MDEP STC Self Assessment Report

Multinational Design Evaluation Programme
Self Assessment 2012

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MDEP STC SELF ASSESSMENT REPORT

Related to: MDEP Steering Technical Committee

SELF ASSESSMENT REPORT

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EXECUTIVE SUMMARY

A self assessment of the Multinational Design Evaluation Program was initiated in late 2011 to take stock of the MDEP programme of work, what has been accomplished to date and what has yet to be accomplished, as well as assess if MDEP activities are enhancing safety of new reactor design reviews and harmonisation. Data was collected from both MDEP members (90 surveys were completed) and external stakeholders (15 organisations provided input). Input was requested in the areas of goals and achievements of the programme, communications, scope, membership and participation. Feedback from MDEP members and external stakeholders was generally very positive. The respondents found MDEP to be a unique and useful forum to connect with experts from other regulators. Most respondents also believe that MDEP has been successful in achieving most of the goals set out in the terms of reference. However, there are areas that continue to be a challenge to harmonisation, such as differing regulatory practices among the member countries. The self assessment found that the format and processes of the programme are effective and there is not a desire for significant changes in the way the programme is implemented.

An overall theme that arose from the self-assessment is that MDEP is transitioning from a small group of regulators who co-operate internally, to a more inclusive organisation that has more interfaces and co-operative arrangements with other organisations. The observations from the internal and external stakeholders indicate that these interfaces with external organisations should be expanded to make MDEP more effective. For example, the conclusions suggest that MDEP is very effective in encouraging co-operation and harmonisation among the standards development organisation, and provides useful input to IAEA standard development.

The self assessment identified several actions to improve communications, and make MDEP activities more effective including:

- Develop an agreed upon definition of convergence to be used for MDEP activities, in the form of a revision to the Terms of Reference;
- Modify the MDEP Terms of Reference to remove the objective of improving public understanding and acceptance of safety goals;
- Develop a communication plan that identifies stakeholders and specific communication products;
- Open at least a part of the MDEP library to non-MDEP representatives and invite non-MDEP organisations to attend issue-specific working group meetings as appropriate;
- Enhance interactions with its IAEA counterparts to identify areas in which MDEP can provide useful input to IAEA safety standards under development;

- Identify completion strategies (including final products, recommendations to SDOs or other organisations for follow-up activity) in the issue-specific working group Programme Plans;
- Continue the activities of the design-specific working groups at least through the construction oversight phase;
- Address advanced reactor issues, through an STC Subcommittee or Working Group that would explore the issues of most interest to the MDEP member countries;
- Act quickly to approve the formation of new design-specific working groups (consistent with the existing Rule of Three for forming design specific working groups);
- Support increasing MDEP membership consistent with the existing guidance, and encourage participation in MDEP by any national regulators who are considering designs under MDEP review.

1. Background

Purpose:

A self-assessment of MDEP was proposed at the September 2011 meeting of the MDEP Steering Technical Committee (STC). The self assessment was intended to take stock of the MDEP programme of work, accomplishments to date and future accomplishments, as well as to assess if MDEP activities are enhancing safety of new reactor design reviews and harmonisation. The self assessment was intended to identify lessons learned as well as impediments to harmonisation of regulatory requirements and practices among the MDEP members.

Process:

The STC utilised several inputs to provide insights in to the self assessment including the experience gained in the pilot project and over the last 4 years of MDEP operation in its current structure. Since March 2008 when the MDEP was approved in its current form, the Policy Group (PG) has met 6 times; the STC has met 19 times, the EPR Working Group (EPRWG) 11 times; the AP1000 Working Group (AP1000WG) 6 times, the mechanical Codes and Standards Working Group (CSWG) 11 times, the Vendor Inspection co-operation Working Group (VICWG) 10 times, and the Digital Instrumentation and Control Working Group (DICWG) 14 times. It should be noted that other meetings such as design-specific subgroups meetings and STC subcommittee meetings have also been held. In all, some several thousand person-hours have been invested in MDEP activities. The experience gained and the lessons learned from MDEP activities that contributed to this self assessment have been documented in the record summaries and conference proceedings documents that are contained in the MDEP library and available on the MDEP public website. Another tool used by the STC were surveys and questions soliciting input from internal and external stakeholders in order to get a comprehensive picture.

With respect to the internal self assessment survey, the MDEP STC Chair and other STC members, with input from the NEA, produced a questionnaire for the purpose of requesting pointed feedback from those who know the MDEP best – the people who participate in MDEP meetings from the 10 (at that time) member countries, the IAEA, and the NEA. Proposed survey questions were forwarded to all STC members and, as a result of feedback from several members of the STC, some questions were modified and some questions were added to the survey. The survey was then sent to MDEP participants from the STC, and all working groups. Policy Group members and other senior managers in the participating agencies who are involved in MDEP activities took part as desired. In addition, the IAEA representatives

who take part in issue-specific subgroups were also invited to take part, as well as some of the NEA MDEP technical secretariat.

In all, approximately 90 persons took the survey. Every MDEP member country was represented in the survey responses. The IAEA and the NEA also provided responses to the survey.

With respect to the role of the respondents, the most frequently represented group was the EPRWG and its subgroups at 35 respondents. All of the other working groups had significant responses, as well. It is notable that all STC members responded (including members of the two STC subcommittees) as well as 4 Policy Group members. Seven persons who identified themselves as MDEP member regulator management who do not normally attend MDEP meetings also responded.

The goal of the internal self assessment survey was to receive open and frank input from MDEP participants with the purpose of evaluating if the MDEP activities are meeting the goals of each participant and regulatory body, and to identify improvements that can be made and/or adjustments in future activities of the MDEP. This was a blind survey with no recording of names or email addresses although country and working group/committee affiliations were requested. Answers were as anonymous as possible.

A separate survey was distributed to the external stakeholders -- organisations that had interfaced with MDEP working groups in the past, or had participated in the MDEP conference in September 2011. This survey consisted of 10 open-ended questions, rather than multiple choice questions. The questions addressed the role of MDEP, the usefulness of MDEP products, the effectiveness of communications, and when MDEP activities should be transferred to other organisations. Surveys were sent to 35 organisations. Fifteen responses were received.

The STC analysed the responses and made 15 specific recommendations to the Policy Group at its meeting in May 2012. The Policy Group endorsed the recommendations with minor modifications. A summary of the findings and actions taken are listed in Section 3 of this report.

2. Analysis of the internal and external survey responses

2.1. Goals and achievements

Internal stakeholders were asked how they thought that their activities helped reach the MDEP goals and objectives, expected outcomes, and challenges facing the Working Groups.

The MDEP Terms of Reference (ToR) defines the MDEP goals and objectives as (1) enhancing multilateral co-operation within existing regulatory frameworks, (2) facilitating multinational convergence of codes, standards and safety goals, (3) facilitating licensing of new reactors, (4) encouraging safer reactor designs, (5) enhancing co-operation between regulators on design reviews, (6) improving public understanding of safety, and (7) encouraging global standardisation. The internal survey's participants were asked how they thought that their activities helped reach these goals. The respondents generally agreed that MDEP activities were meeting all of these goals except the goal of improving public understanding of safety.

The ranking from highest to lowest of the MDEP activities that are meeting these goals and objectives (survey participants agree or strongly agree that the activity is meeting this goal):

1. Enhancing multilateral co-operation within existing regulatory frameworks (95%);
2. Enhancing co-operation between regulators on design reviews (89%);
3. Facilitating licensing of new reactors (81%);
4. Encouraging safer reactor designs (80%);
5.-6. Facilitating multinational convergence, and encouraging global standardisation (75%);
7. Improving public understanding of safety (31%).

The survey participants also were asked if they agreed that the results of their work were helping to meet the expected outcomes as listed in the MDEP ToRs which include (1) increased knowledge transfer through the exchange of information between regulators, (2) identify similarities and differences in regulatory practices, (3) move towards convergence on regulatory positions and understand where convergence may not be practical, (4) increased stakeholders understanding of regulatory practices, (5) enhanced ability for regulators to co-operate in reactor designs reviews, (6) enhanced ability for regulators to co-operate in vendor inspections, (7) provide useful input to upgrade IAEA safety standards, and (8) provide useful input to Standards Development Organisations (SDO).

In general, the survey respondents agreed or strongly agreed that the results of the MDEP in these areas are meeting the expected outcomes. The first two expected outcomes of increasing knowledge transfer among regulators and identifying similarities and differences in regulatory practices are almost at 100% agreement. Agreement falls off with the issues of increasing stakeholders understanding of regulatory practices (63%), providing useful input to SDO (62%), and providing useful input to upgrade IAEA safety standards (54%).

The ranking from highest to lowest of those MDEP activities that are meeting these expected outcomes is (% that agreed or strongly agreed):

1. Identify similarities and differences in regulatory practices (100%);
2. Increased knowledge transfer through the exchange of information between regulators (99%);
3. Move toward convergence on common regulatory positions, etc. (85%);
4. Enhanced ability of regulators to co-operate in reactor designs reviews (81%);
5. Enhanced ability of regulators to co-operate in vendor inspections (73%);
6. Increased stakeholders understanding of regulatory practices (63%);
7. Provides useful input to SDO (62%);
8. Provides useful input to upgrade IAEA safety standards (54%).

The survey participants were also asked about some of the biggest challenges to meeting the goals, objectives, and expected outcomes as described in the ToRs. The ranking from highest to lowest of those who agreed or strongly agreed that these are impediments to successfully meeting MDEP goals:

1. Differing regulatory practices (90%);
2. Differences in quality assurance requirements (76%);
3. Differences in safety classification (73%);
4. Pace of work/pressure to meet expected completion dates (65%);
5. Lack of agreement among working group members (59%);
6. Insufficient direction from the STC/PG (38%).

A notable result was that the top two responses thought to be an impediment "to a great extent" were the differing regulatory practices (30%) and differences in safety classification (26%). No other impediment reached over 9% in this category.

Survey participants were also asked what they did not like about MDEP, or what should be changed. Some members noted that, although progress has been made in some areas, it is not clear that MDEP is any closer to its objective of harmonisation of regulatory requirements and practices.

External stakeholder feedback on the role of MDEP included:

- The primary task of MDEP is co-operation among regulators and it is working well;
- Technical exchanges have been useful to avoid divergence of conclusions in specific technical areas;
- Harmonisation of regulatory requirements and practices is a prerequisite for co-operation;
- Harmonisation will work best if the member States agree on developing a new risk-informed and performance based framework to replace the current largely deterministic framework;
- MDEP should not only develop common positions, but agree that the common positions will be implemented in their national regulations;
- MDEP should not attempt to reach harmonisation through general wording that has to be reshaped/detailed when coming to the national level, or by enveloping requirements of all the participants;
- MDEP should provide guidance in similarities and differences in requirements and practices, as well as proposals for harmonisation;
- MDEP's role is to facilitate liaison between regulators and identify areas of convergence for use by SDO;
- MDEP is a program in which members can exchange experiences in reviewing the safety of new reactor designs, as well as exchanging information about the methodologies and processes of review;

- MDEP is a very effective platform for exchanging information on regulatory practices, partial and full results of design evaluations, and challenges. Such exchanges are very important for small and mid-size regulators with limited resources;
- MDEP should be a complementary organisation to the international organisations aimed at creating generic standards and procedures (IAEA, EC, WENRA, OECD working groups, ICRP). MDEP should be focused on more specific issues linked to specific types of reactor technologies;
- Industry should be involved in the convergence process for providing data input and making proposals;
- The role of MDEP is to identify the differences in the different countries requirements, and understand the reasons. This is the basis of work on the harmonisation of safety standards;
- MDEP should focus on harmonisation of requirements and practices for specific reactor technologies, rather than developing generic guidelines similar to IAEA standards.

Use of design-specific work and products

With regard to design reviews, internal respondents to the survey agreed that MDEP interactions are useful in confirming findings that had previously been made (80%). The respondents stated that MDEP interactions improved the safety focus of the design review (60%), helped identify previously undiscovered safety issues (54%), expanded the scope of review (45%), or reduced resources needed to perform the review (15%). It is worth stressing the relatively low number regarding the opinion that MDEP activities helped reduce the resources needed to perform the design reviews.

Also with regard to the design reviews, the responders overwhelmingly thought that sharing advanced copies of review findings, requests for additional information and status of the design reviews were being used by each country. Formulating design specific common positions also was viewed as extremely positive. External participants, particularly industry, found the sharing of documents among regulators to be useful.

MDEP issue-specific products

With respect to the use of MDEP products by the MDEP member regulators, the answers to this question are very interesting in that for each of the products mentioned in the question, there are a very high number of "NA" answers which leads one to believe that these responders are not very familiar with the particular product. For example, it is highly likely that a DICWG member is not knowledgeable or not affected by the work of the VICWG and is unlikely to use the Inspection Protocol document or the Vendor Inspections results database. In addition, it is probably best to look at the percentages who answered at the extremes of the possible answers – those that answered that either the MDEP product wouldn't be used at all or would be used to a great extent. When doing so, the answers reveal the following ranking of the use of MDEP products by regulators:

1. Digital I&C Common Positions (33% used to a great extent; 4% not at all used);
2. Participation in witnessed vendor inspections (23% to a great extent; 4 % not at all);
3. -4. Tie between table of upcoming vendor inspections (21% to a great extent; 4% not at all) and vendor inspection protocol document (21% to a great extent; 5% not at all);
5. Comparison of pressure boundary codes (20% to a great extent; 5% not at all);

6. Vendor inspection results database (16% to a great extent; 7% not at all);
7. Position paper on safety goals (17% to a great extent; 11% not at all);
8. Comparison of quality assurance requirements (16% to a great extent; 8% not at all).

It should be noted that if you include the responses for products that will be used "somewhat" by the regulators, the most used products are Comparison of QA requirements and the Position Paper on Safety Goals. The next question about the expected benefits of future work provides a more complete picture of these responses.

When comparing various future products (which are also consistent to some already existing MDEP products – completed or ongoing) the rankings would be:

1. Completing Digital I&C common positions (42% to a great extent; 26% to some extent);
2. Providing suggestions to IEC/IEEE and IAEA to harmonise DI&C standards (41% to a great extent; 25% to some extent);
3. Performing joint vendor inspections (27.5% to a great extent; 38% to some extent);
4. Harmonising QA inspection procedures (QA requirements) (23% to a great extent; 44% to some extent);
5. Developing a process to use foreign codes and standards (22% to a great extent; 41% to some extent);
6. Helping SDO converge on specific parts of the codes (21% to a great extent; 39% to some extent);
7. Performing multinational vendor inspections (21% to a great extent; 45% to some extent);
8. Comparing codes for Class 2 and 3 components (18% to a great extent; 42% to some extent).

From analysis of responses to these two questions, the most used and interesting generic issue-related products to pursue in the future are clearly DI&C common positions with VICWG following (including QA requirements issues). It again should be noted that the CSWG work with respect to the soon-to-be released code comparison work, etc., should move up with respect to usage by the regulators.

The majority of external stakeholders stated that they have not used MDEP products. In several cases, particularly for non-MDEP regulators, they clarified that they had not used the products yet because their country had only recently made a decision to pursue new build, or they had not decided on a technology yet. Industry responders were generally more likely to use MDEP products, and indicated that they found the common positions useful and potentially helpful to IAEA, SDO, and non-MDEP regulators.

Input to IAEA draft standard reviews

Approximately 70% of MDEP member responders believe that MDEP discussions are helpful to member reviews of IAEA draft standards (4% believed otherwise and 22% had no opinion).

2.2. Communications

Regarding communications within MDEP, a large majority of the respondents found communication between working groups, the STC and the PG to be effective. The internal survey respondents overwhelmingly found the listed information resources useful with the highest usefulness from email exchanges with other MDEP members and meetings. The results of the survey are:

- Meetings (99% at least somewhat useful with 61% stating very useful);
- Email exchanges with members (98% at least somewhat useful with 61% very useful);
- MDEP website (83% at least somewhat useful with 30% very useful);
- MDEP library (81% at least somewhat useful with 41% very useful);
- MDEP annual report (81% at least somewhat useful with 28% very useful);
- MDEP conference (75% at least somewhat useful with 27% very useful).

A majority found the guidance from the PG, STC and other working groups to be useful. The results of the survey are as follows:

- Guidance and input from the STC (96% at least somewhat useful with 44% very useful);
- Guidance and input from the PG (88% at least somewhat useful with 31% very useful);
- Guidance and input from other working groups (87% at least somewhat useful with 20% very useful).

Suggestions on improving communications

The internal responders provided some feedback about better ways to communicate information about MDEP to other organisations including:

- Look for opportunities to make presentations at other international meetings;
- Produce an MDEP Newsletter periodically;
- Present program plans and status of work at significant industry meetings;
- Give more formality to MDEP products and allow for a more formal public comment and review process;
- Invite other organisations to specific meetings as observers;
- Expand MDEP membership;
- Formulate and carry out a communications strategy;
- Some consistent recommendations for improving the MDEP library include (1) ensuring that all presentations for meetings are placed in the library in a timely manner, (2) reorganising of the library to enhance obtaining information, (3) addressing the Final versus Working areas of the library.

Suggestions from external stakeholders:

- The external stakeholders noted that they use the MDEP website to obtain information, and suggested that improvements be made in the layout and structure. Some suggested a more active channel of information to external stakeholders, such as regular newsletters, or announcement when new information is posted. Some would like more information on the website. For example, more detailed reports or drafts of issues that MDEP is working on;
- External stakeholders expressed an interest in having access to parts, or all, of the MDEP library;
- The annual report is widely read;
- The MDEP conference is well attended but there is too little detail. The conference is not a substitute for technical meetings and workshops;
- Some responders noted that they received information on MDEP activities through CNRA/CSNI working groups. Therefore, it is important that MDEP continue to interact with CNRA working groups, especially WGRNR.

Interactions with other stakeholders

The most frequent external interactions by MDEP working groups and the STC are with the IAEA representatives, followed by vendors such as AREVA and Westinghouse. This is followed by interactions with licensees such as EDF, TVO, etc, and interactions with non-MDEP regulators (mostly on a less than yearly basis). It was perceived by the respondents that many MDEP groups do not interact with the following organisations at all – CNRA/WGRNR, CSNI, WENRA, Mechanical SDOs, and Industry organisations such as the World Nuclear Association. The responses reveal that some MDEP members do indeed meet with some of these external stakeholders at least occasionally and we do know that the CNRA/WGRNR and the STC interact very frequently and that the U.K., Finland, and France are also members of WENRA and maintain contact with their counterparts. In addition the CSWG maintains very frequent contact with the mechanical SDO and WNA/CORDEL as does the DICWG with IEEE and IEC (although it has recently been noted that IEEE has NOT been attending DICWG meetings as they had in the past – this statement was made several times in the comment section of these questions). The VICWG initiated contacts with the SDO (including ISO) and WNA in 2012. Also, we know that CNRA and CSNI invite MDEP to give an update at each of their bi-annual meetings which is usually carried out by an MDEP member or the NEA technical secretariat. The CNRA/WGIP got close relationships with the VICWG in 2012 (VICWG members attended the WGIP workshop in Switzerland).

The key message from the responses to this question is MDEP should look for ways to reach out to these external stakeholders and to find opportunities to interact with them about MDEP activities.

With respect to rating the perceived effectiveness and usefulness of interactions with external stakeholders, interactions with the IAEA (84% rating of at least “somewhat effective and useful”), reactor vendors (91%), and new reactor licensees/applicants (88%) are by far the highest. Others include Non-MDEP regulators (56%), Mechanical SDO (55%), CNRA/WGRNR and CSNI (54%), WENRA (50%), Industry organisations such as WNA (49%), and other Industry organisations such as NEI, etc. (39%). It should be noted that the ratings of interaction with little or no benefit are highest with non-MDEP regulators.

It is clear from review of the responses that MDEP participants find a lot of benefit and efficacy in interactions with the IAEA, and the reactor vendors and licensees in the design-specific working groups. 83% of the respondents felt that the process of developing common positions has at least been

somewhat helpful in facilitating useful communications with industry representatives. An example of helpful communications with industry was given in the EPRWG work on containment sump issues and communications with the vendor/licensees.

It is certain from the work of the DICWG and CSWG that interactions with their respective electrical and mechanical SDO is invaluable in carrying out their work and soon the VICWG will start interacting with the mechanical SDO on QA issues – although the importance of communicating with these organisations may be masked somewhat by the results of this survey response. In their responses to the survey, the SDO and industry expressed a desire for more and earlier interactions with MDEP.

It is also clear that future interactions should be explored with all of the external stakeholders but it does appear that with respect to the benefits of completing MDEP work, the MDEP participants are not convinced that interactions with non-MDEP regulators will help them accomplish that. This does not mean that further outreach to them should not be undertaken as this would help achieve the goal of increasing stakeholder understanding of MDEP activities. Note that in their responses to the survey, the non-MDEP regulators indicated a desire for more information and meetings beyond the MDEP conference.

Industry and SDO desire more and earlier interactions. Industry would like to have greater involvement in WG activities, including participating in meetings and the drafting process of MDEP position papers.

2.3. MDEP scope and topics

Most of the WG members believe that their working group should continue as long as enough members are interested in interacting (51%), or at least until the current Programme Plan (2012-2013) activities are completed (24%). The remaining expressed no opinion.

Future of issue-specific working groups

Most MDEP members think that issue-specific work should eventually be transferred to another organisation such as CNRA or the IAEA. However, when that should happen was not clear (the majority of those who answered yes to transferring the issues agreed that a transfer should happen after the current (2012/2013) Programme Plan is completed. There were a significant number that answered that the work should not be transferred. Note that about half of the respondents chose the “NA” option. The results were as follows:

- CSWG: Do not transfer (12%), Transfer (Total: 37%, 10% in the near future; 16% after current PP, 11% at some later time); 45% NA;
- DICWG: Do not transfer (20%), Transfer (Total: 37%, 9% in the near future, 14% after the current PP, 14% at some later time); 50% NA;
- VICWG: Do not transfer (24%), Transfer (Total: 29%, 3% in the near future, 14% after the current PP, 14% at some later time); 51% NA.

External stakeholders suggested that the generic efforts should be completed after Common Positions are published, or after clearing an issue.

Future of design-specific working groups

When asked about the future role of design-specific working groups, it was clear that the working groups should continue their work on the EPR and AP1000. A majority (56%) of MDEP members answered that the design-specific working groups should continue at least until all members have completed the design review. A large number also believed that the working group should continue throughout the construction oversight phase (28%), or after plant operation begins (19%). 11% believed that the design specific working group should be discontinued when fewer than 3 MDEP members are still performing the review. 33% answered the "No Opinion" option.

Some noteworthy individual comments include:

- Working groups should be maintained but with a reduced number of meetings, stressing the importance of the personal connections made and the rapidity at which information can be obtained from other regulators;
- MDEP should cover operational issues as well;
- Disbanding or transferring a design-specific working group should be done on a case-by-case basis since reactor design reviews are in different phases but the rule of three MDEP members should apply;
- Technical specifications and operating instructions need to be reviewed during site licensing phases so there are advantages of MDEP operations continuing into licensing;
- If a subgroup or group is concluded, a report about lessons learnt, etc., should be produced;
- Some expressed a lack of clarity of the future of EPRWG and AP1000WG when the design evaluation processes are complete in the U.S.A. and the U.K.;
- It would be useful to keep the design-specific working groups active through site licensing.

While this question was not specifically asked of the external stakeholders, an industry responder suggested that MDEP has a role to play throughout the life of a fleet of plants, since the majority of accident risk comes from operation. Backfits that are found necessary as a result of new knowledge or operating experience should be considered by MDEP and common positions taken such that designs do not diverge throughout the life of the plants.

Both the internal and external surveys indicate that there is a benefit to maintaining some sort of co-operative arrangements after one or more WG members completes its design review.

Since the self assessment indicates general agreement on the high-level MDEP goals of increased regulatory co-operation and harmonisation of requirements and practices, the question of the future of the design-specific working groups (after certification, combined license or operating license) can be addressed by considering the type and level of activity that would be appropriate to continue to support those goals. The members of the working group could maintain general communications and regulatory contacts relevant to:

- Project status;
- Construction inspections (using the MDEP library);
- Construction experience (supporting the WGRNR database);

- Vendor inspections (relevant to AP1000).

These could be accomplished through periodic conference calls (including video conferencing where practical) and regular e-mail exchanges. The typical current practice of three working group meetings each year during the active design review stage would not be necessary or appropriate.

In addition, the working group could be called into action when circumstances called for increased activity. For example, to support the goal of harmonisation and standardisation, the working group could begin to co-operating actively when regulators begin addressing situations that could affect the plant design such as:

- Design changes (e.g. from Periodic Safety Reviews or utility requests);
- New requirements/ practices/ policies;
- Plant corrective actions (addressing construction or operating experience).

Inclusion of Fukushima-related activities

Currently the issue of Fukushima and potential lessons learnt is being discussed at every STC meeting to ensure that all MDEP members understand the actions being taken by the other MDEP regulators. When asked about the best way to deal with the Fukushima lessons learnt issue, most members preferred to keep the current process. The results were as follows (a respondent could choose more than one answer):

1. Discussed in STC meeting as they are now (46%);
2. Dealt with in design-specific working group as they are now (40%);
3. Explore possible formation of a Fukushima working group (33%);
4. No opinion (22%).

Other noteworthy comments include that the Fukushima issues are being handled by other regulatory groups such as CNRA and this issue should be left to others; issue should be left to design-specific working groups; perhaps have a dedicated subgroup in each design-specific working group.

In general, external participants agreed with the current approach taken by MDEP, to focus Fukushima discussions in the design-specific working groups.

External stakeholders expressed a variety of views on MDEP's role in addressing Fukushima lessons learned including:

- Industry responders stated that MDEP should ensure unification of regulatory views as to the reflection of post-Fukushima safety improvement requirements on new reactor designs. It should identify, review and understand the reasons for different backfit solutions chosen by different countries. While the IAEA and NEA provide high level guidance, MDEP should address Fukushima-related issues for new reactors for practical use in licensing considerations, and provide early dialogue with the industry;
- The MDEP design-specific working groups provide a unique forum for ensuring that there are consistent conclusions coming from the different regulators at the end of the stress test evaluations or equivalent processes in other countries;

- Others thought that many other groups are already working on Fukushima issues and it is not the role of MDEP to participate in post-Fukushima activities;
- MDEP could facilitate an international process of assessments for specific reactor designs based on knowledge gained from Fukushima;
- MDEP should extend the WENRA initiative on safety goals for new reactors to countries outside of Europe.

Potential new work

Among the internal responses, there was significant interest in addressing all of the new issues listed in the survey within MDEP. The exact manner in which to undertake this work was not clear although the highest responses favored new issue-specific working groups. The results of the survey show the following order of support for new issues (note that about half of the respondents chose the "No Opinion" option and, if the percentages were normalised the results would double but still remain in the same order):

1. Passive safety Systems (Yes address in some way: 49%, as a working group; 28%; No do not address: 6%);
2. Severe accidents (Yes: 44%, working group: 26%; No: 7%);
3. Human machine interface (Yes: 41%, working group: 24%; No: 3%);
4. Startup testing (Yes: 40%, working group: 26%; No: 9%);
5. Construction Inspection Practices (Yes: 40%, working group: 19%; No: 5%);
6. PSA methodology (Yes: 39%, working group: 20%; No: 8%);
7. Fire Protection (Yes: 38%, working group: 20%; No: 8%);
8. Design Basis Accident methodology (Yes: 36%, working group: 18%; No: 13%);
9. Accident/Event categorisation (Yes: 36%, working group: 20%; No: 11%);
10. Initial operation: (Yes: 32%, working group: 22%; No: 14%).

The issues that are of clear interest to members of design-specific working groups, such as startup testing and initial operation have relatively high numbers recommending working groups. This may be explained by the fact that the 6 countries involved in the design-specific working groups probably answered in the affirmative whereas the other 4 countries did not. If this is true, an option would be for the design-specific working groups to take these issues on within their work.

Industry believes that MDEP should address some basic issues of tomorrow's nuclear safety architecture including: design change management, the role of vendors, emergency response, and the role of probabilistic safety goals.

New design-specific working groups

Regarding potential new work on specific designs, of those who gave an opinion, there was interest expressed in addressing all of the new designs within MDEP. However, this interest, in raw numbers, was less than that expressed for the generic issues. Also there were differing levels of support based on whether one would actually participate in such a new design-specific working group. The results of the

survey show the following order of support for new design-specific working groups (note that about 60% of the respondents chose the "No Opinion" option and, if the percentages were normalised the resulting percentages would increase in all areas):

1. ATMEA1 (Support new working group: 32%, would participate: 15%; No support: 10%);
2. APR1400 (Support: 28%, participate: 15%; No: 10%);
3. APWR (Support: 28%, participate: 12%; No: 9%);
4. mPOWER (Support: 28%, participate: 18%; No: 11%);
5. AES 2006 (Support: 24%, participate: 6%; No: 14%);
6. ABWR (Support: 24%, participate: 13%; No: 13%);
7. ESBWR (Support: 22%, participate: 9%; No: 14%).

Inclusion of advanced reactor review activities in MDEP

A majority of the MDEP members agreed that MDEP should address advanced reactor topics. The majority believed advanced reactors should be addressed by design-specific working groups when the criteria are met (30%) or in design-specific working groups for reactor types (such as HTGRs, LMRs, etc.) (11%). The next largest group believes that MDEP should address these issues in issue-specific working groups for topics applicable to all advanced reactors (20%), while 17% think that MDEP should only focus on large light-water reactors. The rest expressed no opinion.

The members believed that small modular reactor issues should be addressed in issue-specific working groups when enough countries agree to co-operate on such issues (34%). A smaller number thought these issues should be addressed only in design-specific working groups for specific designs and when they meet the MDEP criteria for design specific working group formation (27%). Again, 16% believed that MDEP should only focus on large light water reactors.

2.4. Membership and participation

The internal survey responses indicate that 60% of respondents find the current number of members in MDEP is appropriate; 24% stated that MDEP would benefit from allowing additional regulatory authorities to attend working group meetings as observers; 23% stated that MDEP would benefit from additional members; and 7% stated the MDEP would function more effectively with fewer members. One consistent recommendation was that all MDEP members should actively participate in the working groups in which they are members.

The internal responders stressed the need for all regulators to participate especially those building new reactors and the need to coordinate activities with CNRA to ensure no duplication of effort.

There was a suggestion from a non-MDEP regulator that regulators from countries embarking on a nuclear power program to participate in some MDEP activities as observers.

Industry urged MDEP to accept increasing its membership to the regulators of countries embarking on new build as participation of these countries will enhance co-operation and will contribute to convergence of the licensing processes.

Internal operations

About 70 percent (%) of the MDEP member responders attended every meeting or almost every meeting. The majority of the rest attended about half of the meetings.

A vast majority (86%) of respondents agree that the frequency of meetings is appropriate. Only about 4% thought that the group should meet more frequently and 5% thought it should meet less frequently.

By far the biggest impediment for MDEP participants to attend MDEP meetings and carry out MDEP-related functions is "other regulatory work of higher priority" (83% responded that this issue affects their ability to attend meetings and do MDEP work either "somewhat" or "to a great extent"). Other similarly rated issues in this area are (1) limited agency resources (50%), (2) inconvenient location of meetings (40%), (3) inconvenient timing of meetings (32%), and (4) lack of relevance of topic regulatory work (20%).

Some noteworthy comments on this issue are that sometimes obtaining a visa to attend meetings in France is a lengthy process and has affected the ability to participate in MDEP meetings. There was a recommendation to rotate meeting locations to different countries. Also, one responder added that budgetary restrictions impede attendance. One member noted that travelling to Paris for every meeting (or almost every meeting), especially the issue-specific working groups, puts too much of a travel burden on those members outside of Europe.

To some extent it was expressed that, due to visa and budgetary issues with travel, always having meetings in Paris was inconvenient (although this was not a majority of respondents – 10% stated that the meeting location affects their ability to attend meetings "to a great extent", 30% "somewhat", and 60% "not at all"). There was a recommendation to rotate meeting locations to different countries.

Approximately 88% of the respondents were at least somewhat familiar with their Working Group's Programme Plan (PP) with 62% being very familiar with the PP. About 80% of the respondents thought that the PP was at least somewhat useful with 54% thinking that it was very useful.

Feedback about the NEA support as the technical secretariat was generally positive with regard to timeliness and quality of support for meetings and communications and the quality of facilities provided in Paris. There was a recommendation that NEA should assist with resources (funds) for members to attend.

3. Assessment and recommendations

Several tools were used to assess the status of the MDEP activities including: the results from the surveys discussed above, the experience of the working groups which consists of thousands of person-hours spent on MDEP activities, and the knowledge of the Policy Group's expectations.

Feedback from MDEP members about the most effective aspects of the MDEP was generally very positive. The respondents mentioned many times that MDEP is a unique and useful forum to connect with experts from other regulators. Communication paths have been well established as a result of MDEP activities and it has become quick and easy to communicate with colleagues from other countries when issues arise. In addition, the atmosphere of MDEP meetings has facilitated meaningful exchanges among participants.

The following are some common general observations from the self assessment, and actions taken by MDEP to address them:

a) ***Co-operation on design reviews***

Both internal and external stakeholders believe that the most effective aspect of MDEP is the co-operation and exchange of information it facilitates for design reviews. The benefits of co-operating on design reviews were confirmed by the survey, especially in confirming each regulator's findings and revealing issues that may not have been identified by another regulator. The respondents agreed that MDEP interactions increased the safety focus of the reviews.

Action: The STC will continue to oversee the work of the design-specific working groups to assure continued co-operation on a broad range of technical topics.

b) ***Products of the issue-specific working groups***

The self assessment found that all of the current and projected products of the issue specific working groups are being or will be used by a majority of the MDEP members. MDEP products are used more often by MDEP members and the industry, but not widely used by non-MDEP regulators

Actions:

- The current working groups will continue with their proposed programme of work and complete the products under development.
- The STC will identify opportunities and facilitate communications with other regulators, through other international organisations, to make them aware of MDEP products and will follow an MDEP Communications Plan that addresses these issues.

c) ***Convergence of regulatory requirements***

The results of the self assessment indicate that the objective of convergence, as stated in the MDEP ToR, is not clear and is not consistently understood by internal and external stakeholders. The ToR states that MDEP should focus on convergence of regulatory practices that will develop into convergence of regulatory requirements. However, absent a commitment that the MDEP regulators will implement common positions into their national regulations and practices, convergence will be difficult to achieve.

Action: The MDEP Terms of Reference will be revised to clarify the definition of convergence.

d) ***Improving public understanding of safety***

The terms of reference states that an objective of MDEP is to "further public understanding and acceptance of safety goals on an international basis" and an expected outcome is to "increase stakeholders understanding of regulatory practices on an international basis." However, the programme has taken no specific actions towards this goal. As a result, a majority of members stated in the self-assessment that MDEP is not meeting this objective. While communicating with the public about its activities should be part of MDEP's programme of work, influencing public opinion is not a primary objective of the programme.

Action: The wording in the current ToRs will be revised to better reflect what is being done in MDEP. Specifically, the wording of "acceptance" of safety goals will be removed.

e) ***Communications and interactions with external stakeholders***

External stakeholders make use of the products currently available to get information on MDEP activities, but would like more interaction and more active involvement in MDEP activities. External stakeholders indicated that they would like to have access to more information through the MDEP website, access to the MDEP library, and participation in meetings or workshops.

Actions:

- MDEP will continue to produce an annual report and hold biennial MDEP conferences;
- MDEP will develop a Communication Plan that identifies stakeholders and specific communication products;
- The design-specific working groups will interact, as needed, with the appropriate vendors and licensees/applicants;
- The issue-specific working groups will interact, as needed, with SDO and other industry organisations. The STC will explore additional opportunities such as workshops with external stakeholders;
- NEA should explore ways to make more information available through the MDEP website, and will consider active outreach to stakeholders when new information becomes available;
- MDEP will explore various options for opening the MDEP Library to external stakeholders with a focus on regulators from WGRNR first, taking care to protect proprietary and sensitive information.

f) ***Communications within MDEP***

A large majority of members have found the communications within MDEP to be effective and the guidance and input from the STC, PG, and other working groups to be useful, although improvements could be made to the MDEP public website and library.

Actions: MDEP will explore necessary changes to the MDEP Library to make it easier to use, and continue to encourage members to contribute information to the library.

g) ***Role of MDEP in the IAEA standard development***

Most MDEP members believe that MDEP products provide useful input to upgrade the IAEA safety standards, and that MDEP discussions are helpful to member reviews of IAEA draft standards. MDEP should be a complementary organisation to the international organisations aimed at creating generic standards and procedures such as the IAEA.

Action: MDEP will enhance cooperation with its IAEA counterparts to identify areas in which MDEP can provide useful input to the IAEA safety standards under development. The STC Chair met with IAEA representatives in June 2012 to better define the roles of MDEP and the IAEA.

h) ***Future of issue-specific working groups***

Many MDEP members believe that the work of the issue-specific working groups should eventually be transferred to another organisation such as CNRA, the IAEA, etc.

Action: The MDEP working groups will identify end users of their products. The working groups will identify completion strategies for the issue-specific working groups using currently established procedures regarding starting or stopping working group activities. Guidance will be included in the STC Guidance Document on Programme Plan formulations regarding identification of end users of working group documents and to encourage early interactions with these end users**.**

i) ***Future of design-specific working groups***

Both the internal and external responders believe that there is a benefit to maintaining some type of co-operative arrangements after one or more WG members completes its design review. Most members believe that the design specific working groups should continue at least until all members have completed the design review, and a large number also believed that the working group should continue throughout the construction oversight phase. This was supported by industry responders.

Action: Guidance will be included in the STC Guidance Document on Programme Plan formulations regarding the preference to continue design-specific working groups through the construction phase and to provide means to feedback back new design issues to the applicable MDEP countries regardless of the status of construction or operation**.**

j) ***Inclusion of Fukushima-related activities***

Most members endorse the current manner in which MDEP deals with Fukushima follow-up actions, including continuing discussion in the STC and the design-specific working groups. External participants believe that the MDEP design-specific working groups should ensuring that there are consistent conclusions coming from the different regulators at the end of the stress test evaluations or equivalent processes in other countries.

Actions:

- The STC will continue the current practice related to co-operation on Fukushima follow-up actions;
- The design-specific working groups will tackle Fukushima lessons learnt and report to the STC.

k) ***Inclusion of advanced reactor review activities in MDEP***

MDEP is not currently undertaking activities as documented in the ToR involving the "implementation of MDEP products to facilitate licensing of new reactors, including those being developed by the Generation IV International Forum," with an emphasis on the latter part regarding advanced reactor designs. A majority of the MDEP members agreed that MDEP should address advanced reactor topics.

Action: MDEP will follow the currently established processes regarding starting new working groups to address new designs (including advanced reactor and small and modular reactor issues).

l) ***Potential new work***

The self assessment indicated that there was significant interest by MDEP members in addressing new issues within MDEP. The two generic issues that ranked highest were Passive Safety Systems and Severe Accidents. The highest support for working on new designs and for participating in a design-specific working group was expressed for the mPOWER, ATMEA1, and APR1400 designs. A majority of the members responses indicated that MDEP should consider addressing advanced and small modular reactor issues.

The STC observes that the EPR working group has been very effective. This appears to be partly because international co-operation was started early in the evaluation process.

Action:

- MDEP will continue to include a relatively small number of MDEP topics and keep them closely connected to topics relevant to new reactor designs;
- MDEP will act quickly to approve the formation of new design specific working groups (consistent with the existing Rule of Three for forming design specific working groups).

m) ***Membership***

The self assessment found that external stakeholders strongly favor allowing more members. In addition, the MDEP members are generally supportive of opening membership, at various levels, to more participants.

Action: The MDEP PG will support increasing MDEP membership consistent with the existing guidance, and encourage participation in MDEP by any national regulators who are considering designs under MDEP review.

n) ***Participation***

More active participation from All MDEP countries in MDEP activities would benefit MDEP efforts to meet its goals and objectives.

Action: The Policy Group members were requested to provide encouragement and support to their staffs to actively participate in relevant MDEP work.

o) ***Internal operations***

The self assessment found that MDEP meeting frequency is appropriate, although resource and time restraints make travelling for meetings difficult sometimes.

Action: To facilitate broader participation by each regulatory organisation, the STC will consider holding one STC meeting per year in a different MDEP member country, and will consider on a case by case basis and in consultation with the NEA, holding working group meetings in other locations.