



FQ0670/13

Report on ISO TC92 SC4 Meeting, October 2011

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Report on ISO TC92 SC4 Meeting, October 2011

1. CLIENTS

- Ministry of Science and Innovation
- BRANZ
- Department of Building and Housing
- Standards New Zealand

2. BACKGROUND

The purpose of this report is to provide information to BRANZ, Standards New Zealand (SNZ) and the Department of Building and Housing (DBH) about the activities of ISO TC92 SC4 (fire safety engineering) and to serve as a record of attendance at ISO TC92 SC4 during the week of October 17 – 21, 2011 in Ottawa, Canada.

Colleen Wade and Greg Baker attended the ISO TC92 Subcommittee 4 meetings during the week representing Standards New Zealand.

2.1 Background for attendance at meeting and representation on committee

The Ministry of Science and Innovation, BRANZ and the Department of Building and Housing are funding research to develop a risk-based design fire tool in recognition of the need for the development and support of design methodologies that will lead to greater robustness and confidence in fire safety engineering design. The current review of the Building Code by DBH may also lead to significant changes to how fire safety engineering is conducted in New Zealand. The possible adoption of several ISO TC92 produced documents is also being considered as part of a fire safety engineering framework.

ISO TC92 SC4 is an International Standards Organisation sub-committee that is responsible for developing international standards and guidance documents related to fire safety engineering. New Zealand participation in ISO TC92 SC4 and its associated working groups provides an important opportunity to ensure the New Zealand research, and new Building Code changes benefit from international linkages by working closely with other international experts in this field as well as providing an opportunity to learn from and influence international directions in fire safety engineering.

2.2 Structure of ISO TC92 SC4

This sub-committee consists of the main plenary group supported by a number of working groups and task groups. Most of the actual work done takes place in the working and task groups.

The meetings attended included the following:

- Task Group 1 (convenors meeting)
- Working Group WG1 (general principles and performance concepts);
- Working Group WG6 (design fires);
- Working Group WG7 (verification and validation of calculation methods);

- Working Group WG9 (calculation methods);
- Working Group WG10 (fire risk assessment);
- Working Group WG11 (behaviour and movement of people);
- Working Group WG12 (fire performance of structures);
- Joint meeting with SC3 on life safety criteria based on toxic hazard
- SC4 plenary session

The various working groups are currently drafting a range of documents, some of which will ultimately become international standards. Depending on the final intended application of a document and its stage of development the following abbreviated notations are used in identifying relevant documents:

PWI	preliminary work item
NP	approved work item
WD	working draft
CD	committee draft
TR	technical report
DTS	draft technical specification
TS	technical specification
DIS	draft international standard
FDIS	final draft international standard
IS	international standard

A technical specification (ISO/TS) is reviewed/balloted every three years in order to decide if it will be confirmed for a further three years or revised to become an international standard or be withdrawn. It is now possible for TS to have an indefinite life. Final outputs are either technical reports or international standards, with a strong preference for the latter wherever possible.

3. ACTIVITIES

3.1 Task Group TG1 (meeting of convenors)

Convenor: J Kruppa, France.

Meeting No. 25 (17 October 2011, 9.25 am)

This was a general meeting of working group convenors to liaise on the program for the week and brief each other on common issues and items to be discussed in the working groups during the week.

- Current membership includes 17 O-members and 26 P-members. New O-member is Hong Kong.

- Systematic review closes 15th Dec 2011 for ISO 16730 - WG7 document on assessment, verification and validation of calculation methods.
- Discussion on document numbering.
- New work item registered with ISO PWI 17545 'Simplified approach to scenario specification and fire frequency estimation'.
- Document presented on a survey on a risk informed performance based approach to fire protection.
- Participants are reminded to check the ISO live-link website for the official SC4 membership list to ensure its accuracy and currency.
- J Weise (Germany) reported that the German authorities are cancelling all performance requirements in their regulation relating to smoke management design – that leads to more complex components and design, calculation results are not being accepted, partly due to the great differences in the design compared to prescriptive requirements (note it may be that this action applies to only certain classes of building). Eurocode structural fire requirements are accepted, but not ASET/RSET design approaches. J Weise promoted the need for published and accepted input data and acceptance criteria and these should be important directions for future work by ISO. According to J Weise, in Germany, political boundary conditions drives the prescriptive requirements rather than stated performance objectives or functional statements. J Hall (USA) commented that we need to provide tools to extract functional requirements and objectives from the prescriptive requirements.
- The Working Group convenors, in turn, described their proposed work group activity to be discussed during the week.
- It was proposed to add an agenda item on wildland fires to the joint SC3/SC4 meeting.
- Next spring meeting of TC92 SC4 is in Greece on 23-27th April 2012.
- Next fall meeting of TC92 SC4 is in Sapporo, Japan on 21-26th October 2012.

3.2 Working Group WG1 (general principles and performance concepts)

Convenor: Prof. T Tanaka, Japan

Meeting No. 6 (18 October 2011, 2.00pm)

Examples of building code objectives, functional requirements and performance levels were provided by New Zealand, Japan, Sweden and France.

T Tanaka (Japan) had presented the Japanese requirements at the previous meeting and therefore did not re-present them at this meeting.

C Wade (New Zealand) described a set of draft fire safety code clauses that was recently developed in New Zealand by the Department of Building and Housing.

N Benichou (Canada) described the Canadian experience where they examined the prescriptive requirements and determined the objective that the prescriptive requirement was attempting to achieve. Alternative performance based design is essentially one of equivalence to prescriptive requirements in Canada.

J Kruppa (France) described work underway in France to develop a comprehensive set of functional requirements for performance based design, covering both mandatory and voluntary fire protection objectives.

D Nilsson (Sweden) described a proposed revision of the Swedish Regulations which in principle is quite similar to the approach also proposed in New Zealand and for this reason will be of some interest to DBH and others. Guidance is given on input data to be used for calculations and the minimum set of scenarios that must be examined. A brief English translation was available but is quite truncated compared to the original Swedish version.

T Tanaka (Japan) proposed that each of the country examples be presented in a similar format and published as examples.

C Wade (New Zealand) suggested an alternative approach being to accept the references from each country as is, and focus on developing a unified model example drawing from each of the country cases as appropriate. This could be used by countries considering adopting performance based objectives and functional statements selecting from those that are relevant to the needs of the particular country.

T Tanaka (Japan) requested the examples be updated for discussion at the next meeting.

3.3 Working Group WG6 (design fire scenarios and design fires)

Convenor: C Wade, New Zealand

Meeting No. 24 (19 October 2011, 9.00am)

This working group has previously produced a Technical Report ISO/TR 13387-2 Fire Safety Engineering - Part 2: Design fire scenarios and design fires, as part of the suite of ISO/TR 13387 reports.

More recently this has been supported by Technical Specification ISO/TS 16733 “Fire safety engineering – selection of design fire scenarios and design fires” published on 7 July 2006 and reconfirmed by systematic review in 2009. Two examples of the selection of design fire scenarios are currently included in the technical specification: for a multipurpose covered stadium, and for a warehouse containing a single commodity.

The guidance provided in ISO/TS 16733 is of a general nature and takes users through the process (steps) of identifying design fire scenarios and their characteristics. It does not give any detailed specifications (i.e. numerical values) for design fires to be used for any particular occupancy. The technical specification is written with a deterministic assessment in mind and therefore is aimed at providing guidance on how to reduce a very large number of possible fire scenarios down to a manageably small set of design fire scenarios (scenario clusters) that can be used in an analysis.

Work item: TS 16733

TS 16733 was discussed and the WG members agreed to make revisions to the document to better accommodate a qualitative scenario selection process. Particularly section 6, steps 6-9 will be revised, along with additional introductory material being included to guide users in determining the purpose of the intended analysis.

C Wade (New Zealand) will distribute a preliminary document for consideration by January 31, 2012 to the rest of the task group comprising C Wade (New Zealand), J Hall (USA), N Benichou (Canada), R Fahy (USA), D Nilsson (Sweden), A Nazih (France), A Alveres (France) and J Weise (Germany). The task group will develop revised text for discussion at the Greece Meeting.

Work item: PWI 29241 Examples

WG6 is in the process of developing two examples of the selection of design fires characteristics to accompany the design fire scenarios given in Annex B and Annex C of ISO TS 16733. The first example is for a multi-purpose covered stadium and the second for a warehouse with a single commodity. The intention is to follow the subsections of ISO TS 16733 to illustrate its use.

At the current time only one of the examples is active, the covered stadium. Work on the warehouse example has been deferred because the project leader considered it was necessary to first address matters relating to use of a safety concept before the worked example could be advanced. J Weise (Germany) offered to send written feedback to the convenor on the experiences and difficulties of the German mirror group in trying to develop the second example.

There was no advancement of either example at this meeting, pending possible changes to TS 16733.

Work Item 17545: A document was presented by J Hall on 'Simplified Approach to Scenario Specification and Fire Frequency Estimation'. A task group was formed to further develop the document for discussion in Greece comprising J. Hall, C. Wade, N Benichou, A Alveres, A Nazih, R Fahy and D Nilsson.

Data Requirements for WG6: A draft table containing a list of data requirements for WG6 was discussed. The table is intended to become Part 2 of TS 16733. Comments received were discussed and further contributions were invited. The document will be re-circulated to WG6 prior to the next meeting.

SC3/SC4 Work Items: The suggested work item relating to a classification approach for assessing toxic hazard of finished products in buildings is not adequately developed for action at this stage. The item was discussed at the SC3/SC4 joint meeting.

The proposal to extend the covered stadium example to include an evaluation of tenability of the fire effluent was not discussed, pending further revision of the TS and the example.

The next meeting of SC4/WG6 will be in Greece during the week April 23-27.

3.4 Working Group WG7 (verification and validation of calculation methods)

Convenor: D Brein, Germany

Meeting No. 24 (18 October 2011, 9.00am)

Main Document: ISO 16730 Fire safety engineering -- Assessment, verification and validation of calculation methods (Published in July 2008).

ISO 16730:2008 provides a framework for assessment, verification and validation of all types of calculation methods used as tools for fire safety engineering. It does not

address specific fire models, but is intended to be applicable to both analytical models and complex numerical models that are addressed as calculation methods in the context of this International Standard. It is not a step-by-step procedure, but does describe techniques for detecting errors and finding limitations in a calculation method.

ISO 16730:2008 includes the following:

- a process to ensure that the equations and calculation methods are implemented correctly (verification) and that the calculation method being considered is solving the appropriate problem (validation);
- requirements for documentation to demonstrate the adequacy of the scientific and technical basis of a calculation method;
- requirements for data against which a calculation method's predicted results shall be checked;
- guidance on use of ISO 16730:2008 by developers and/or users of calculation methods, and by those assessing the results obtained by using calculation methods.

The ballot for review of ISO 16730:2008 is under way (closes 15 Dec 2011).

Work item: ISO/NP TS 13447 Guidance for the use of fire zone models

This project with C Wade (New Zealand) as task leader and principal author is underway in order to address particular characteristics of zone models with special emphasis on their ranges of applicability, limitations etc. Further minor revisions were made since the last meeting and the work group agreed that SC4 be asked to now initiate DTS balloting on the document.

Work item: ISO/NP TR 10796- 1 through 4:

Four examples on calculation methods have been developed to demonstrate the applicability of the procedures described in ISO 16730 for calculation methods for several different types of physics based mathematical models (ie zone model "CFAST", CFD model "ISIS", structural model "WALL2D" on predicting the fire performance of wood-framed wall assemblies) as well as for the equation-based calculation method (egress model "EXIT89").

The votes just cast for WD 10796-2 to -4 required some changes that were completed, and it is intended that these documents will now be sent out for balloting as DTRs by the end of October 2011. New Zealand opposed the naming of proprietary models in these examples.

WD 10796-1 (zone model example) will be made available for balloting as a DTR by November 2011 after final editorial work is completed. D Brein (Germany) described changes that had been made to document N166rev - it still requires to be revised further by removing the reference to comparison with FDS – to be done by W Jones (USA).

New numbers may be issued such that the examples become Part 2 to 5 in the 16730 series.

ICFMP International Collaborative Fire Modelling Project

M Dey (USA) was invited to make a presentation about open versus blind simulations.

D Brein (Germany) says that this could be the basis for further work including other information distributed to determine what the future direction should be.

E Guillaume (France) asks what parameters need to be validated and says a good methodology is needed.

N Benichou (Canada) says that typically a model developer runs a few tests and does open validation of their own. The end user may take another dataset to confirm validity for their application.

J Hall (USA) says there is a clear cut example giving pros and cons of the two options. But wonders how to bring that material to the attention of the users? A non mandatory annex with a collection of information giving different points of views is one possible way that would be consistent with the ISO structure that we could use.

D Brein (Germany) agreed to set up a task group comprising J Hall (USA), A Alvarez (France) and M Dey (USA) to progress this prior to the Greece meeting.

Sensitivity Analysis

E Guillaume (France) was invited to make a short presentation on sensitivity analysis to the Work Group. He said that sensitivity can be just as dependent on the details of the scenario as on the properties of the model.

J Hall (USA) said this may be another case for the use of an annex. Also ISO has a committee on statistical methods and it may be worth seeking advice from them.

M Dey (USA) said it was necessary to get agreement on use of various terms and concepts, e.g. what is validation?

E Guillaume (France) was assigned as the task group leader to develop a non-mandatory annex.

3.5 Working Group WG9 (calculation methods)

Acting-Convenor: Dr K Harada, Japan.

Meeting No. 24 (17 October 2011, 2.00pm)

WG9 are preparing documents describing the use of specific calculation methods relating to various fire phenomena. Describing the limitations of calculations as well as the actual equations is seen to be important.

There are three relevant work items for WG9:

1. PWI 16737: a revision to ISO 16737 Fire safety engineering -- Requirements governing algebraic equations -- Vent flows
2. PWI 24678: for algebraic equations on flashover-related phenomena.
3. PWI 29763: for thermal radiation from pool fire flames.

Work item: DIS 16737

PWI 16737, revision of the International Standard ISO DIS 16737:2006 "Fire safety engineering - Requirements governing algebraic equations - Vent flows".

The final version of DIS 16737 (Revision of ISO 16737:2006) has been completed by the convenor with the help of J Gross (USA) for English phrasing and technical content. It was decided to send the draft for publication after a final check by the WG members. The convenor will set the target date in coordination with the SC4 secretary.

Work item: Revised PWI 24678 algebraic equations on flashover-related phenomena

The latest draft was presented by the project leader, N Alvares (USA). One equation will be selected for further documentation for its range of applicability and limitations. WG 9 agreed that further development of the document is continued by the project leader N Alvares (USA) with the help of K. Harada (Japan).

Work item: PWI 29763 thermal radiation from pool fire flames

A Alvarez (France) provided a revised draft for PWI 29763: Requirements governing thermal radiation from pool fire flames. He discussed some of the difficulties he encountered in examining data from the literature and determining the emissive power of the flames. It was noted the method described in Annex B did not have published validation. WG members were invited to provide any other experimental data for flame flux to surfaces to assist the work of the project leader. The WG agreed that further development of the technical contents of Annex A and Annex B by the project leader A Alvarez (France) would continue with the help of T Tanaka (Japan).

Work item: flame spread algorithms

A new work item will be commenced on flame spread algorithms with a task group comprising K Harada (Japan), C Wade (New Zealand), Ni (China) and Kim (Korea). K Harada (Japan) has prepared some initial text on flame spread modelling. There was no time to consider this in depth at the meeting. The document will continue to be developed and will be considered in more detail at the spring meeting.

Other Business:

A draft proposal for new work on wildland fires was prepared by K. Papaioannou (Greece). The broad contents were reviewed quickly. Among the items, it was found that section 8.3 on fire intensity would fall within the WG's scope. The possibility of new work in this area will be discussed by the SC3/SC4 joint WG.

3.6 Working Group WG10 (fire risk assessment)

Convenor: J Hall, USA.

Meeting No. 24 (21 October 2011, 9.00am)

This working group has previously prepared ISO/DIS 16732 Guidance on risk assessment for use in fire safety engineering. This document has been published.

ISO/DIS 16732 provides the conceptual basis for fire risk assessment by stating the principles underlying the quantification and interpretation of fire-related risk. These fire risk principles apply to all fire-related phenomena and all end-use configurations, which means these principles can be applied to all types of fire scenarios.

Work item: PWI 12607

J Taveau (France) gave an update to the meeting (via Skype) on the example for a propane storage facility with an objective to reduce the probability of a BLEVE to an acceptable level. The example is well developed and nearing completion. There was extensive discussion of it in the meeting and J Taveau (France) agreed to update the example taking on board the various comments received.

WG10 will ask SC4 to create a new work item for this example, so that it can then be progressed for balloting as DTR 16732-3 and to launch the DTR ballot in order to receive further comments to be considered by WG10 at its next meeting.

3.7 Working Group WG11 (Behaviour and movement of people)

Convenor: R Fahy, USA

Meeting No. 24 (19 October 2011, 2.00pm)

Work item: ISO/CD TR 16738

WG11 is a work group concerned with behaviour and movement of people.

ISO/TR 16738 (ISO/TC 92/SC4 N515) Fire Safety Engineering – Evaluation of behaviour and movement of people was published in July 2009.

Work item: PWI 29761 Occupant behavioural scenarios

The current version of WD 29761 was modified slightly, based on recent comments, but discussions at the Ottawa meeting about this work item focused on re-thinking the approach to be used. This will involve a) reviewing TS 16733 to see where occupant concerns are built into the selection of fire scenarios; b) considering how TS 16733 would be used when the fire safety objective is life safety; c) suggesting edits to TS 16733 that would better show how occupants are implicitly considered in selecting design fire scenarios; and d) developing the steps specifically needed to combine occupant behavioural scenarios with design fire scenarios. This will determine the structure of the next revision of the draft of WD 29761.

New Work Item:

A possible new project was discussed on the design of evacuation experiments. It was agreed to ask SC 4 to add this to the SC4 work programme. The work item has R Fahy (USA) as project leader and a task group including N Benichou (Canada), H Colina (France), D Nilsson (Sweden), and G Harris (UK).

3.8 Working Group WG12 (fire performance of structures)

Convenor: N Benichou, Canada

Meeting No. 16 (20 October 2011, 2.00pm)

Work item: ISO/WD 24679 Fire safety engineering – Performance of structures in fire

This working group is currently engaged in the preparation of a technical specification for guidance on structures in fire for use by fire and structural engineers. The document TS 24679 has now been published as a Technical Specification.

The example from Japan was not updated for this meeting. A revised version was requested for discussion at the next meeting.

The example from China for an airport terminal was presented by Qui Peifang (China). The example will be updated based on the discussion at the meeting.

The example from France for an open car-parking building was presented by J Kruppa (France).

The example from New Zealand was described by G Baker (New Zealand). This example is based on the same building as in the Japan example, but illustrates a different approach and simpler design procedure.

The WG agreed to ask SC4 to register two of the examples as New Work Items intended to become parts of TS 24679:

- NP TR 24679 - 2 – Fire safety Engineering – Performance of structure in fire – Part 2: Example of an airport terminal (With Ni Zhaopeng, China, acting as the Project Leader)

- NP TR 24679 - 3 – Fire safety Engineering – Performance of structure in fire – Part 3: Example of an open car park (With Bin ZHAO, France, acting as the Project Leader)

Note: Part 1 "General" will be the transformation of ISO/TS 24679:2011 into an international standard.

3.9 Joint Meeting SC3/WG5 and SC4, Toxicity

Convenor: R Gann, USA

Meeting No. 8 (20 October 2011, 9.00am)

R. Gann summarised and updated the status of the list of potential new work items previously prepared for discussion and consideration by the various work groups in SC3 and SC4. The list is included as Appendix A of this report.

3.10 SC4 plenary session

21 October, 2.00pm

Chairman: J Kruppa, France

Secretariat : B Smerecki, AFNOR (France)

There was confirmation of a revised numbering system using the standard numbers and subsequent parts. Examples will be published as Part 2 for example.

Reminder of the obligation of P-members to vote on draft documents.

The working group convenor reports were presented at the plenary session.

The topic of wildland fires will be discussed at the joint SC3/SC4 meeting in Greece.

A copy of the resolutions made by SC4 are given in Appendix B.

This was the last meeting for J Kruppa (France) after 12 years as the Chairman of TC92 SC4. The SC members warmly thanked Mr Kruppa for his valuable service. The new Chairman is N Benichou of Canada.

Location and date of next meeting: Greece, April 23 – 27, 2012.

4. SUMMARY

This report summarises activity in ISO TC92 SC4 on fire safety engineering as discussed at the October 2011 meeting in Ottawa, Canada.



APPENDIX A

ISO/TC 92/SC 4 N535

Candidate Work Items from Matrix for Use of Tenability and Smoke Toxic Potency Information in Fire Safety Engineering

RGG; revised from SC3 N142 March 12, 2010
Revised April 29, 2010; revised February 13, 2011; amended April 3, 2011;
amended September 28, 2011

SC3

1. Standard on requirements for large-scale test methods to represent toxic gas and smoke hazards in different fire scenarios. Document on scenarios for large-scale fire tests **(SC3 WG1)**

This International Standard will provide guidance for the set-up of large-scale fire tests which represent different well-defined fire scenarios, and presents guidance on the sampling of toxic gas and smoke hazards. It provides bases for comparing the results among different types and scales of such tests.

Status: Richard Hull designated as Project Leader. PWI documents and rough draft to be developed by SC3 and circulated to SC3 and SC4 (copy to SC1) for discussion in Ottawa (10/2011); **Action: Richard Hull**

2. Normative documents on obtaining fire effluent data for finished products **(SC3 WG1)**
 - a. Standard for correlation of toxicity data among physical fire models and full-scale tests **(WD 29903)**

This International Standard will provide principles for characterizing the yields of toxic gases from a laboratory fire test and provides bases for comparing the results among different types and scales of such tests. This Standard also includes consideration of the uncertainties in the gas yield determinations. The combined uncertainty is a key factor in the ability to establish similarity or difference of test results. The sufficiency of the agreement between a bench-scale test and a real-scale test depends on the needed precision in the fire hazard or risk assessment. This is not covered in this Standard.

Status: Under Enquiry, closing 12/4/2011. No action expected in Ottawa.
Action: Per Blomqvist

- b. Bench-scale method for the determination of hazardous components of fire effluents (ISO/TS 19700; controlled atmosphere cone calorimeter)

ISO/TS 19700 describes a tube-furnace method for the generation of fire effluent for the identification and measurement of its constituent combustion products, in particular, the yields of toxic products under a range of fire decomposition conditions. The use of this apparatus is generally applicable to individual materials, to products that are layered such that the layering will not result in a significant change in product yields with time in real fires, i.e. to

products where the upper surface does not provide major protection to the sub-layers. This method has been designed to provide data for input to hazard assessments and fire-safety engineering design calculations.

Interest has been expressed in SC1 WG5 and SC3 WG1 in using the controlled atmosphere cone calorimeter for this purpose.

Status: Completion of revised Rounds 1 and 2 of the round robin on ISO/TS 19700 scheduled by Ottawa meeting. **Action: Richard Hull**

Plan for a small symposium on the use of the controlled atmosphere cone calorimeter at the Ottawa meeting. **Action: Eric Guillaume & Stephen Grayson.**

3. Technical Report on the effect of combustion conditions on effluent components **(SC3 WG2)**

This document summarizes and interprets the findings of research on the variation of the yields of toxic compounds, visible smoke, and heat with combustion conditions, notably equivalence ratio and possible the chemical composition of the combustible.

Status: Compilation of sources of data for discussion in Ottawa. **Action: Not yet assigned.**

4. International Standard on calculation of wall losses of gases and smoke **(SC3 WGx)**

This document would include the published methods for assessing the decrease in gas and smoke concentrations as a function of distance from the fire. Non-normative annexes would compile the results of tests of wall losses.

Status: No action yet.

5. Examples of calculations of FED and time to threat to tenability **(SC3 WG5)**

This Annex to **ISO 13571** or an SC3/SC4 document provides examples of the use of the equations within the Standard.

Status: SC3 WG5 and SC4 WG11 to compile previous examples supplied by Experts. **Action: Examples from Guillaume and Su; for discussion in Paris (4/2011).**

6. Technical Report on the sub-incapacitating effects of fire effluent **(SC3 WG5)**

This document compiles and interprets the published literature on the effects of toxic gases, visible smoke, and heat at levels below those that lead to incapacitation.

Status: Jim Norris to do a preliminary compilation of select toxicants for discussion at Ottawa meeting. **Action: Jim Norris.**

7. Compilation of limiting hazard by product type and fire scenario **(SC3 WG5)**

Status: No action yet.

8. Possible additional document on safety of emergency responders.

Status: No action yet.

9. Possible document on default values for toxic gases, heat, smoke optical density (**SC3 WG5**)

SC4

1. Include consideration of tenability conditions in revisions of **ISO/TS 16733 (SC4 WG6) and ISO/TS 16732 (SC4 WG10)**

For both design fire scenarios and risk assessment, this would be in the form of new examples. In these examples, assumptions on the effects of delay in evacuation or incapacitation (before or during evacuation) would be included.

Status: Add to the arena example being developed in SC4 WG6 the parameters necessary for tracking changes in tenability threat. Input will be needed from SC4 WG11. Draft Statement of Work developed. **Action:** Colleen Wade and Dick Gann; for discussion at the Ottawa meeting.

2. Normative document on effects of smoke and toxicants on human behavior and judgment and thus on time to threat to tenability; or non-normative document on what to do if no information is available (**SC4 WG11**)

This would be a follow-on to **ISO/DTR 16738** in **SC4 WG11**. SC3 Task 6 would develop guidance on changes in people as a result of effluent exposure. This would include effects of these changes on movement speed and choices. An annex could include treatment of statistical distribution of behavioral response. This may require pre-normative work, such as a parametric study of a design fire, behavioral scenarios, and different EC₅₀ values to examine the effect on movement speed, etc.

Status: No action yet, awaiting results of SC3 Task 6.

3. Include consideration of fire effects on people in document on selection and implementation of behavioral scenarios (**SC4 WG11**)

This would be an extension of **WD 29761**.

Status: "Place holders" supplied by Gann to Fahy. Include in discussion of 29761 at the Ottawa meeting. **Action:** Rita Fahy, Dick Gann.

4. Technical Report on relative importance of various fire scenarios, including guidance for jurisdictions that do not have fire incidence data compilations (**SC4 WG 10**)

This document would guide authorities on how to weight fire scenarios, including the likelihood that people would be moving within the occupancy.

Status: As a first step, John Hall has sent an NWI ballot for a document on standard methodology for collection of fire data in TC92 WG8, closing 9-10-2011. Then, use existing national data as a starting point and adjust for broader cultures and demographics. **Action: John Hall.**

5. International Standard(s) on flame spread algorithms **(SC4 WG9)**

This Standard would establish criteria for equations and software for calculating fire growth, including changes in equivalence ratio that might affect combustion product yields, as in Item 3 under SC3.

Status: Preliminary draft circulated by Kazu Harada for discussion in Ottawa.
Action: Kazunori Harada.

6. International Standard for fire growth capability in zone and CFD models **(SC4 WG7)**

This Standard would establish criteria for equations for validating effluent generation and transport models, including changes in equivalence ratio that might affect combustion product yields, as in Item 3 under SC3. Some application in 16733 in SC4 WG6.

Status: Could be in examples of application of ISO 16730. **Action: Dieter Brein.**

7. International Standard on transport and losses of effluent and effluent components in zone and CFD models **(SC4 WG7)**, using output from Item 4 under SC3. SC4 WD7 would assist in the documentation of the results of the SC3 task and their introduction into fire models.

Status: Awaiting Task 4 document from SC3. Criteria for validation could then be developed in SC4 WG7 and could be part of an example in 16733.

8. Technical Specification on approach to grouping finished products by magnitude and nature of effluent potency **(SC3/SC4 WG6)**

The purpose of this document is to support the inclusion of real combustibles in engineering calculations and to provide a basis for efficient calculation of effluent potency contribution. One would use a generic average value unless a combustible item is distinctive, based on, e.g., mass of the item, burning rate, toxic product yields, other products burning at the same time. Consider using a probability distribution of product characteristics and, e.g., a 99 % cutoff.

Status: Colleen Wade, John Hall, and Dick Gann to coordinate. Gann sent a prior paper on this to Wade, Hall, and Kruppa. NWIP prepared for SC3 WG5; discussion in Paris.

9. Guide to estimating tenability. **(SC3/SC4 WG1)**

This would be a guide to using all the above documents, along with other appropriate TC92 documents, for estimation of whether people would be able to escape from a fire. It would build on the outline in Clause 11 of ISO 23932.

Status: Could be a joint project between SC3 WG5 and SC4 WG1. No action yet.

APPENDIX B

ISO/TC 92/SC 4 "Fire Safety Engineering" Resolutions Ottawa, Canada 21st October 2011

Resolution SC4 N215 – Ottawa 1, 11/10/21 – Launch of a DTR Ballot for ISO/WD 10796-1

As proposed by WG 7 in document SC4 N665,

Considering that the draft ISO/WD 10796-1 "Fire safety engineering – Examples on verification and validation of a calculation method – Part 1: Fire zone model" is nearing completion by SC4/WG 7,

ISO/TC 92/SC 4 agrees to designate the document as DTR 16730-2 (New numbering agreed in Hangzhou) and to launch the DTR ballot in order to get comments to be considered by WG 7 at its next meeting.

Note: Part 1 "General" will be the revision of ISO 16730:2008.

Resolution SC4 N216 – Ottawa 2, 11/10/21 – Launch of a DTS Ballot for ISO/WD 13447

As proposed by WG 7 in document SC4 N665,

Considering that the draft ISO/WD 13447 "Fire safety engineering – Guidance for use of fire zone models" is nearing completion by SC4/WG 7,

ISO/TC 92/SC 4 agrees to designate the document as DTS and to launch the DTS ballot in order to get comments to be considered by WG 7.

Resolution SC4 N217 – Ottawa 3, 11/10/21 – Addition to the SC4 work programme of a Preliminary New Work Item

As proposed by WG11 in document SC4 N667,

ISO/TC 92/SC 4 agrees to add to the SC4 work programme a preliminary new work item on the design of evacuation experiments with Rita FAHY as project leader and a task group including N. BENICHO, H. COLINA, D. NILSSON, G. HARRIS and possibly others to be determined.



Resolution SC4 N218 – Ottawa 4, 11/10/21 – Launch of New Work Item Proposals for WG 12

As proposed by WG 12 in document SC4 N668,

ISO/TC 92/SC4 agrees on sending to SC4 member countries for vote as New Work Items the following parts, as separate documents:

- NP TR 24679 - 2 – Fire safety Engineering – Performance of structure in fire – Part 2: Example of an airport terminal (With NI Zhaopeng, China, acting as the Project Leader)
- NP TR 24679 - 3 – Fire safety Engineering – Performance of structure in fire – Part 3: Example of an open car park (With Bin ZHAO, France, acting as the Project Leader)

Note: Part 1 "General" will be the transformation of ISO/TS 24679:2011 into an international standard.

Resolution SC4 N219 – Ottawa 5, 11/10/21 – Launch of New Work Item Proposal for WG 10

As proposed by WG 10 in document SC4 N666,

ISO/TC 92/SC4 agrees on sending to SC4 member countries for vote as a New Work Item the following document:

- NP TR 16732 - 3 "Fire safety engineering – Fire risk assessment – Part 3: Example of an industrial property" (Previously registered as PWI 16207)

ISO/TC 92/SC 4 agrees also to designate the document as DTR 16732-3 and to launch the DTR ballot in order to get comments to be considered by WG 10 at its next meeting.

Resolution SC4 N220 – Ottawa 6, 11/10/21 – Joël KRUPPA

In response to the decision of Joel KRUPPA to resign from ISO/TC 92/ SC 4 Chairmanship, ISO/TC 92/SC 4 wishes to express its appreciation for his years of productive service, to acknowledge the friendly, collegial nature of that service and to wish him well in his future endeavours. His participation in SC4 will be missed.

