Government agencies, Standardization and Certification bodies, and Industry to establish the Green Hydrogen ecosystem.  Accordingly, the WG has recommended the adoption of various international standards related to equipment and processes to be deployed across the hydrogen value chain. MNRE has requested the Bureau of Indian Standards for immediate (Highest Priority) adoption of International Codes and Standards as recommended by the WG.  Out of these, the following standard pertain to Automotive Vehicles Running on Non-conventional Energy Sources Sectional Committee, TED 26 :   1. ISO 16964: 2019 - Gas Cylinders Flexible Hoses Assemblies Specification And Testing {TED/26/22603} 2. ISO 23273: 2013 - Fuel Cell Road Vehicles Safety Specifications Protection Against Hydrogen Hazards For Vehicles Fuelled With Compressed Hydrogen   {TED/26/22604}  In view of the above, Chairperson, TED 26 was requested to accord his approval for sending the National Foreword Corresponding to this document for Wide Circulation of 30 days. | **Status in 26th Meeting**  The Chairperson accorded his approval for wide circulation of National Foreword corresponding to ISO 16964 and ISO 23273 for 30 days through email.  Accordingly National Forewords were prepared and sent for wide circulation to all the committee members through BIS Portal as TED 33 (22603)W and TED 33 (22604)W.  The draft completed its wide circulation period and No Comments have been received.  The committee may discuss and decide.  **Decision in 26th Meeting:**  The committee approved the documents TED 26 (22603)W {*Adoption of ISO 16964: 2019* } and TED 26 (22604)W {*Adoption of ISO 23273: 2013* } for printing. | The Standards have been published as **IS 19035** and **IS 19036**.  The Committee may please note. | The committee noted. |
|  | **Review of CNG Series of Standards** | A Series of 14 standards on CNG Sub systems have been taken up for review by Sectional Committee TED 26. These 14 standards are given below: | **Status in 26th Meeting:**  Following documents are under wide circulation :   1. *TED 26 (15007)* 2. *TED 26 (15008)* 3. *TED 26 (18368)* 4. *TED 26 (18373)* 5. *TED 26 (18374)* 6. *TED 26 (18375)* 7. *TED 26 (18377)* 8. *TED 26 (18378)* 9. *TED 26 (18379)* 10. *TED 26 (18380)*   **Decision in the 26th Meeting:**  The committee noted | Following documents have completed their wide circulation period:   1. *TED 26 (15007)* 2. *TED 26 (15008)* 3. *TED 26 (18368)* 4. *TED 26 (18373)* 5. *TED 26 (18374)* 6. *TED 26 (18375)* 7. *TED 26 (18377)* 8. *TED 26 (18378)* 9. *TED 26 (18379)* 10. *TED 26 (18380)*   No Comments have been received.  The committee may deliberate and decide.  In addition, The committee finalized following four documents for printing in its 24th meeting  (*However kept the documents on hold in 25th meeting till the time all documents get finalized to address the cross referencing problem*)     1. *TED 26 (14995) {After Incorporating accepted comments}* 2. *TED 26 (15013)* 3. *TED 26 (15014)* 4. *TED 26 (15015)*   The committee may deliberate and decide. | The committee decided to send all 14 documents for printing. |
| Review for revision of IS 15710:2006  **Doc: TED 26(14995)** |
| Review for revision of IS 15711:2006  **Doc: TED 26(15007)** |
| Review for revision of IS 15712:2006  **Doc: TED 26 (15008)** |
| Review for revision of IS 15713:2006  **Doc : TED 26 (18368)** |
| Review for revision of IS 15714:2006  **Doc : TED 26 (18373)** |
| Review for revision of IS 15715:2008  **Doc: TED26 (15013)** |
| Review for revision of IS 15716:2006  **Doc: TED26 (15014)** |
| Review for revision of IS 15717:2006  **Doc : TED 26 (18374)** |
| Review for revision of IS 15718:2006  **Doc : TED 26 (18375)** |
| Review for revision of IS 15719:2006  **Doc : TED 26 (18377)** |
| Review for revision of IS 15720:2008  **Doc : TED 26 (18378)** |
| Review for revision of IS 15721:2006  **Doc : TED 26 (18379)** |
| Review for revision of IS 15722:2006  **Doc : TED 26 (18380)** |
| **Status in 23rd Meeting:**  The Draft documents TED 26 (14995), TED 26 (15014) have been sent for Wide Circulation.  Document TED 26 (15007), TED 26 (15008), TED 26 (15013) & TED 26 (15015) have been sent for HoD approval for Wide circulation.  Apart from the aforesaid six documents, Remaining 8 documents have also been received from Panel Convener and the same are attached as Annexure-4 of Agenda of 23rd Meeting.  The Committee may deliberate and decide.  **Decision in 23rd Meeting:**  The committee noted the status of documents TED 26 (14995), TED 26 (15014), TED 26 (15007), TED 26 (15008), TED 26 (15013) & TED 26 (15015).  The committee also decided to send remaining eight documents of this series as attached with agenda for wide circulation.  **Status in 24th Meeting:**  Following Documents Have completed their Wide Circulation Period :   1. *TED 26 (14995)* 2. *TED 26 (15013)* 3. *TED 26 (15014)* 4. *TED 26 (15015)*   Comments have been received on the document TED 26 (14995)W and the same have been attached as [Annexure 2](#A2) of the Agenda.  No Comments have been received on other three documents i.e. TED 26 (15013)W  TED 26 (15014)W  TED 26 (15015) W.  The Committee may discuss the comments and finalize the documents for printing.  Apart from that following Documents have been sent as P Drafts and have completed their circulation period :   1. *TED 26 (15007)* 2. *TED 26 (15008)* 3. *TED 26 (18368)* 4. *TED 26 (18373)* 5. *TED 26 (18374)* 6. *TED 26 (18375)* 7. *TED 26 (18377)* 8. *TED 26 (18378)* 9. *TED 26 (18379)* 10. *TED 26 (18380)*   No Comments have been received on these documents. The committee may send these drafts for Wide Circulation.  **Decision in 24th Meeting:**  The comments received on the document TED 26 (14995) was discussed in the meeting and the committee decided to accept all the comments owing to their editorial Nature.  The committee decided to following four documents for printing:   1. *TED 26 (14995) {After Incorporating accepted comments}* 2. *TED 26 (15013)* 3. *TED 26 (15014)* 4. *TED 26 (15015)*   The committee also decided to send following ten Documents for Wide Circulation for a period of 60 days:   1. *TED 26 (15007)* 2. *TED 26 (15008)* 3. *TED 26 (18368)* 4. *TED 26 (18373)* 5. *TED 26 (18374)* 6. *TED 26 (18375)* 7. *TED 26 (18377)* 8. *TED 26 (18378)* 9. *TED 26 (18379)* 10. *TED 26 (18380)*   **Status in 25th Meeting:**  Following Documents have been uploaded on BIS Portal for Wide Circulation and are due for HoD’s Approval for the circulation:   1. *TED 26 (15007)* 2. *TED 26 (15008)* 3. *TED 26 (18368)* 4. *TED 26 (18373)* 5. *TED 26 (18374)* 6. *TED 26 (18375)* 7. *TED 26 (18377)*   *Following documents will be sent for WC Shortly:*   1. *TED 26 (18378)* 2. *TED 26 (18379)* 3. *TED 26 (18380)*   Other four documents which the committee finalized in the last meeting, give cross references to other standards of this (CNG) series which are under the process of revision.    Hence difficulty is being faced to prepare the final draft of these standards as year of publication and title of other standards will be different after the revision.  The committee may deliberate the issue.  **Decision in the 25th Meeting:**  The committee deliberated the issue and decided that all the documents will be finalized only after all the documents complete their Wide circulation period so that cross referencing problem can be addressed. |
|  | **Adoption of AIS 157** (SAFETY AND PROCEDURAL REQUIREMENTS FOR TYPE APPROVAL OF COMPRESSED GASEOUS HYDROGEN FUEL CELL VEHICLES) **as Indian Standard** | In the last (24th) meeting of SC TED 26, The committee noted that SC TED 27 (Electric and Hybrid Vehicles Sectional Committee), is in the process of adopting AIS 157 as Indian Standard. The committee also noted that ‘Fuel Cell’ falls under the Scope of SC TED 26 and not under the scope of SC TED 27.  {*Scope of SC TED 26: Standardization of Fuel System Components for Automotive Vehicles using New and Renewable Energy Sources such as Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), Bio-Gas, Hydrogen/Methane Blends, Bio-diesel/diesel blends, alcohol (Ethanol/Methanol)-petrol blends Hydrogen, Fuel Cell and their installation requirements.*  *Scope of SC TED 27: Standardization of Electric and Hybrid vehicles and their components}*  Hence the committee recommended the Adoption work of AIS 157 to be shifted from SC TED 27 to SC TED 26.  The committee also requested member secretary to raise this issue in the next meeting of SC TED 27 and also to seek suitable directions from TEDC.  **Status in 25th Meeting:**  The matter was discussed in the last (29th) meeting of Transport Engineering Division Council (TEDC) held on 22/12/2022, and it was decided to transfer the conversion work of AIS 157 from SC TED 27 to SC TED 26, along with Fuel Cell Panel (Panel 8 of SC TED 27).  The committee may deliberate and decide the further course of action for the panel along with the document.  **Decision in the 25th Meeting:**  The committee noted the decision of TEDC.  It was decided to keep Tata Motors as the convener of the Fuel cell panel as they were the convener when the panel was working under the guidance of SC TED 27.  Mr. Shailendra Kumar from Tata Motors informed the committee that AISC panel is discussing a draft amendment to AIS 157.  The committee hence asked Tata Motors to provide the final draft to BIS Within one month time.  The committee also asked member secretary to send the draft for a wide circulation of 60 days, once the draft is received from Tata Motors.  The comments received on the draft can then be discussed in next SC TED 26 Meeting. | **Status in 26th Meeting:**  The draft will be sent for wide circulation once the thoroughly deliberated draft is received from Fuel Cell Panel (Convenor : Tata Motors)  **Decision in the 26th Meeting:**  The committee discussed the matter and requested Shri P S Gowrishankar, Convener of Panel 6, to promptly organize the next Panel 6 meeting and submit the discussed draft, inclusive of all amendments, for the adoption of AIS 157 as Indian Standards to BIS Secretariat.  Member secretary was requested to send the draft submitted by Panel 6 for wide circulation of 60 days | The Panel 6 Convener, Shri P S Gowrishankar, prepared the Working Draft based on AIS 157 and submitted to BIS for internal circulation within the committee.  The Working Draft was circulated among the committee members dt. 25/04/2024 for comments after approval from chairperson, TED 26.  Subsequently, A Panel Meeting was organized by the Panel Convener dt. 17/05/2024 to discuss and resolve the comments received.  The minutes of the meeting were circulated through BIS Portal dt. 20/05/2024 and also attached at **Annex- 4** of the agenda for reference.  The Committee may deliberate and decide. | The committee noted that progress on the document and approved the document for Wide Circulation of 60 days.  The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached.  The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting.  It was decided to take a final call on the matter in the next meeting. |
|  | **Adoption of AIS 195** (SAFETY AND PROCEDURAL REQUIREMENTS FOR TYPE APPROVAL OF COMPRESSED GASEOUS HYDROGEN IC ENGINE POWERED VEHICLES) **as Indian Standard** | In previous meeting, The committee constituted Panel 7 to formulate standards related to Hydrogen IC Engine Powered Vehicles. | | The Panel Convener, Shri Muthu Kumar, prepared two Working Drafts based on AIS 195 for M&N Category vehicles and for CEVs and submitted the same to BIS for internal circulation within the committee.  The Working Drafts were circulated among the committee members dt. 15/05/2024 for comments after approval from chairperson, TED 26.  Subsequently, A Panel Meeting was organized by the Panel Convener dt. 28/05/2024 to discuss and resolve the comments received.  The minutes of the meeting were circulated through BIS Portal dt. 29/05/2024 and also attached at **Annex- 5** of the agenda for reference.  The Committee may deliberate and decide. | The committee noted that progress on the document and approved the document for Wide Circulation of 60 days.  The matter of referring the UN ECE Guidelines and other International Regulations / Standards (i.e. GTR 13, SAE Standards etc.) Where Indian Standards are already available, was also discussed in the meeting but No Consensus was reached.  The chairman then requested all members to thoroughly analyze the matter and present their comments at the next meeting.  It was decided to take a final call on the matter in the next meeting. |

# REVIEW OF INDIAN STANDARDS

## The committee noted the information given in the agenda.

## The committee noted the standards which were falling due for review this year, i.e. 2024-25:

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **IS Number** | **IS Title** | **Decision / Discussion of the committee** |
| 1. | IS 15715 : 2008 | Road vehicles - Compressed natural gas (CNG) fuel system components - Conduit (Ventilation Hose) | Final draft for revision of this standard has been approved by the committee for printing. |
| 2. | IS 15720 : 2008 | Road vehicles - Compressed natural gas (CNG) fuel system components - Compartments/sub - Compartments | Final draft for revision of this standard has been approved by the committee for printing. |
| 3. | IS 15870 : 2009 | Road vehicles - Use of compressed natural gas (CNG) fuel system in internal combustion engine vehicles - Code of practice | The committee requested Panel 1 to take up this standard for examination. |
| 4. | IS/ISO 17268 : 2020 | Gaseous Hydrogen Land Vehicle Refuelling Connection Devices | The committee assigned the work of review of this standard to Panel 3. |

# PROGRAM OF WORK

## The committee noted the program of work given in the agenda.

# INTERNATIONAL ACTIVITIES

## The committee noted the information given in the agenda related to ISO TC 22 SC 41.

## The committee noted the information given in the agenda related to ISO TC 197.

## The committee noted the information given in the agenda related to ISO TC 22 SC 37.

## The committee noted the program of the work of ISO TC 22 SC 41, ISO TC 197 and ISO TC 22 SC 37.

## The committee emphasized the importance of BIS actively participating in ISO technical committee and working group meetings to represent India's perspective. It was decided to make efforts to send Indian delegations to the upcoming meetings of those technical committees and working groups where the committee has an active liaison.

# DATE AND PLACE FOR THE NEXT MEETING

## The committee decided to hold its next meeting in Physical Format at ARAI Pune.

# ANY OTHER BUSINESS

## There being no other comments, the meeting ended with a vote of thanks from the Member Secretary to the Chairman and the members.