



Strålsäkerhets
myndigheten

Swedish Radiation Safety Authority

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Research

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Regulatory Approaches in
Nuclear Power Supervision

SSM perspective

Background

Between 2003 and 2005 the Swedish Nuclear Power Inspectorate (SKI) sponsored a study to better understand the benefits and difficulties of using various regulatory approaches for supervision of commercial nuclear power safety. At the time of the study little research had been published on the use and impact of different regulatory strategies. This is still the situation today.

The main purpose of this exploratory study was to contribute to a more systematic understanding of the experiences of nuclear regulatory staff when using different regulatory approaches. This type of information can facilitate the building of a better knowledge base on the conditions under which experts have found certain strategies to be more or less effective.

In the first study, a number of regulatory approaches were identified and defined by consulting with nuclear regulatory staff. Since the previous study was completed major changes have taken place in the nuclear industry worldwide. Long term operation (LTO), beyond the initial licenses, is planned in many countries. As a result of these plans, more attention needs to be given to aging management. In some countries, modernisations are also needed to allow longer periods of operating. Actions to further increase the terminal output in nuclear power reactors are underway in several countries. New reactors are being built and licensing processes are underway. Taken together, these conditions lead to significant new challenges for regulatory bodies. Although many regulatory organizations are being strengthened with additional resources in this situation, they need to continue developing and refining their strategies for their regulatory supervision in different functional supervision areas in order to conduct their regulatory activities as efficiently as possible.

Objectives

The objective of this follow-up study was to support SSM in further understanding regulatory approaches and how they can be combined as part of effective strategies. The survey was intended to assist SSM in identifying current standards, experiences, and practices in the regulation of nuclear power plants. The results will also be valuable for the participating authorities as well as other parties interested in nuclear regulatory supervision activities.

Results

In the more in-depth study, it was stressed that regulatory supervision is a dynamic process and that the approaches being examined in this survey were important tools, used iteratively and in combination to address complex cases. The effectiveness of any approach was linked to how appropriate it was to the specific characteristics of the case.

Many of the findings from the previous study were confirmed by the findings from the extended new study, including most of the benefits

and difficulties of different approaches. As found in the previous study, combinations of approaches were used across all the areas of regulatory supervision studied. The findings from the study show that the combinations of approaches depend on the nature of regulatory supervision. There is also a tendency to combine additional approaches as a functional area of regulatory supervision becomes more complex.

SSM will use the findings in order to achieve a regulatory supervision that is more effective and even more appropriate for purpose. In SSM's further development of its regulatory activities, approaches and strategies will be developed for various areas of regulatory supervision and be adapted to the nature of the areas and matters of regulatory supervision as well as their importance for safety.

The starting point of this work will be the discussion on the findings of the present study at the CNRA workshop on Regulatory Approaches and the Characteristics of an Effective Regulator, which will be held 28-30 October 2013 in Stockholm. The results from the workshop will be documented in a CNRA Green Booklet.

Need for further research

The two studies have contributed to a more systematic understanding of experience with different regulatory approaches and practices—their selection, their use, and their outcomes. However, there is a need for further research in the area. This includes the need to study how the results from the area of nuclear safety can be transferred to other related regulatory areas, such as radiation protection and security.

Project information

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This report concerns a study which has been conducted for the Swedish Radiation Safety Authority, SSM. The conclusions and viewpoints presented in the report are those of the author/authors and do not necessarily coincide with those of the SSM.

Content

Sammanfattning av rapporten	6
Report Summary	12
1. Introduction	17
1.1. Background and study goals	18
1.1.1. Method and findings from 2003-2004 study and 2004 workshop	20
Findings from the 2003/04 interviews.....	22
Workshop on findings from the 2003/04 study.....	22
1.2. Overview of the 2011/12 study and organization of this report.....	23
2. Research plan and implementation	26
2.1. Defining terms.....	26
2.1.1. Regulatory supervision.....	26
2.1.2. Approaches.....	27
2.1.3. Areas of supervision	27
2.2. Developing the questionnaire.....	29
2.2.1. Section I: Case study examples	30
2.2.2. Section II: Usual approach or combination of approaches	32
2.2.3. Section III: Approach definitions and usefulness	33
2.2.4. Response categories and requests for comments.....	33
2.3. Administering the questionnaire	33
2.4. Completing initial analysis	35
2.5. Meeting with participating agencies	35
2.6. Analysing written comments and discussion.....	36
3. General findings regarding the role of approaches in regulatory supervision	37
3.1. Regulatory supervision is a dynamic process	37
3.2. Approaches used in combination and described as tools.....	38
3.3. Approaches are complementary tools, not competing options	38
3.4. Approaches differed in emphasis but used/useful across all areas.....	39
3.5. Increase in the use of approaches	39
3.6. Circumstances often determine the approach(es) used, and effectiveness of outcomes	39
3.7. Resources, expertise requirements can be high regardless of approach	40
3.8. Prescriptive and education/influence approaches represent multiple tools.....	41
4. Follow up of 2003/04 findings	42
4.1. Benefits and difficulties of regulatory approaches	42
4.1.1. Prescriptive	43
4.1.2. Case-based and Facility-based	43
4.1.3. Outcome-based	43
4.1.4. Risk-based and Risk/hazard-based	44
4.1.5. Process-based.....	44
4.1.6. Self-assessment based	44
4.1.7. Education/influence approach	44
4.2. Use of approaches in regulatory supervision	45
4.2.1. Combinations of approaches used in all areas of supervision.....	45
4.2.2. Less reliance on a prescriptive recently, moving toward process-based with prescriptive for action/closure when necessary.....	46
4.2.3. Risk-based to prioritize for quality systems and plant design/modifications	46
4.2.4. Risk-based for plant design/modification: tension and balance....	46
4.3. Consequences of regulatory approaches	47

4.3.1. Primary responsibility for safety on licensee or regulator?	47
4.3.2. Clear requirements and expectations of licensee?	48
4.3.3. Important safety issues identified and addressed?	49
4.3.4. Level of expertise required of licensee? Of regulator?	49
4.3.5. Level of resources required of licensee? Of regulator?	50
4.3.6. Flexibility given licensee with usual approach(es)?	51
4.3.7. Do approach(es) affect public credibility regarding safety of licensee facility? Regarding regulator?	52
4.3.8. Do approach(es) affect safety culture of licensee? Of regulator?	53
4.4. 2003/04 report issues that emerged from examples regarding regulatory approaches	54
4.4.1. Resistance to changing regulatory approaches	54
4.4.2. Tension concerning use of risk analysis for regulatory decisions	54
4.4.3. Differences in interpretations of regulatory approach definitions	55
4.4.4. Importance of combinations of approaches for regulatory effectiveness	55
5. Circumstances that affect regulatory supervision	56
5.1. Experience	56
5.2. Characteristics of the industry	57
5.3. The use of contractors	57
5.4. Cooperation/agreement between regulator and licensee	58
5.5. Characteristics of the case: scope and early intervention	59
5.6. Performance by licensee and regulator	60
6. Usefulness, use, emphasis, and change of regulatory approaches: overall and within areas of supervision	61
6.1. Results across all areas of supervision	61
6.1.1. Overall usefulness of approaches	62
6.1.2. Overall use and emphasis of different approaches	63
6.1.3. Overall change in the use of approaches	64
New regulation	65
Increased use of self-assessment	65
Increased use of risk/hazard approach	66
Experience/learning by the agency	66
Increased use of outcome approach	66
An event led to the change	66
6.2. Evaluation of approaches in each area of supervision	66
6.2.1. Management Systems	67
6.2.2. Maintenance	69
6.2.3. Operations	71
6.2.4. Safety Culture	73
6.2.5. Plant Life Extension	75
6.2.6. Major Plant Modifications	77
6.2.7. Power Up Rates	79
6.2.8. Construction	81
7. Discussion of specific approaches	83
7.1. Prescriptive	83
7.1.1. Usefulness of approach	86
Clear and detailed requirements	86
Rigid, inefficient, and places responsibility for safety on the regulator	87
Exertion of regulatory authority	87
7.1.2. Use, emphasis, and change in use of prescriptive approach	88
7.2. Facility	88
7.2.1. Usefulness of approach	89
Overarching regulations	89

Both general and site specific approaches needed	90
Reasons for using a facility approach	90
7.2.2. Use, emphasis, and change in use of facility approach.....	91
7.3. Outcome	91
7.3.1. Usefulness of approach.....	91
Improving plant performance.....	92
Responsibility for performance placed with licensee	93
Difficulties of finding good outcome measures.....	93
7.3.2. Use, emphasis, and change in use of outcome approach.....	93
7.4. Risk/Hazard	94
7.4.1. Usefulness of approach.....	94
Using a risk/hazard approach to focus regulatory attention.....	94
Using a risk/hazard approach to improve safety performance.....	94
Difficulties with method used for risk/hazard based	95
7.4.2. Use, emphasis, and change in use of risk/hazard approach	96
7.5. Process	96
7.5.1. Usefulness of approach.....	96
Critical approach for safety management.....	97
Requires a high level of expertise	98
7.5.2. Use, emphasis, and change in use of process approach	98
7.6. Self-Assessment.....	98
7.6.1. Usefulness of approach.....	99
Promoting continuous improvement.....	100
Placing responsibility on the licensee.....	100
Should be used with other approaches and monitored by the regulator	100
7.6.2. Use, emphasis, and change in use of self-assessment approach	101
7.7. Education/Influence	101
7.7.1. Usefulness of approach.....	101
Key tool for regulators.....	104
Providing information	104
Requires a great deal of experience	104
Depends upon licensee acceptance	104
7.7.2. Use, emphasis, and change in use of education/influence approach.....	105
7.8. Responses to “Additional comments” and “Should other approaches to regulatory supervision be added?”	105
8. Summary and concluding remarks	107
8.1. Summary.....	107
8.2. Concluding Remarks	110
Appendix 1.....	113
Appendix 2	127
Appendix 3	129
Appendix 4	135
Appendix 5	137

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Acknowledgments

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Sammanfattning av rapporten

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- 40 **C p r i i p l p i u p t k m c f ' t g i r g t k p i ' q e j ' v k u { p ' l p p g d @** cw'o { pf ki j gvgp' kpg'j ct'i gpgtgm'i knki c'ntcx'wcp'uv@ngt'lpf kxkf wgm'ntcx'r °'xctlg'cp/ r@ i plpi 'wkt°p'f guu'ur gekknc'hqpuvwmkqp.'whqto plpi 'qej 'xgtmco / j gv'0Vku{pgp'lpkmcu'ugf cp'r °'cw'h3/4lc'w r 'j wt'f g'lpf kxkf wgm'ntcxgp' ghgtngxu0"
- 50 **T g u w n c v l p t k m c f ' t g i r g t k p i ' q e j ' v k u { p ' l p p g d @** cw'o { pf ki j gvgp'uv@ngt' u@ngtj guo °n'qej 'tguwncvntcx'w'u@ngtj guu{pr wpm'r °'cpr@ i plpi gp'qej " xgtmco j gvgp.'wcp'cw'i g'f wgrki ctg't°f 'gngt'x@ ngf plpi 'h3/4'j wt'f guc' o °n'qej 'tguwncv'unc'w r p°u0F gv'dnk'w r 'vni'vnu° pf uj cxctgp'cw'dg/ uv@ o c'j wt'o °ngp'qej 'tguwncv'unc'w r p°u0"
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xctk'cw'uko wgtc'hqtucw'f kcmi 'qo 'qrkc'cpi tgr r uu@v'h¼'km{p'i gpqo 'cw'
r °'gw'u{ ugo c'kum'u@v'uco r'kphqto c'kq'qo 'j wt'qrkc'cpi tgr r uu@v'cp/
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Huvudsakliga resultat

Tillsyn är en iterativ och dynamisk process som använder olika kombinationer av angreppssätt som redskap för att fånga in tillsynens komplexitet

Gzr gtvgtpc'uoqo 'f gmqi 'k'uwf lgp'qej 'kf g'wr r h34lcpf g'f kumwukqpgtpe'dgvq/ pcf g'cw'vkm{p'@'gp'f {pco kmlr tqeguu'qej 'cw'f g'cpi tgr r uu@v'uoqo 'w'pf gt/ u34ngu'k'uwf lgp'@'xkmi c'tgf uner OF guuc'cpx@f u'kgtcvkv'qej 'k'huo d'kpc'vqp' h34'cw'uxctc'b qv'qknc'vkm{pult'° i qtu'huo r igzkgv0Cpi tgr r uu@v'unc'ugu' uqo 'huo r igwgtcpf g'xgtm' i 'qej 'k'pv'uoqo 'huo pmwtgtcpf g'xgtm' i 0''

Alla angreppssätten tillämpades och bedömdes vara användbara

Cm'cpi tgr r uu@v'vkm@ r cf gu'qej 'dgf 3/4 f gu'xctc'cpx@f detc'cx'f g'nguc' r gtuqpgtpe'uoqo 'f gmqi 'k'uwf lgp'OT gp'vcmo @v'cpu' i 'f g'uxctc'p'f g'cw'cpx@f / plpi gp'cx'qknc'cpi tgr r uu@v'k'p'qo 'vkm{pgp'j cf g'34nc'OF gwc'nc'p'v'f c'r °'cw' cpx@f plpi gp'cx'qknc'cpi tgr r uu@v'@'o gt'g'vcdgtcv'kf ci 0'Vtqu'xctc'vqp'k' cpx@f plpi gp'qej 'k'i tef gp'cx'cpx@f detj gv'u'° tcr r qt'gtcf gu'cpx@f detj gv' h34'xctlg'cpi tgr r uu@v'k'p'qo 'uco vki c'vkm{puqo t° f gp'uoqo 'uwf gtcf gu'0''

Angreppssättens effektivitet har stark koppling till karaktären på tillsynsaktiviteten

Hcmqtgt'cx'dgv'f g'ng'h34'cpi tgr r uu@v'g'p'gh'gm'k'gv'xct'vkm'gzgo r gn'vkm' uv'pf uj cxctgp'qej 'o {pf ki j g'v'p'u'gt'ht'gp'j g'vgt.'h'° i cpu'u'ngt'j g'ud'gv'f g'ng.'" h34'v'q'p'f gv'o g'nc'p'vkm'v'pf uj cxctgp'qej 'o {pf ki j g'v'p'qej 'huo r g'v'p'p'j' qu' vkm'v'pf uj cxctgp'qej 'o {pf ki j g'v'p'OF g'uxctc'p'f gu'huo o g'p'vctgt'c'p'v'f g't'cw' uco vki c'cpi tgr r uu@v'h34'wu@v'gt'i qf c'ur g'ek'rk'um'v'p'unc'gt'qej 't'guwt'gt'j' qu' o {pf ki j g'v'p.'qej 'cw'pk'° p'r °'m'v'p'unc'gt'pc'qej 't'guwt'gt'pc'dgt'qt'r °'vkm{pu' h'° i qt'pcu'netcm@0Gp'unwuc'u'h'° p'f kumwukqpgtpe'qo 't'guwt'gt'xct'cw'gw' h'g'rc'm'ki v'x'c'lx'cpi tgr r uu@v'h34'gp'vkm{puc'm'k'kgv'rgf f g'vkm'34nc'v'd'g'j q'x'cx' t'guwt'gt'0''

En stor del av resultatet från studien som genomfördes under perioden 2003-2004 bekräftades av resultatet från studien 2011-2012

J vxwf f g'rgp'cx't'guwnc'v'g'h'° p'f gp'v'f ki ctg'uwf lgp'dgmt@ncf gu'kf g'p'pc'uwf l'g.'" vkm'gzgo r gn'x'cf 'i @ngt'h34'f g'rt'qej 'ux'° tki j g'vgt'x'kf 'vkm@ r plpi 'cx'qknc'cp/ i tgr r uu@v'cpx@f plpi gp'cx'cpi tgr r uu@v'x'kf 'vkm{p'qej '@gp'x'k'uc'cx'huo/ u'gn'x'gp'ugt'pe'uoqo 'h34'gt'cx'qknc'cpi tgr r uu@v'OF h34'f g'rt'pc'qej 'ux'° tki j g'vgt'pc' o gf'cpi tgr r uu@v'p'kf g'p'pc'uwf l'g'h'nc'p'ct'f g'uoqo 'cpi cxu'k'uwf lgp'h'° p'4225/42260''

- **Rt gunt k v k h34 gunt k c p f g' l p t k m p l p i 'c x' t g i n g t l p i 'q e j 'v k m { p ' ' F gp'j vxwf uc'm'ki c'h34'f g'rgp'o gf'f gwc'cpi tgr r uu@v'@'cw'f gv'@'v'f r'ki v' qej 'm'ct'v'h34'vkm'v'pf uj cxctgp'x'knc'ht'cx'uoqo 'i @ngt'qej 'f g'h34'x'p'plpi ct''**

uqo "hppu0F g'j wxwf ucmki c'ux°tki j gvgtpc"@"cw'cpi tgr r uu@w'@cw'f gp' i gt'gp" f gtc'cw'c'cpuxctgv'lt°p'vkmv°pf uj cxctgp"qej "cw'f gp'nt@gt'tgrvkv'uvqtc" tguwtugt'j qu'bo {pf ki j gvgp'qej "cw'u{uqo gv'ncp'drk'uvgn'qej "ux°t'cw'h34/ @f tc0

▪ **Cpi@ i plpi ulpt kmcf 't gi rgt lpi 'qej 'vkmf p''**

F gp'j wxwf ucmki c'h34f grgp"o gf "f gwc"cpi tgr r uu@w'@cw'f gp' i gt'gp" uv34tg'hgzkdkkgv'i gpqo "cw'htcxgp'cpr cuucu'vknif gv'kpf kxf wgm'hcngv0' F g'j wxwf ucmki c'ux°tki j gvgtpc"@"cw'cpi tgr r uu@w'@cw'f gp' i gt'gp" "wr r rxcu'uqo " i qf v'emki v'qej "drk'lpnq'pugmxgpv'k'htcxu@ncpf gv'r°'h'ncpcpf g'cpi@ i / plpi ct0F guuwqo "nt@gt'f gppc'utcvgi k'tgrvkv'uvqtc'tguwtugt'j qu'bo {p/ f ki j gvgp'h34'f g'kpf kxf wgm'ntcxcp'cu'plpi ctpc"qej "ugf cp'wr r h34/plpi / gp'k'vkmf p'gp"

▪ **T guwnc vlt kmcf 't gi rgt lpi 'qej 'vkmf p''**

F gp'j wxwf ucmki c'h34f grgp"o gf "f gwc"cpi tgr r uu@w'@cw'f gp' i gt'gp" uv°pf uj cxctgp'ul@x'cxi 34c'd@nc'u@w'v'cw'dgf tkc'xgtmco j gvgp'h34'cw' wr r p°'u@ngtj gwu° r'gp'qej "u@ngtj gwt guwncv'p0F g'j wxwf ucmki c'ux°tki / j gvgtpc'h34'bo {pf ki j gvgt'@"cw'k'gp'v'k'gtc"qej "u@nc'f g'bo °n"qej "t guwncv' ntcx'uqo "dgj 34u'h34'cw'u@ngtj gvgp'unc'wr r t@vj °m'cu'qej "ugf cp'k'vkmf / p'gp'j kvc'u@w'cw'h34'lc'wr r "qej "bo @c"bo qv'bo °r'gp0

▪ **T knlpt kmcf 't gi rgt lpi 'qej 'vkmf p' qej 'Hct c/ luncf glpt kmcf 't gi rgt lpi ''**

F gp'j wxwf ucmki c'h34f grgp"o gf "f guuc"cpi tgr r uu@w'@cw'htcxgp'ncp" uv@ncu'k'tgrv'k'p'vknit'knpkx°'t gur gmxxg'uncf gr qv'p'v'c'ri'qej "x'gp'k'p'k'nc" vkmf p'gp'ghgt'f gwc0'vkmf p'gp'h'nc'f @o gf "qr v'ko gtcu0F g'j wxwf ucmki c' ux°tki j gvgtpc"o gf "f guuc"cpi tgr r uu@w'@cw'cxi 34c'vknit'4'rik'ki j gvgp'j qu' t kux@f g'gt'k'p' u' "t kunc'pc'nf uo g'qf g'p'c't'gur gmxxg'o g'qf g'p'c'h34'x@f g'gt'k'p' cx'uncf gr qv'p'v'c'ngt' uco v'dgf 34o c'xknc'k'p'f c'v'uqo "ncp'ngt'd34'vknit / r cu0F guuc'cpi tgr r uu@w'd34."gp'ri v'f g'f g'nci c'p'f g'bo {pf ki j gugzr g'v'gt'p'c." f @h34'gp'f cu'v'p'x@f cu'k'hqo d'k'p'c'v'k'p'bo gf "cp'f tc"cpi tgr r uu@w0

▪ **Rt qegulpt kmcf 't gi rgt lpi 'qej 'vkmf p''**

F gp'j wxwf ucmki c'h34f grgp"o gf "f gwc"cpi tgr r uu@w'@cw'f gp' i gt'bo {p/ f ki j gvgp'gp'h34'f lwr cf "h34'uv° g'ng'qo "vkmv°pf uj cxctgp'u'xgtmco j gv'qej " xcf'uqo "r°xgt'net'f gppgu'u@ngtj gwuctd'gv'0F g'j wxwf ucmki c'ux°tki j gvgt/ pc'h34'bo {pf ki j gvgto gf "f gwc"cpi tgr r uu@w'@cw'f gh'k'p'k'gtc'f g'u@ngtj gw/ o °n'r °"q'rknc'p'kx°gt'k'gw'rg'f p'k'p' u' u' uqo "o qv'xknc'r tqegu'ugt'p'c"qej "f gtcu' gh'gm'k'k'kgv'unc'wx@f gtcu0F gwc'@"gp'hqo r hgz'wr r i k'x0"

▪ **Gi gpx@f g'gt'k'p' ulpt kmcf 't gi rgt lpi 'qej 'vkmf p''**

F gp'j wxwf ucmki c'h34f grgp"o gf "f gwc"cpi tgr r uu@w'@cw'f gp'k'uki "v'f r'ki / i 34'cw'f gv'r t'ko @c'u@ngtj gw'cpuxctgv'ri i gt'j qu'vkmv°pf uj cxctgp0F gp' j wxwf ucmki c'ux°tki j gvgp"o gf "f gwc"cpi tgr r uu@w'@cw'f gv'ncp' i g'f'ri " vtq'x@f ki j gv'j qu'c'mo @j gvgp'h34'bo {pf ki j gvgpu'ctd'gv'qej "d34'f @h34' c'p'x@f cu'k'hqo d'k'p'c'v'k'p'bo gf "cp'f tc"cpi tgr r uu@w0F guuwqo "dgj 34gt" o {pf ki j gvgp'ul@x'k'h0 r r'ki "qo h'cw'p'k'p' i gpqo h34'c'k'p' i °gp'f g'dgf 34o / plpi ct'cx't guwncv'p'ht°p'vkmv°pf uj cxctgp'u'gi gpx@f g'gt'k'p' uctd'gv'0F gwc" nc'p'nt@x'uvqtc't guwtugt0

- **R° xgtncpu'gngt'wldkf plpi ulptkncf 'b { pf ki j gvaxgt mco j gv"**
 Cpi tgr r u@wgv@'cpx@pf dcv'k'nao o wplnc'kqpgp'o gf "kmu° pf uj cxctg"
 qej "cmo @j gvgp0'Gp'ux°tki j gv'o gf "cpi tgr r u@wgv@'cw'f gv'cpvci rki gp"
 m@xt'j' ¾ "nao r gvgpu'qej 'i qf'gthctgpj gv'j qu'o { pf ki j gvgp'uco 'vcw'cp/
 i tgr r u@wgv'¾ wu@wgt 'kmu° pf uj cxctg'pu'ceegr vcpu0F gvc'@'gw'cp/
 i tgr r uu@w'uqo "gpf cu'd¾'cpx@pf cu'k'nao dlpckqpgp'o gf "cpf tc'tgi ngtlpi u"
 qej "kmu{ pucpi tgr r u@w'

Kd°f c'uwf lgtpe'htco nqo 'cw'qrknc'nao dlpckqpgt'cx'cpi tgr r uu@w'cpx@pf u"
 h¾'cw'wr r p°'o °ngp'o gf "kmu{ ppg'qej 'cw'f gp'r'tguntk'kxc h¾'guntk'kxcpf g"
 kptkmpkpi 'qhc'kmu@ r cu'h¾'cw'f'kmu° pf uj cxctg'cw'i gpqo h¾'c°'i @f gt"
 qej 'h¾'cxunw'cx'@gpf gp0H° p'uwf lgp'uqo 'i gpqo h¾'f gu'wpf gt'r g'kqf gp"
 4225/4226'h¾'f gu° wc'ht° i qt'wr r 'Kf gppc'uwf kg0H° i qtpc'j cpf rcf g'qo "nup/
 ugnxgpugt'xkf'kmu@ r plpi gp'cx'f g'qrknc'cpi tgr r uu@wgp'xkf 'kmu{p=° xgtncp"
 r °'xgo 'uqo 'vct'j wwf cpuxct'h¾'u@ngtj gvgp.'ntcxg'p'v'f rki j gv.'j wt'u@ngt/
 j gw'ht° i qt'h¾'gu.'p¾'x@pf ki c'ur gekrkuwmpuner gt.'tguwtucp'x@pf plpi . 'hgz kdk/
 rkgv'tqx@f ki j gv'j qu'cmo @j gvgp.'uco 'v'u@ngtj gwumwmt0Uxctgp'k'uwf lgp"
 cpv'f gt'cw'f guuc'nupugnxgpugt'xct'o gt'tgr'vgtcf g'knif gv'gpunkf c'kmu{ pu@
 tgpf gv'htco h¾'cm'kmu'kmu° pf uj cxctg'pu'qej 'o { pf ki j gvgpu'gthctgpj gvt'qej "
 h¾'j °ncpf gv'o gncp'kmu° pf uj cxctg'qej 'o { pf ki j gvgp.'@'kmu'lul@xc'cp/
 i tgr r uu@wgv'gmt'kmu'nao dlpckqpgp'cx'cpi tgr r uu@w'uqo "kmu@ r cf gu0"

Omständigheterna påverkar utfallet av tillsyn

Gw'cpvcr'qo u@pf ki j gvt'p@ pf gu'cx'f g'uxctcpf g'k'uwf lgp'qej "wpf gt'f ku/
 mwuukp'gt'pc'uqo "f g'two 'j qu'o { pf ki j gvt'pc0P° i tc'gzgo r gn'@'gthctgp/
 j gvt.'kpf wutkpu'gi puner gt.'cpx@pf plpi gp'cx'gpvtgr tgp¾'gt.'i tcf gp'cx'f kc/
 nqi 'o gncp'o { pf ki j gv'qej 'kmu° pf uj cxctg.'f gv'gpunkf c'hcngv'qej 'ghhgmkk/
 vvgp'j qu'kmu° pf uj cxctg'qej 'o { pf ki j gvt'0Qo u@pf ki j gvt'uqo "qhcuv"
 p@ pf gu'j c'uvqt'r °xgtncp'xct'gthctgpj gvgp'j qu'kmu° pf uj cxctg'qej 'o { pf ki /
 j gvgp'tgur gmkg'f tcf gp'cx'f knqi 'o gncp'kmu° pf uj cxctg'qej 'o { pf ki j gvgp0""

Kuwf lgp'dgvqpcf gu'i gpqo i °gpf g'xkmgp'cx'gthctgpj gvt'qej "h@f qo ct.'f gnu"
 p@'f gv'i @ngt'xcngv'cx'cpi tgr r uu@w'h¾'cw'j cpvgtc'gp'u@unkf 'ht° i c.'f gnu'p@"
 f gv'i @ngt'ghhgmkk'kmu@ r plpi 'cx'hgtc'cpi tgr r uu@w'k'kmu{ ppg0'Gthctgpj gv'
 xct'f gp'r °xgtncp'uhcmqt'uqo 'wr r i cxu'j c'uv¾'uw'dgv'f g'ng' h¾'unwt guwnc'gv'k'
 gw'gpunk'kmu{ pu@gpf g0'Xkmgp'cx'gthctgpj gv'j qu'kmu° pf uj cxctg.'gpvtgr tg/
 p¾'gt'qej 'o { pf ki j gvgp'h' hgu'htco 0"

Gp¾'r gp'f knqi 'o gncp'kmu° pf uj cxctg'qej 'o { pf ki j gvgp'cpu° i u'lp'xgtnc"
 r °'f gv'xcrc'c'cpi tgr r uu@wgv'p@'kmu{ putgr'vgtcf g'ht° i qt'j cpvgtcu'qej 'r °'f g"
 tguwtugt'uqo "dgj ¾ku0"

Vtg'qo t°f gp'uqo 'cpu° i u'j c'dgv'f cpf g'lp'xgtncp'r °'kmu{ p'g'pu'ghhgmkk'kgv."
 qc'xugw'xkmgv'cpi tgr r uu@w'uqo "kmu@ r cu.'drgx'v'f rki c'wpf gt'f kumwukp'gt'pc"
 o gf 'o { pf ki j gvt'pc'uqo 'f gmqi 'k'uwf lgp<"

- xkmgp'cx"@f co °ngpki "o {pf ki j gwu³4xplpi "qej "ntcxu@rplpi "
- xkmgp'cx'cw'o {pf ki j gvgp"@ "v f rki "o gf 'f g'h³4x@pplpi ct'uqo "uv@u'r °"
vku^o pf uj cxctgp"qcxugw'xkmgv'cpi tgr r uu@vgv'uqo "vm@ r cu"
- nqo o wplncvqpu/"gngt"uco xgtncp^hqto gtpc"uqo "cpx@f u'cx"o {pf ki /
j gvgp"ó"lphqto cvkq. "wdkrf plpi ."r °xgtncp"ngt"ht@ lcpf g"

F guuc"qo t °f gp"d³4"qemu° h³4lcu'wr r "qej "f kumwgtcu0'

Report Summary

Vj ku'tgr qt v'r t gupw'vj g' hpf kpi u'ltqo "c"4233 B4"uwwf { "ur qpuqt gf "d { " yj g'Uy gf kuj "Tcf k'v'kqp"Uchgv { "Cwj qtkv { "UO -0Vj g'r wtr qug"qh'vj g' uwwf { "y cu'vq"dgwgt"wpf gtucpf "yj g'wug. "dgpghku"cpf "f hkwkku"qh'f kh/ hgtgpv'tgi wrcvqt { "cr r tqcej gu'ht' tgi wrcvqt { "uwr gtxkukqp"qh'eqo o gtekn' pwerget' r qy gt "uchgv { 0Vj g'uwwf { "wugu'vj g't guwuu'ltqo "cpf "hmqy u'wr " qp" c' r tqce'v'ur qpuqt gf "d { "yj g'Uy gf kuj "P wergct "Rqy gt "Kpur gevqtcvg" *UMK'pqy "o gti gf "cu'r ctv'qh'UO +vj cv'y cu'eqo r rvgf "kp"4225 B6" *UMKT gr qt v'4227-59-0Vj g'uwwf { "y cu'kpvgp'kpcmf "gZR nqtcvqt { "kp" f g/ uki p"cpf "yj g't guwuu'uj qwf "dg'eqpukf gt gf "cu'kpr w'ht' hvt'vj gt' y qtm' tcvj gt' y cp' f ghpkxg' qweqo gu'Ur gekhe' i qcnu' y gt g' vq' uwxg { "tgi wrc/ vqt { "uch'cdqw'vj g' ghge'v'kpguu'cpf "eqpugs wpegu'qh'f khgtgpv'cr / r tqcej gu'vq' tgi wrcvqt { "uwr gtxkukqp"cpf "cdqw'vj g' wughwpguu'qh'vj g' cr r tqcej gu. "yj g'wug"qh'vj g' cr r tqcej gu. "cpf "yj g'ej cpi gu'kp'vj g'cr / r tqcej gu' cr r rkgf "vq' tgi wrcvqt { "uwr gtxkukqp"kp" gki j v'ctgeu'qh' tgi wrcvqt { " uwr gtxkukqp" < o cpci go gpv'u' ugo u. "o ckp'v'p'peg. "qr gtc'v'kpu. "uchgv { " eww'g. "r npv'v'kg"gz v'pukp. "o clqt' r npv' o qf kh'ec'v'kpu. "r qy gt "wr " tcvu. "cpf "eqpuv'w'v'kqp"

Ugxgp' cr r tqcej gu³ "vq' tgi wrcvqt" y gt g' gxcn'w'v'gf "d { "yj g' r ct'v'k' cpw'kp" yj g'4233 B4"uwwf { <

- Rtguetkr v'xg'"
- H'ek'v' / dcugf '"
- Qweqo g/ dcugf '"
- Tkun'kphqto gf "qt' j c| ctf / kphqto gf '"
- Rtqegu' / dcugf "
- Ugrh'cuuguu gpv' dcugf '"
- Kphw'p'eg' l'gf w'v'kqp'"

C"y tkwgp's wguv'kppc't g'y cu'wugf "vq' uwxg { "gZR gt w'ltqo "ci gpeku' tgi / wrcvki "pwerget' r qy gt "kp' h'xg' eqw'v'k' < Uy gf gp. "Ur ckp. "yj g' Wp'k'gf " Ucvu. "Ecp'c. "cpf "yj g' Wp'k'gf "M'kpi f qo 0Hh'v' / h'qwt' s wguv'kppc't gu' y gt g' t'gwtpgf "dgw' ggp' H'gd't wct { "cpf "Lwn { "qh'42340 H'qmy / wr "o gg'v' kpi u'y gt g' j' gf "cv'gcej "ci gpe { "vq' f' k'uewuu'vj g' k'pk'c'n't guwuu'qh'vj g' uwt / xg { "kp" Q'ev'q'dgt "cpf "P qxgo dgt. "42340"

Vj g'uwwf { "y cu'pqv'k'p'v'p'gf "vq' h'pf "qpg" o'dguo' cr r tqcej "qt' ugv'qh'cr / r tqcej gu'ht' tgi wrcvqt"qt' "vq' r tqf w'eg' r tq'qh'qh'vj g' gh'kece { "qh'cp { "qpg" cr r tqcej "qt' ugv'qh'cr r tqcej gu'OK' y cu'k'p'v'p'gf "vq' gpeqwtci g' f' km'j " cdqw' tgi wrcvqt { "cr r tqcej gu'cpf "vq' u' { ugo c'v'ecm { "eqm'ge'v'k'p'qto c'v'kqp"

.....
¹ See report for full definitions of these approaches.

cdqw'j qy 'f hgt g'pvt'gi w'vqt { 'cr r tqcej gu'ctg'wugf 'kp'qtf gt 'vq'dwxf 'c' dgwgt 'w'pf gtucpf kpi 'qh'v'j g'ko r ceu'qh'wukpi 'xctkqwu'cr r tqcej gu. 'ko / r tqxg'v'j g'vqni'cxckrdng'vq'tgi w'vqtu. 'cpf 'vq'ko r tqxg'eqo o wplecvkqp' cdqw'v'j gug'vqni'y kj kp'cpf 'cetquu'tgi w'vqtu0Vj g'tgr qt'v'wuo o ct'k' gu' tgr qpugu'cpf 'kf gp'v'k'gu'v'j go gu'cetquu'v'j g'tgr qt'v'gf 'g'zr g'k'p'egu'qh' g'zr g'tu'v'j cv'o c { 'r tqxkf g'kpuki j v'u'vq'tgi w'vqt { 'ci gpek'gu'kp'v'gto u'qh' uwr gtxk'qt { 'r tce'v'legu0''''

Key findings

Regulatory supervision is an iterative and dynamic process that uses combinations of approaches as tools to address the complexity of regulatory supervision

Vj g'zr g'tu'w'x'g { gf 'd { 'v'j g's w'v'k'p'p'c't'g'cpf 'k'p'en'w'f g'f 'k'p'f 'k'ue'w'uk'p'u' cv'o g'g'v'k'p'i u'w'g'ug'f 'v'j cv't'gi w'v'qt { 'uwr gtxk'k'qp'ku'c'f { pco k'e'r tqe'guu' cpf 'v'j cv'v'j g'cr r tqcej gu'd'g'k'p'i 'g'zco k'p'g'f 'k'p'v'j ku'w'x'g { 'y g't'g'ko r q't'cv'v' v'q'ni'w'ug'f 'k'g't'c'v'x'g'n { 'cpf 'k'p'eqo d'k'p'c'v'k'p'v'q'c'f'f't'g'u'u'v'j g'eqo r ng'z'k'f { 'qh' t'gi w'v'qt { 'uwr gtxk'k'qp'0Vj gug'cr r tqcej gu'y g't'g'r t'g'ug'p'v'gf 'cu'eqo r ng/ o g'p'v'c't { ô p'q'v'eqo r g'v'k'p'i ô y c { u'qh'o c'p'c'i k'p'i 't'gi w'v'qt { 'r tce'v'legu0''''

All of the approaches were used and considered useful

Cm'qh'v'j g'cr r tqcej gu'y g't'g'w'ug'f 'cpf 'eq'p'uk'f g't'g'f 'w'ug'h'w'id { 'v'j g'o cl'q't'k'f { 'qh't'g'ur q'p'f g'p'u'0Qx'g't'cm't'g'ur q'p'f g'p'u't'g'r q't'v'gf 'v'j cv'k'p'v'j g'k't'g'zr g't'k'p'eg' v'j g't'g'j c'f 'd'g'g'p'c'p'k'p'et'g'c'ug'k'p'v'j g'w'ug'q'h'v'j gug'cr r tqcej gu'k'p't'gi w'v'qt { 'r tce'v'leg. 'uwi i g'v'k'p'i 'v'j cv'v'j g'w'ug'q'h'v'j gug'cr r tqcej gu'j cu'd'ge'qo g'o q't'g' g'w'c'd'r'k'uj g'f 'q'x'g't'v'ko g'0C'n'j q'w'i j 'v'j g't'g'y cu'x'c't'k'c'v'k'p'k'p'v'j g'ng'x'g'n'q'h'w'ug' cpf 't'g'r q't'v'gf 'w'ug'h'w'p'g'u'u'q'h'ur g'ek'h'le'cr r tqcej gu'cet'quu'c't'g'cu'q'h't'gi w'v' / v'k'p'p.'v'j g't'g'y cu'w'q'o g'w'ug'cpf 't'g'r q't'v'gf 'w'ug'h'w'p'g'u'u'q'h'g'cej 'cr r tqcej ' y kj kp'g'cej 'qh'v'j g'g'k'i j v'c't'g'cu'q'h'uwr gtxk'k'qp'0'

The effectiveness and efficiency of any approach was tied to how appropriate it was to the specific characteristics of the case''

Vj g'cr r tqcej gu'w'ug'f 'cpf 'q'x'g't'cm'q'w'eqo g'qh'v'j g't'gi w'v'qt { 'uwr gtxk' uk'p'f'g'r g'p'f g'f 'q'p'v'j g'ej c't'ce'v'g't'k'v'k'eu'q'h'v'j g'ec'ug'ô k'p'en'w'f k'p'i 'v'j g'zr g/ t'k'p'eg'q'h'v'j g'h'eg'p'ugg'cpf 'v'j g't'gi w'v'qt. 'v'j g'uch'g'v { 'u'k'i p'k'h'ec'p'eg'q'h'v'j g' k'u'w'g. 'v'j g'ng'x'g'n'q'h'v'w'v'k'p'v'j g'h'eg'p'ugg'l't'gi w'v'qt 't'g'r'v'k'p'uj k'r. 'cpf 'v'j g' eqo r g'v'g'p'eg'q'h'v'j g'h'eg'p'ugg'cpf 'v'j g't'gi w'v'qt0E'qo o g'p'u'd { 't'g'ur q'p'f / g'p'u'w'i i g'ug'f 'v'j cv'c'm'cr r tqcej gu't'g's w'k't'g'zr g't'v'k'g'cpf 't'g'u'q'w't'eg'u'cpf ''

vj cv'vj g'hgxgnlf gr gpf u'qp'vj g'ur gekhle"ecug0Qpg'ko r rlec'vqp'qh'vj g'f ku/ ewuukqpu'qp'tguqwtegu'y cu'vj cv'ej qqulpi 'vj g'y tqpi 'cr r tqcej 'hqt'vj g' ekewo ucpegu'qh'vj g'ecug'kpetgcugf 'tguqwtg'tgs wkt go gpw0'

Many of the findings from the 2003/04 study were supported by the findings in the 2011/12 study

O quv'kpf kpi u'htqo 'vj g'gctrlgt'uwf { 'y gtg'uw r qtvgf 'd { 'vj g'4233 B4" uwf { 'kpenf kpi 'vj g'dgpg'ku'cpf 'f khlw'ngu'cuuqek'vgf 'y kj 'ur gekhle" cr r tqcej gu.'vj g'wug'qh'cr r tqcej gu'kp'tgi wrcvt { 'uwr gtxkukqp.'cpf 'uqo g' qh'vj g'eqpugs wpegu'cpf 'kuwgu'tgi ctf kpi 'vj g'wug'qh'f khtg'gpv'cr / r tqcej gu0"

Vj g'dgpg'ku'cpf 'f khlw'ngu'qh'vj g'cr r tqcej gu'tgr qtvgf 'd { 'tgr qpf / gpw'kp'vj g'4233 B4'uwf { 'y gtg'uko krc't'v'q'vj qug'tgr qtvgf 'd { 'tgr qpf / gpw'kp'vj g'4225 B6'uwf { . 'hqt'gzco r rg<

- Rtguetkr v'xg'cr r tqcej gu'j cxg'vj g'cf xcpvci g'qh'dgkpi 'erget'cpf 'vj g' f kucf xcpvci g'qh'dgkpi 'kphgz'kng0'vj g' { 'ctg'uqo g'ko gu'wugf 'v'q'gzgt'v' tgi wrcvt { 'cwj qtkv'0'
- Hekrkv' 'cr r tqcej gu'cmqy 'tgi wrcvtu'v'q'cf f tguu'wpls wg'kuwgu'cpf " ej ctcevt'ku'eu'qh'r rcpw.'dw'kp'o qu'ecugu.'tgi wrcvtu'r tghgt 'v'q'wug' qxgtcej kpi 'tgs wkt go gpw'cetquu'ne'gpuggu0'
- Qweqo g'cr r tqcej gu'gpeqwtci g'ne'gpuggu'v'q'ko r tqxg'r rcpv'r gt/ hqto cpeg'cpf 'r rceg'vj g'tgr qpukdkkv' 'hqt'uchgv' 'y kj 'vj g'ne'gpuggu0' Qweqo g'o gcuwtgu.'j qy gxgt.'ctg'qhwgp'f khlw'v'q'kf gpv'kh'0'
- Tkunlj c' ctf 'cr r tqcej gu'hqewu'tgi wrcvt { 'cwgp'v'qp'qp'ctgcu'qh' j ki j gt'tkun'cpf 'j c' ctf 'cpf 'y gtg'uggp'cu'ko r tqxkpi 'uchgv' 'r gthqt/ o cpeg00 gy qf u'hqt'tkun'cpf 'j c' ctf 'cpcn'uku'j cxg'ko kcv'qpu'vj cv' ctg'uqo g'ko gu'qxgtr'qngf 'cpf 'ecp'tguwv'kp'uqo g'ctgcu'tgegkxkpi " rkwr'qt'pq'cwgp'v'qp0'
- Rtqegu'cr r tqcej gu'ctg'etk'lecn'hqt'kf gpv'kh' kpi 'ng' { 'grgo gpw'hqt" uchgv' 'o cpci go gpw0C'f khlw'v' 'y kj 'r tqegu'cr r tqcej gu'ku'vj g' eqo r ngz'kv' 'qh'f gh'kpi 'cpf 'gxc'w'v'kpi 'r tqegu'gu0'
- Ugrh'cuuguu gpv'cr r tqcej gu'y gtg'uggp'cu'r tqo q'kpi 'eqp'v'pw'wu" ko r tqxgo gpv'd { 'ne'gpuggu'dw'uj qwf 'pqv'dg'c'ucpf/cm'pg'cr / r tqcej . 'uj qwf 'dg'o qpkq'gf 'd { 'vj g'tgi wrcvt.'cpf 'o c' { 'pqv'j cxg' etgf kdkkv' 'y kj 'vj g'r wdrke0"
- Gf wec'v'qp'kph'w'peg'ku'wughw'lp'k'v'qf welpi 'pgy 'r tqi tco u'cpf " eqo o wplec'v'kpi 'y kj 'vj g'ne'gpugg'cpf 'vj g'r wdrke0'f khlw'ngu'kp/ enf g'ku'r quukdn' 'tgs wkt kpi 'c'f tgc'v'f gcn'qh'tgi wrcvt'gzr g'k'p'eg" cpf 'ku'f gr gpf kpi 'wr qp'ne'gpugg'ceegr wpegu0'

Tgur qpf gpw'kp'dqj 'uwf lgu'pqvf 'vj cv'cr r tqcej gu'y gtg'wugf 'kp'eqo / dlpcvkqp'vq'cej lxxg'tgi wrcvt { 'i qcn'cpf 'vj cv'c'r tguetk vxg'cr r tqcej " y cu'wugf 'hqt'cevqpp'cpf 'tguqmwkqp0Gki j v'ur gekhe's wgunqpu'tgi ctf kpi " vj g'eqpugs wpegu'qh'tgi wrcvt { 'cr r tqcej gu'f gtxgf 'Itqo 'vj g'4225126" uwf { 'y gtg'kpenf gf 'kp'vj g'4233134'uwf { <'mewu'qh'r tko ct { 'tgur qpuk/ dkrk\ 'hqt'uchgv\ . 'erctk\ 'qh'tgs wkt go gpw. 'tguqmwkqp'qh'uchgv\ 'kuwgu. " gZR gtvug'tgs wkt gf . 'tguqwt egu'wugf . 'hgz kdkrk\ . 'r wdne'et gf kdkrk\ . 'cpf " uchgv\ 'ewmwg0'kpi" i gpgtcn'eqo o gpw'uw i guvf 'vj cv'vj gug'eqpugs wpe/ gu'y gtg'o qtg'tgrcvf 'vq'vj g'ej ctcevgtkukcu'qh'vj g'ecugô gur gekcm\ 'vj g" gZR gtlkpeg'qh'vj g'hkpgugg'cpf 'vj g'tgi wrcvt'cpf 'vj g'tgrcvkpuj kr 'dg/ vy ggp'vj g'hkpgugg'cpf 'vj g'tgi wrcvtô vj cp'vq'vj g'cr r tqcej "qt'eqo dk pcvkqp'qh'cr r tqcej gu'wugf 0"

Circumstances affect the outcomes of regulatory supervision

C'pwo dgt'qh'ekewo ucpegu'y gtg'pqvf 'kp'eqo o gpw'd { 'tgur qpf gpw' vq'vj g's wgunqppctg'cpf 'kp'vj g'f kuewukqpu'cv'ci gpekgu0Vj gug'kpenf gf " gZR gtlkpeg. 'ej ctcevgtkukcu'qh'vj g'lpf wnt { . 'vj g'wug'qh'eqpvtcevqtu. 'eq/ qr gtcvkqp'cpf 'ci tgggo gpv'dgy ggp'vj g'tgi wrcvt'cpf 'vj g'hkpgugg. 'ej ct/ cevgtkukcu'qh'vj g'ecug'cpf 'vj g'r gthqto cpeg'rgxgn'qh'hkpgugg'cpf 'tgi w rcvtu0Vj g'ekewo ucpegu'vj cv'y gtg'o quv'qh'gp'o gpvkppgf 'cu'j cxkpi "c" uki pkkpcpv'ko r cev'y gtg'gZR gtlkpeg'qh'vj g'hkpgugg'cpf 'vj g'tgi wrcvt'cu' y gm'cu'eqqr gtcvkqp'cpf 'ci tgggo gpv'dgy ggp'vj g'hkpgugg'cpf 'vj g'tgi w rcvt0""

Vj g'ko r qtcpeg'qh'gZR gtlkpeg'cpf 'rguqpu'hgctpgf 'y cu'go r j cuk gf " vj tqwi j qw'vj g'eqo o gpw'd { 'tgur qpf gpw. 'dqj 'kp'tghgtpeg'vq'vj g" ej qleg'qh'cr r tqcej 'wugf 'vq'cf f tgu'c'r ctvewrct'kuwug'cpf 'kp'tghgtpeg" vq'vj g'ghgevxg'ko r ngo gpvkqp'qh'cr r tqcej gu'kp'tgi wrcvt { 'r tcevleg0' GZR gtlkpeg'y cu'vj g'ej ctcevgtkukcu' b quv'qh'gp'o gpvkppgf 'cu'c'ekewo / ucpeg'vj cv'y qwf 'j cxg'chgevgf 'vj g'qweqo g'qh'vj g'ecug0Vj g'ko / r qtcpeg'qh'hkpgugg. 'eqpvtcevqt. 'cpf 'tgi wrcvt'gZR gtlkpeg'y cu'pqvf 0""

Vj g'rgxgn'qh'eqqr gtcvkqp'cpf 'ci tgggo gpv'dgy ggp'vj g'hkpgugg'cpf 'vj g" tgi wrcvt 'y cu'o gpvkppgf 'cu'kphwgpelkpi 'vj g'cr r tqcej 'ugrgevgf 'vq'cf / f tgu'c'tgi wrcvt { 'eqpegtp'cpf 'cu'j cxkpi "c'utqpi 'ko r cev'qp'vj g'tg/ uqwt egu'wugf 0""

Vj tgg'vqr leu'o gpvkppgf 'cu'j cxkpi "c'uki pkkpcpv'ko r cev'qp'vj g'ghge/ vxgpguu'qh'tgi wrcvt { 'r tcevlegô tgi ctf rguu'qh'vj g'cr r tqcej 'wugf ô go gti gf 'f wtkpi 'vj g'f kuewukqpu'cv'tgi wrcvt { 'ci gpekuc"<

- vj g'lo r qtwpeg"qh'vj g'cr r tqr tkvg"ngxgn'qh'tgi wrcvt { "cwj qtk\ "cpf "
- vj g'lo r qukkqp"qh'o cpf cvqt { "tgs wkt go gpw"
- vj g'lo r qtwpeg"qh'r tqxkf kpi "engct'tgi wrcvt { "gZR gevckqpu'tgi ctf/
nguu"qh'vj g'cr r tqcej "wugf "
- vj g'v{r g"qh'eqo o wpleckqp"qt "kpgtceckqp"gpi ci gf "kp'd { "vj g'tgi wrc/
vt { "ci gpe { ô kphqto cvkqp."gf weckqp."kphwpeg"qt'r tqo qvkqp"

Vj gug"vqr leu"o gtk'cf f kkpncnt'gxkgy "cpf "f kuewuukqp0'

"

"

1. Introduction

Vj ku'tgr qtvr t gupw'vj g' hpf kpi u'htqo "c"4233 B4"uwf { "ur qpuqtgf "d { " yj g"Uy gf kuj "T cf k'v'k'p"Uchgv{ "Cwj qt kv{ "UO +0"Vj g'r wtr qug'qh'yj g' uwf { "y cu'v'q'dgwgt "w'pf gt u'v'cpf "yj g'wug. "d'g'p'g'h'ku"cpf "f h'k'k'w'm'k'g'u"qh'f k'h/ hgt gp'v't gi w'v'qt { "cr r tqcej gu' hqt "t gi w'v'qt { "uwr gtx'k'k'p"4"qh'eqo o gt/ ek'n'p'w'engct "r qy gt "uchgv{ 0"Vj g'uwf { "wugu'yj g't'g'u'w'm'u'htqo "cpf "h'q'm'y u" w' "qp" c"r t'q'lg'v'ur qpuqtgf "d { "yj g"Uy gf kuj "P w'engct "R'qy gt "k'p'ur g'v'q't'c'v'g" *UMK'p'qy "r ctv'qh'UO + "yj cv'y cu'eqo r ng'v'f "k'p"4225 B6" *Gzr g't'k'p'eg" y kj "T gi w'v'qt { "U't'c'v'gi k'g'u'k'p" P w'engct "R'qy gt "Q'x'g't'uki j v'UMKT gr qt v' 4227-59+50"

Ur gek'h'ecm{ "UO "cungf "yj cv'yj g"4233 B4"uwf { "m'q'm'c'v't gi w'v'qt { " r t'c'e'k'g'u'k'p" g'k' j v'c't'g'c'u'q'h'uw' g't'x'k'k'p"v'q<

- uwtxg{ "gzr g't'k'p'eg"qh't gi w'v'qt { "u'c'h'i't gi c'tf k'pi "yj g"gh'g'v'x'g'p'g'u"qh' f h'g't'g'p'v'cr r tqcej gu"
- uwtxg{ "gzr g't'k'p'eg"qh't gi w'v'qt { "u'c'h'i'y kj "t gi c'tf "v'q"y j g'yj gt "yj g" cr r tqcej gu'wugf "ch'gev"
 - y j q "c'ng'u'r t'k'o ct { "t'g'ur q'p'uk'd'k'k'v{ "h'q't "uchgv{ "
 - j qy "e'ngct "yj g't'gs w'k't go gp'u'c'p'f "gzr g'v'c'v'k'p'u'c't'g"v'q "h'k'g'p'ug'g'u"
 - gzr g't'v'ug't'gs w'k't gf "qh'h'k'g'p'ug'g'u"cpf "t gi w'v'qt u"
 - t'g'u'q'w't'g'u't'gs w'k't gf "qh'yj g'h'k'g'p'ug'g'u"cpf "yj g't'gi w'v'qt u"
 - h'g'z'k'd'k'k'v{ "i k'g'p"v'q "h'k'g'p'ug'g'u"
 - r w'd'k'e "e't'g'f k'd'k'k'v{ "qh'yj g'h'k'g'p'ug'g'u"cpf "yj g't'gi w'v'qt u"
 - uchgv{ "e'w'm'g"qh'yj g'h'k'g'p'ug'g'u"cpf "yj g't'gi w'v'qt u"
- k'f g'p'v'h' { "yj g'cr r tqcej gu'wugf "q'x'g't'c'm'c'p'f "k'p" g'c'ej "c't'g'c"qh'uw' g't'x'k' u'k'p"
- k'f g'p'v'h' { "ej c'pi gu'k'p"yj g'w'ug"qh'f h'g't'g'p'v'cr r tqcej gu'c'p'f "yj g't'g'c'u'q'p'u" h'q't "yj qug'ej c'pi gu"

C'y t'k'w'g'p's w'g'u'k'p'p'c'k't'g'q'p't'gi w'v'qt { "cr r tqcej gu'y cu'f g'x'g'm'r gf "c'p'f " c'f o k'p'k'v'g't'gf "v'q" c'f f t'g'u"yj g'ug's w'g'u'k'p'u" *ugg" C'r r g'p'f k'z "3" h'q't "c" e'q'r { "qh' yj g'eqo r ng'v'g's w'g'u'k'p'p'c'k't'g"0" Gzr g't'v'ht'qo "h'x'g" e'q'w'p't'k'g'u<"Uy gf gp." Ur c'k'p. "yj g'W'p'k'g'f "U'c'v'g'u "E'c'p'c'f c."c'p'f "yj g'W'p'k'g'f "M'k'p'i f'q'o "r ct'v'k'c'v' g'f "k'p" yj g'uwtxg{ 0" h'k'v{ /h'q't's w'g'u'k'p'p'c'k't'g'u'y g't'g't'g'w't'p'g'f "d'g'y g'g'p" H'g'd/ t'w'c't { "c'p'f "L'w'q" "qh'42340" k'p" c'f f k'k'q'p"v'q "yj g'ug"76" s' w'g'u'k'p'p'c'k't'g'u. "37" o go d'g't'u'qh'yj g'k'p'v'g't'p'c'v'k'p'c'n' C'v'q'o k'e" G'p'g't'i { "C'i g'p'e { " *K'G'G'c" + "k'p'v'g/ i t'c'v'g'f "T gi w'v'qt { "T'g'x'k'g'y "U'g't'x'k'g" *K'U" + "o k'u'k'q'p"v'q "Uy gf gp" k'p" H'g'd/ t'w'c't { "qh'4234" h'k'g'f "q'w's w'g'u'k'p'p'c'k't'g'u"0" k'p" c'f f k'k'q'p"v'q "yj g's w'g'u'k'p'p'c'k't'g'uwtxg{ ."o g'g'v'k'p'i u'y g't'g'j g'f "c'v'g'c'ej "qh'yj g'c'i g'p'k'g'u'r ct'v'k'c'v'k'p'i "

2: Regulatory supervision is defined in section 2.1.1 and includes all areas of regulatory oversight.
3: Available at <http://www.stralsakerhetsmyndigheten.se>
4: These questionnaires did not include the identities, experience, or agencies of the respondents. The data available from these questionnaires was examined to see if there were any significant differences in the approaches used. In addition, the case studies from these questionnaires were used in the qualitative analysis.

kp'vj g'4233 B4'uwf {0T guwnu'htqo 'vj g'76's wgu'kappck'gu'cpf 'vj g'o gg'v
kpi 'f'kuewukqpu'y gtg'cpcn'ugf'cpf'ctg'r t'gugpv'kf'kp'vj ku'tgr qt'v0"
"

Nkng'vj g'4225 B6'uwf {.'vj g'4233 B4'uwf {'y cu'g'zr'rt'cvqt {'kp'p'cw'wt'g'0'
K'f'k'f'pqv'v'gu'v'j {r'q'vj'gugu'cpf'y cu'p'q'v'g'zr'ge'v'f'v'q'r'q'f'w'eg'r't'q'q'h'q'h'v'j'g'
gh'ke'ce {'q'h'c'p {'r'ct'v'k'w'rt'c'r'r't'q'cej'q't'ug'v'q'h'c'r'r't'q'cej'gu'0'V'j'g't'gr'qt'w'
uwo o'ct'k'g't'g'ur'qp'ugu'cpf'k'f'g'p'v'h' {'vj'go'gu'c'et'qu'u'vj'g't'gr'qt'v'f'g'zr'g't'k'
g'p'egu'q'h'g'zr'g't'w'vj'cv'o'c {'r't'q'x'k'f'g'k'p'uki'j'w'v'q't'gi'w'rc'v'qt {'c'i'g'p'el'gu'y'k'j'
t'gi'ct'f'v'q'u'w'r'g't'x'ku'qt {'r't'c'v'k'eg'u'0"

1.1. Background and study goals

Vj g'l'qd'q'h'p'w'eng'ct'r'q'y'g't'g'i'w'rc'v'qtu.'v'q'cu'uw't'g'v'j'g'uch'g'v'q'h'v'j'g'p'w'eng'ct'
k'p'f'w'ut {'.'ku'e'q'o'r'ng'z'0'V'j'g'c'r'r't'q'cej'gu'w'ug'f'd {'t'g'i'w'rc'v'qtu'o'w'w'v't'g'ur'q'p'f'
v'q'u'w'ej'f'c'e'v'qtu'cu'vj'g'nc'y'u'c'r'r'k'ec'd'ng'v'q'vj'g'k'p'f'w'ut {'.'vj'g'ew'w'w'g'q'h'v'j'g'
eq'w'p't {'c'p'f'vj'g'k'p'f'w'ut {'.'vj'g'ge'q'p'q'o {'.'ew't'g'p'v'g'ej'p'q'm'i {'.'c'p'f'vj'g'
j'ku'v'qt {'q'h'v'j'g'k'p'f'w'ut {0T'ge'q'o'o'g'p'f'c'v'k'q'pu'ht'q'o't'g'i'k'p'c'n'c'p'f'k'p'v'g't'p'c/
v'k'p'c'n'eq'q'r'g't'c'v'k'q'p.'u'w'ej'cu'Y'GP'TC.'EP'TC'c'p'f'K'G'G'c'nu'j'c'x'g'c'p'
k'o'r'c'ev'q'p'p'c'v'k'p'c'n't'g'i'w'rc'v'qtu'0"
"

T'g'i'w'rc'v'k'q'p'ku'c'f' {p'c'o'le'g'p'v'g't'r't'k'ug'c'p'f't'g'i'w'rc'v'qtu'p'g'g'f'v'q'q'u'v'j'c'v'c'n/
n'q'y'vj'go'v'q'o'gg'v'ew't'g'p'v'ej'c'm'g'p'i'gu'c'p'f'v'q'c'f'c'r'v'q'ej'c'p'i'gu'k'p'r'q'rk'k'
e'c'n'c'p'f'ng'i'c'n'o'c'p'f'c'v'g'u.'ew'w'w'g'u.'ge'q'p'q'o {'.'c'p'f'v'g'ej'p'q'm'i {0K'f'c'f'f'k'
v'k'q'p.'vj'g' {'o'w'w'v't'c'em'c'p'f't'g'ur'q'p'f'v'q'ej'c'p'i'gu'k'p'vj'g'eq'p'f'k'k'q'p'c'p'f'
o'c'p'c'i'go'g'p'v'q'h'p'w'eng'ct'k'p'w'c'm'v'k'q'pu'0T'g'i'w'rc'v'qtu'j'c'x'g'v'q't'g'ur'q'p'f'v'q'
vj'g'ug'ej'c'p'i'gu's'w'k'em'f'.'gh'k'ek'p'v'f'.'c'p'f'gh'g'ev'k'x'g'n'0'
"

Vj g'eq'p'v'g'z'v'q'h't'g'i'w'rc'v'k'q'p'ku'p'q'v'vj'g'q'p'n'vj'k'p'i'vj'c'v'o'c'ng'u't'g'i'w'rc'v'qt' {'
u'w'r'g't'x'k'uk'q'p'f'k'h'k'ew'n'o'vj'g't'g'c't'g'f'k'h'k'ew'n'k'g'u'v'j'c'v'c't'g'k'p'j'g't'g'p'v'k'p'vj'g'l'qd'
q'h't'g'i'w'rc'v'qt'0'Q'p'g'q'h'v'j'g'ug'ku'vj'g'q'p/i'q'k'p'i'v'g'p'uk'q'p'k'p'g'u'w'c'd'k'uj'k'p'i'vj'g'
d'q'w'p'f'c't' {'d'g'y'g'g'p't'g'i'w'rc'v'qt' {'t'g'ur'q'p'uk'd'k'k'k'g'u'ht'uch'g'v' {'c'p'f'k'p'f'w'ut' {'
t'g'ur'q'p'uk'd'k'k'k'g'u'ht'uch'g'v' {0H'q't'g'z'c'o'r'ng.'t'g'i'w'rc'v'qtu'o'w'w'v'd'c'r'c'p'eg'vj'g'
p'g'g'f'ht'ng'eg'p'ug'g'ng'z'k'd'k'k'v'v'q'et'g'c'v'g'uch'g'q'r'g't'c'v'k'q'pu'y'k'j'vj'g'p'g'g'f'ht'
vj'g't'g'i'w'rc'v'qt'v'q'g'u'w'c'd'k'uj' 'er'c't'k'v' {'c'p'f'ug'v't'g's'w'k't'go'g'p'u'c'p'f'u'w'c'p'f'c't'f'u'
vj'c'v'f'gh'k'p'g'r'g't'g'q't'o'c'p'eg'g'z'r'g'ev'c'v'k'q'pu'0'k'p'r'c'c'ev'k'eg'vj'ku'o'g'c'p'u'k'p'f'k'p'i'c'
d'c'r'c'p'eg'd'g'y'g'g'p'ö'w'p'f'g't/ur'g'ek'h'k'ek'v'ö.'y'j'k'ej'ec'p'ng'c'f'v'q'eq'p'h'w'uk'q'p'c'p'f'
k'p'eq'p'uk'v'g'p'e' {'k'p'o'q'p'k'q't'k'p'i'ng'eg'p'ug'g'u.'c'p'f'ö'q'x'g't/ur'g'ek'h'k'ek'v'ö.'vj'c'v'ec'p'
d'g'eq'o'g'k'p'h'ng'z'k'd'ng'ô'g'f'w'ek'p'i'vj'g'c'd'k'k'v'v'q't'g'ur'q'p'f'v'q'p'g'y'k'p'h'q't'o'c'v'k'q'p'
c'p'f'v'g'ej'p'q'm'i {ô'c'p'f'vj'c'v'o'c' {'w'p'k'v'g'p'v'k'q'p'c'm'f' 'o'q'x'g't'g'ur'q'p'uk'd'k'k'v' 'ht'
uch'g'v'f'ht'q'o'ng'eg'p'ug'g'u'v'q'vj'g't'g'i'w'rc'v'qt'0'C'p'q'v'g't'f'k'h'k'ew'n'c'ur'g'ev'q'h't'g'i'w'
rc'v'k'q'p'ku'o'c'k'p'v'k'k'p'i' 't'g'i'w'rc'v'qt' {'k'p'f'g'r'g'p'f'g'p'eg'c'p'f'c'w'q'p'q'o'q'w'u'l'w'f'i/
o'g'p'v'y'j'k'ng'y'q't'n'k'p'i' 'er'ng'ug'n'f'y'k'j'ng'eg'p'ug'g'u'c'p'f't'g'n'f'k'p'i'q'p'vj'go'cu'c'
o'c'l'q't'u'q'w't'eg'q'h'k'p'h'q't'o'c'v'k'q'p'c'd'q'w'q'r'g't'c'v'k'q'pu'0T'g'i'w'rc'v'qtu'o'w'w'v'c'nu'q'
o'c'k'p'v'k'k'p'c'y'c't'g'p'g'u'q'h'v'j'g'f'k'h'g't'g'p'eg'u'k'p'vj'g'r't'k'o'c't' {'i'q'c'n'u'q'h'v'j'g't'g'i'w'
rc'v'qt'c'p'f'vj'g'k'p'f'w'ut {0'Y'j'k'ng'vj'g't'g'i'w'rc'v'qt'ö'u'r't'k'o'c't' {'i'q'c'n'k'u'r'w'd'k'e'
uch'g'v'f'ö'ht'vj'g'ng'eg'p'ug'g'u'vj'g'r't'k'o'c't' {'i'q'c'n'k'u'v'q'r't'q'f'w'eg'r'q'y'g't'c'v'c'
r't'q'h'k'0'U'ch'g'v'f'ku'c'p'g'eg'u'uct' {'d'w'p'q'v'u'w'h'k'ek'p'v.'eq'p'f'k'k'q'p'ht'vj'g'ng'eg'p/

ugg"vq"cej kxg"vj cvl qct0J gpeg. "vj g'tgi wrcvt"cpf "vj g'fkegpugg"o c {"
j cxg'f khtgtpv'etkgtk'hqt "öy j cv'ku'uchg"gpqwi j Aö"
"

Kp"vj g'hceg"qh"vj gug"cpf "qvj gt"ej cmgpi gu. "tgi wrcvtu"ctg"eqphtqpvgf "
y kj "hpf kpi "tgrkcdng"cpf "ghgevkxg'r tcevegu"vq"cuwrg'uchgv{0Kp"fxgr
qr kpi "vj gug'r tcevegu. "vj g{"pggf "vq"ej qqug"cr r tqcej gu"vj cv'ecp"cf f tguu"
ur gekke"kuwgu0Hqt"gzco r ng. "kp"qtf gt"vq"r tqo qvg'uchgv{. "tgi wrcvt {"
ci gpekgu"pggf "vq"ugngev"cr r tqcej gu"vq"vug"kp"vj gkt "tgi wrcvt {"r tcevegu"
vj cv'j gr "vq"o clpv'kp"qr gp"ej cpgnu"qh'eqo o wplecv'kp"cpf "gpuwrg"
emtkv'qh'kpvgp0J qy gxgt. "vj g'pcwtg"qh"vj g'tgrv'kpj k "dgy ggp'r ct/
vewrt "tgi wrcvt {"r tceveguler r tqcej gu"cpf "vj gug"qweqo gu'ku'pqv'cn
y c {"u'erget0"
"

Vj ku'o cngu'k'lo r qtvcv'hqt "tgi wrcvtu"vq"dg"lpvgpv'kpcn'cpf "vj qwi j vhw'
kp"vj gkt "r tceveguo pqv'qpn' "vq"eqpukf gt"j qy "vj g {"o c {"chgevr'ncpv'
uchgv {"f kgevn {"dw'cnuq"vj gkt "kpf kgevg'ghgevu. "uwej "cu"vj gkt "ghgevr'qp"
uchgv {"ewmwg0Cnj qwi j "tgi wrcvtu"j cxg"o cp {" {"gctu"qh'gZR gtkgpeg"kp"
wukpi "xctkqwu"cr r tqcej gu"cpf "r tcevegu'hqt "f khtgtpv'v{r gu"qh'uchgv {"
kuwgu. "o wej "qh"vj ku'y gcnj "qh'gZR gtkgpeg"j cu'uc {"gf "y kj kp"ci gpekgu"
cu'r ctv'qh'gxgt {"f c {"y qtn0Cnj qwi j "tgi wrcvt {" "uchh'qh'v'p'r tgu'p'vj gkt"
gZR gtkgpeg"y kj "tgi wrcvt {" "uwr gtxkukp"cv'lpvgt'p'v'kpcn' b ggkpi uo
kpenf kpi "vj g"cr r tqcej gu"cpf "r tcevegu"vugf o "vj g"Uy gf kuj "P wengct"
Rqy gt "kpur gevqtcvg"UMK"y cpvgf "vj ku'kphqto cv'kqp"vq"dg"kpvgi tcv'f "kpq"
c"u'uggo cv'k'q'q'ncv'r tcevegu"cetquu"eqwv'v'k'gu0Vq"vj ku'gpf. "UMK"ur qp/
uqtgf "c"uwf {"vq"i cvj gt "kphqto cv'kqp"cdqwu"cr r tqcej gu"vugf "d {" "pwengct"
tgi wrcvtu'hqt "tgi wrcvtu"qh'r qy gt "r r'p'v'0kphqto cv'kqp"eqngev'kqp"tqo "
vj ku'uwf {"y cu'eqo r ngvgf "kp"4225. "vj g'tguwmu"y gtg"cpn'ugf "cpf "c"
y qtmj qr "y cu'j grf "kp"4226. "cpf "vj g'tguwmu"y gtg'r wdrkuj gf "kp"42270Kp"
4233"vj g"Uy gf kuj "Tcf kcv'kqp"Rtqgevkqp"Cwj qtkv {" "UUO + "kpkkcv'f "c"
uwf {"vq"i gvgto kpg"vj g'ewtgpv'vug"qh'tgi wrcvt {" "cr r tqcej gu"cpf "vq"
hqmny "wr"qp"vj g'hpf kpi u'htqo "vj g"4225 126"uwf {"0Vj g'tguwmu"qh"vj g"
4233 B4"uwf {" "ctg"r tqxkf gf "kp"vj ku'tgr qt'0Vj g'r wtr qug"qh"vj gug"uwf kgu"
y cu'vq"i clp"o qtg"u'uggo cv'k'v'p'f gtucpf kpi "qh'gZR gtkgpeg"y kj "f kh/
hgtgpv'tgi wrcvt {" "cr r tqcej gu"cpf "r tceveguo vj gkt "ugngev'kqp. "vj gkt "vug."
cpf "vj gkt "qweqo guo uq"vj cv'tgi wrcvtu'ecp"dgwgt"vug"vj go "cu'vqnu"vq"
gpuwrg'uchgv{0"
"

Vj g'uwf kgu'y gtg'pqv'k'p'v'p'f gf "vq" hpf "qpg"ödguo"cr r tqcej "qt"ugv'qh"
cr r tqcej gu'hqt "tgi wrcvtu"0k'p'ugcf. "vj g {"y gtg'k'p'v'p'f gf "vq" gpeqwtci g"
f kmj v'g"cdqwu'tgi wrcvt {" "cr r tqcej gu"cpf "vq"u'uggo cv'kcm' "eqngev"
kphqto cv'kqp"cdqwu"j qy "f khtgtpv'tgi wrcvt {" "cr r tqcej gu"ctg"vugf 0UUO "
dngkxgf "vj cv'dw'k'f kpi "c"dgwgt "v'p'f gtucpf kpi "qh"vj g'lo r ceu'qh'wukpi "
xctkqwu"cr r tqcej gu'dcugf "qp"o u'uggo cv'k. "eqo r ctcv'kxg'tgxkgy "qh"vj g"
gZR gtkgpegu"qh'tgi wrcvtu'cetquu"eqwv'v'k'gu'y qwf "dg"j gr hwi'vq"ko /
.....

5: In the 2003/04 study, the specific ways in which regulators approached supervision were referred to as "strategies". Based on feedback from that study, in the 2011/12 study, and throughout this report, the term "approach" is used to refer to the specific approaches to supervision and the term "strategy" is not used.

r tqxg'vj g'vqnu'cxckrdng'vq'tgi wrcvtu'cpf 'v'ko r tqxg'eqo o wplecvkqp" cdqw'vj gug'vqnu'y kj kp'cpf "cetquu'ci gpekgu0Vj g'cpvkr cvgf 'xcnwg'qh' vj gug'uwwf kgu'kpenmf gu<"

- Cmny kpi 'tgi wrcvtu'vq'dg'o qtg'kpvkqp'pcn'cpf 'kphqto gf 'kp'vj gk" ej qlæg'qh'cr r tqcej gu"
- O cnkpi 'f kuewukqpu'cdqw'cr r tqcej gu'o qtg'o gcpkpi hwn'cpf "engct/ gt'd{ 'etgcvkpi 'c'eqo o qp'rcpi wci g'ht'f kuewukqp"
- Rtqxf kpi "uqo g'eqo o qp."ecug/dcugf "kphqto cvkqp"qp'vj g'wug'qh" cr r tqcej gu"
- K gpvkh{kpi "uqo g'r tqdrgo u'cpf "uqnwukqpu'vq'ko r ngo gpvcvqp"qh" cr r tqcej gu"
- Etgcvkpi "qr r qtwpkkgu'vq'rgctp'cdqw'tgi wrcvt { "cr r tqcej gu'htqo " qvj gtu"
- Ko r tqxkpi 'vj g'erctkv{ "qht'gi wrcvt { 'kpvv'vj kj kp'c'tgi wrcvt { " ci gpe{ "cpf 'dgwy ggp'tgi wrcvt { "ci gpekgu'cpf 'kpf wwt { ""
- Ngctkpi 'cdqw'vj qy 'tgi wrcvt { "cr r tqcej gu'chge'v'uchgv{ "ewwtg"

Vj g'o gj qf "cpf 'tguwmu'qh'vj g'4225 126"uwwf { "cpf 'y qtmij qr 'ctg'owo / o ctk gf 'dgmjy "cpf 'cxckrdng'kp'hwn'kp'UMKT gr qt v'4227-590Vj g'o gj / qf "cpf 'tguwmu'qh'vj g'4233 B4"uwwf { "ctg'r tgugpvf 'kp'Ej cr vgtu'4/: "qh" vj ku'tgr qt v'

1.1.1. Method and findings from 2003-2004 study and 2004 workshop

Kp'4225."gzt gtu'htqo 'pwerget'r qy gt'tgi wrcvtu'kp'Ecpfc."Hkpcpf." Ur clp.'Uy gf gp.'vj g'Wpkgf 'Mkpi f qo "cpf 'vj g'Wpkgf "Uvcgu'y gtg'kpvgt/ xkgy gf 'cdqw'vj gk"gzr gkpegu'y kj 'tgi wrcvt { "cr r tqcej gu'Ukz'tgi wrcvt { "cr r tqcej gu'y gtg'kfpv'kpf "cpf 'f gk'kpf 'd{ "eqpuwukpi 'y kj 'pw' engct'tgi wrcvt { "uchf8"

- Rtguetkr vkg"
- Ecug'dcugf "
- Qweqo g'dcugf "
- Tkn'dcugf ""
- Rtqeguulu{ vgo "dcugf "
- Ugh/cuuguuo gpv'dcugf "

U{vgo cvk."utwewt gf."qr gp/gpf gf 'kpvgtxkgy u'y kj "gzr gtv'tgi wrcvtu" y j q'j cf "gzvpu'kxg"gzr gkpegu'kp'pwerget'r qy gt'tgi wrcvtu'vq'v'wugf " vq'dgwt'w'pf gtu'cpf "j qy 'tgi wrcvt { "cr r tqcej gu'ctg'cr r rkgf 'kp'r tce/ vkg0Vj g'kpvgtxkgy "dgi cp'y kj "c'tgxkgy "cpf "dtkgh'f kuewukqp'qh'ukz" cr r tqcej gu'hqmjy gf "d{ "s wvukqpu'tgi ctf kpi 'y j gj gt<"

6: See Appendix 2 for a comparison of the definitions of the strategies/approaches from the two studies.

"

- vj g'f ghkpkqpu'y gtg'engct'cpf'ceewtcvg"
- vj gtg'y gtg'cf fklqpcn'cr r tqcej gu'y cv'uj qwrf "dg'kpenmf gf "
- eqo dlpvcvkpu'qh'cr r tqcej gu'y gtg'wugf "

"

Pgzv.'kpvgtxkgy ggu'y gtg'cungf'vq'ej qqug'c'ur gekhe"gzco r ng'qh'vj gkt"
 gZR gtg'peg'y kj 'vj g'cr r tqcej "qt'cr r tqcej gu'wugf "hqt'uqo g'cur ge'v'qh"
 tgi wrcvt { "uwr gtxkukqp'kp'vj tgg'ctgcu<"

"

- Rrcpv'f guki p'cpf "o qf kkecvkpuo xgtkhecvkqp'vj cv'r rcp'vo qf kkec/
 vkpu'f q'pq'cdtqi cvg'kpkcn'vgej plecn'f guki p'dcuku"
- S wrcv'f "u{ ugo uo cuw'cpeg'vj cv'u{ ugo u'vq'cuw'g's wrcv'f "y qtn'
 r gthqto cpeg'ctg'cf gs wcv'g'cpf 'y gm'ko r ngo gpv'gf "
- Vtckl'p' "cpf "s wrcv'khecvkpuo cuw'cpeg'qh'r tqr gt'r tgr ctecvkqp'qh'cm'
 uch'i"

"

Kpvgtxkgy ggu'y gtg'cungf'vq'o'y cmi'vj tqwi j o'gcej "gzco r ng'cpf'f guetkdg"
 vj g'tgi wrcvt { "uwr gtxkukqp'0'vj gp'kpvgtxkgy ggu'y gtg'cungf 'y j lej "cr /
 r tqcej "qt'eqo dlpvcvkqp'qh'cr r tqcej gu'eqo gu'emquguv'vq'vj g'tgi wrcvt { "
 uwr gtxkukqp'kp'vj gkt "gzco r ng'cpf'vq'cpuy gt's wgv'kpu'cdqww'vj g'gzco /
 r ng.'kpenmf kpi <"

"

- F q'f qw'hpqy "j qy "vj ku'cr r tqcej "eco g'vq'dg'ugrgev'f A'K'f'gu." r ngcug'f guetkdg'0'
- J qy "gh'gev'x'g'f q'f qw'vj kpm'vj ku'cr r tqcej "j cu'dggp'kp'vj ku'ecug'A'
- Rngcug'f guetkdg'vj g'o clqt'dgp'ghku.'ki'cp{."qh'wukpi "vj ku'cr r tqcej "
 hqt'vj ku'ecug'0'
- Rngcug'f guetkdg'vj g'o clqt'f k'he'w'ng'u.'ki'cp{."qh'wukpi "vj ku'cr /
 r tqcej "hqt'vj ku'ecug' "hqt'gzco r ng.'y gtg'vj gtg'ko r ngo gpvcvkqp'r tqd/
 ngo u'A'Eqo o wplecvkqp'r tqdngo uA'i"
- K'vj gtg'y gtg'f k'he'w'ng'u.'f q'f qw'vj kpm'vj ku'cr r tqcej "y qwrf "wuwcm'
 tguw'w'kp'vj gug'n'kp'f u'qh'r tqdngo u'qt'y qwrf "dgwgt'ko r ngo gpvcvkqp"
 j cxg'uq'rx'gf "o quv'qh'vj go A'
- F q'f qw'vj kpm'vj cv'q'vj gt'cr r tqcej gu'y qwrf "y qtn'icdqw'gs wcm'f "y gm'
 hqt'vj ku'ctgc'qh'uwr gtxkukqp."qt.'kp'f qw'qr kpkqp."ku'vj ku'cr r tqcej "
 vj g'o quv'cr r tqr tk'v'g'x'gp'vj g'eqpv'gz'v'qh'f qw'eqw'p'f { "cpf "f qw' "
 ci gpe { +A'Rngcug'gZR rckp'0'

Findings from the 2003/04 interviews

Cm't gur qpf gpw'tgr qt vgf "vj cv'eqo dlpvcvqpu'qh'tgi wrcvt { "cr r tqcej gu" y gtg'wugf "kp'uwgr txkukqp"qh'vj g'vj tgg'hwpevkqpcn'ctgcu="j qy gxgt. "vj g" eqo dlpvcvqpu'f khtgtgf "f gr gpf kpi "qp'vj g'hwpevkqpcn'ctgcu"0Hqt "gzco r ng." kp'vj g'ctgc"qh'f guki p"cpf "o qf khecvcqp. "qxgt"j crh'vj g'gzco r ngu'kpenmf / gf "vj g'wug'qh'c"eqo dlpvcvqpu'qh'r tguetr vxg. 'tkum'dcugf. "cpf "r tqegu" dcugf "cr r tqcej gu"0Qvj gt "cr r tqcej gu'y gtg'o gpvkqpgf "kp'rguu'vj cp'c" vj kf "qh'vj g'gzco r ngu'kp'vj ku'ctgc"0Kp'vj g'hwpevkqpcn'ctgcu'qh's wcrkv " u{ ugo u. "cpf "tcklpi "cpf "s wcrkhecvcqp. "qxgt"y q'vj kf u'qh'vj g'gzco / r ngu'tgr qt vgf "c'r tqegu'dcugf "cr r tqcej "eqo dlpgf "y kj "qj gt "cr / r tqcej gu"0"

Kp'vgtxky ggu'cnuq "gztguugf "qr kpkqpu'cdqww'vj g'ghgevkxgpguu'qh'f khtgt / gpv'cr r tqcej gu'cpf "vj g'ghgev'qh'f khtgtgpv'cr r tqcej gu'qp'xctkqwu'cu / r gew'qh'tgi wrcvt { "uwgr txkukqp"0Vj g'ko r ceu'tgr qt vgf "kpenmf gf <"

- Y j gyj gt "vj g'hegpugg"qt "vj g'tgi wrcvt "cngu'r tko ct { "tgr qpukdkkv { " hqt "uchgv { "
- J qy "engt "tgs wktgo gpw'cpf "gztgevcvqpu'ctg'v'q'hegpuggu"
- Vj g'uki pkhecpeg'qh'uchgv { "kuuwgu'kf gpv'khtgf "
- Gztgtkug'pggf gf "d { "tgi wrcvtu'cpf "hegpuggu"
- Tguqwtegu'wugf "d { "tgi wrcvtu'cpf "hegpuggu"
- Hgzkdkkv { "cxckrdrg'v'q'hegpuggu""
- Rwdrke"etgf kdkkv { "

C'tgr qt v'qp'vj g'kpf kpi u'htqo "vj g'kpvgtxky u'y cu'r tgr ctgf "cpf "tgr tg / ugpvcvkgu'htqo "gcej "eqwpt { "r ctvlekr cvkpi "kp'vj g'4225 126'uwf { "o gv'kp" c'y qtmij qr "v'f kuewu'vj g'kpf kpi u"0"

Workshop on findings from the 2003/04 study

C'y qtmij qr "y cu'j grf "y kj "tgi wrcvtu'htqo "gcej "qh'vj g'r ctvlekr cvkpi " ci gpekgu'v'f kuewu'vj g'kpf kpi u'cpf "f gxgrqr "pgz v'uvgr u"0Qxgtcm'vj g" cwgpf ggu'ci tggf "vj cv'vj g'tguwu'qh'vj g'4225 126'uwf { "tghgevgf "vj gkt" gztgtkpeg"0"Cwgpf ggu'cv'vj g'y qtmij qr "ci tggf "vj cv"

- c'eqo o qp "wpf gtucpf kpi "qh'tgi wrcvt { "cr r tqcej gu'ku'ko r qtvcpv""
- tgi wrcvtu'eqo dlpg'vj g'ukz "cr r tqcej gu'kp'f khtgtgpv'y c { u'v'q"cej kxg" tgi wrcvt { "i qcu""
- f khtgtgpv'hcevqtu'uwej "cu'eqpvz v.'pcvqpcn'ewmwg. "cpf "v'r g'qh'uchg / v { "eqpegtp"kp'hwpeg"vj g'cr r tqcej gu'wugf "d { "tgi wrcvtu""
- vj g'kpf kpi u'kp'vj g'tgugctej "tgr qt v'tgi ctf kpi "dgpghku. "f khekewkgu" cpf "eqpugs wpegu'qh'f khtgtgpv'cr r tqcej gu'tghgevgf "vj gkt" gztgtk / gpeg""

.....

7: It was noted that these findings do not necessarily apply to other areas of regulation, such as waste management.

- egtvclp'ej cpi gu'uj qwf "dg'o cf g'v'v'j g'v'gto u'cpf "f ghpkkkapu'r tq/ r qugf "kp'v'j g'tgr qtv<"
 - v'j g'ukz "duvcv'gi kguö'f kuewugf "kp'v'j g'tgr qtv'uj qwf "dg'tghgtt'gf "v'j cu'cr r tqcej gu'v'q'tgi wrcv'kp""
 - v'j gug'cr r tqcej gu'ctg'wugf "cnp'g'qt'kp'eqo d'kpcv'kp'v'q'f g'xgr'qr " tgi wrcv'qt { "uvcv'gi kgu' "
 - "p'gy "f ghpkkkapu'y g'tg'ci tggf "qp'hqt'7"qh'v'j g'8'cr r tqcej gu""
 - v'j g'cf f k'k'kp'qh'c'p'k'p'hw'gpeg'qt "gf wrcv'kp'cr r tqcej "y cu'ci tggf " qp""
 - c'j c'j ctf "cr r tqcej "y cu'umi i gu'gf "cpf "o quv'r ct'v'ekr cpw'ci tggf " k'uj qwf "dg'cf f gf "

O cp { "qh'v'j g'f k'uewuk'apu'cv'v'j g'y qtm'ij qr "h'qewugf "qp'j qy "tgi wrcv'qtu" o ki j v'wug'k'p'htqo c'v'kp'htqo "v'j g'tgr qtv'0'Vj g'tg'y cu'c'i g'p'g'tc'n'ci t'ggo g'p'v' v'j cv'cp'w'p'f g'tu'w'cpf k'pi "qh'j' qy "v'j g'cr r tqcej gu'h'k'lp'v'q'v'j g'q'x'g'tc'tej k'pi " i q'c'n'u'q'h'tgi wrcv'qtu'cpf "v'j g'q'x'g'tc'm'r t'q'eg'u'q'h'tgi wrcv'kp'ku'ko r q't'v'cp'0' Vj ku't'gu'w'ngf "kp'v'j g'ci t'ggo g'p'v'v'j cv'uch'gv' { "gh'k'ek'g'p'e { l'gh'g'e'v'x'g'p'g'u" cpf "r w'd'k'e "t'w'v'y g't'g'r t'ko ct { "tgi wrcv'qt { "i q'c'n'u'0'Vj g'f k'uew'uc'p'w'c'n'uq" ci tggf "v'j cv'v'j g'tgi wrcv'qt { "r t'q'eg'u'v'y cu'f { p'co k'e"cpf "r t'q'ce'v'x'g'cpf "v'j cv' c'o q'f g'n'q'h'j' qy "tgi wrcv'qt { "cr r tqcej gu'h'k'lp'v'q'v'j g'r t'q'eg'u'q'h'tgi wrc/ v'kp'y cu'p'g'gf gf 0'

Vj g'tg'y cu'c'n'uq'ci t'ggo g'p'v'qp'p'gz v'u'v'gr u'h'qt'v'j ku'ct'g'c'q'h't'gug'ctej <

- O cr 'j qy "cr r tqcej gu'h'k'lp'v'q'v'j g'q'x'g'tc'm'tgi wrcv'qt { "u' { u'v'go "
- Gzco k'p'g'v'j g'gh'g'ew'q'h'f k'h'g't'g'p'v'tgi wrcv'qt { "cr r tqcej gu'qp'eqo r g/ v'g'p'e { "p'g'gf gf "d { "tgi wrcv'qt { "r g'tu'q'p'p'g'n""
- Gzr n'q't'g'v'j g'gh'g'ew'q'h'f k'h'g't'g'p'v'cr r tqcej gu'qp'h'k'eg'p'uggu. "gur g'ek'cm { " uch'gv' { "e'w'w'w'g""
- Nq'q'm'c'v'v'j g'gh'g'ew'q'h'f k'h'g't'g'p'v'cr r tqcej gu'qp'r w'd'k'e "qr k'p'k'ap'cpf " v't'w'v'
- F g'v'g'to k'p'g'v'j g'gh'g'ew'q'h'f k'h'g't'g'p'v'cr r tqcej gu'qp'v'j g'gh'g'e'v'x'g'p'g'u" q'h'tgi wrcv'kp"

1.2. Overview of the 2011/12 study and organization of this report

Kp'4233'U'UO "eqo o k'uk'q'p'g'f "c'u'w'f { "v'q'f g'x'g'r'qr "cpf "w'ug'c'y t'k'w'p" s'w'g'u'k'q'p'p'c'k'g'u'w'x'g' { "q'h'g'z'r g't'w'ht'qo "Uy g'f g'p'cpf "q'v'j g't'eq'w'p't'k'g'u'v'q" cu'g'u'ew't'g'p'v'tgi wrcv'qt { "u'w'r g't'x'k'k'q'p'cpf "v'q'h'q'm'y "w'r "qp'v'j g'h'k'p'f k'pi u" ht'qo "v'j g'4225'126'u'w'f { 0"

Ur g'ek'h'ec'm { "U'UO "c'ung'f "v'j cv'v'j g'4233'134'u'w'f { "n'q'q'm'c'v'tgi wrcv'qt { "cr / r tqcej gu'v'q<"

8: In the 2011/12 report the term “practice” rather than the suggested term “strategy” is used to describe the use of a combination of approaches to achieve regulatory goals.

"

- uwtxg{"gZR gtlkpeg"qh'tgi wrcvt{"uc'h'tgi ctf kpi 'y' g'ghgevkxgpguu'qh' f khtgtpv'cr r tqcej gu"}
- uwtxg{"gZR gtlkpeg'y kj 'tgi ctf 'v'y j cv'hevtu'chgevf khtgtpv'qvw/ eqo gu'qh'tgi wrcvt{"uwr gtxkukqp"}
- kf gpvkh{"y' g'cr r tqcej gu'wugf "qxgtcm'cpf 'kp'gcej "qh'gki j v'ctgcu'qh' uwr gtxkukqp"}
- kf gpvkh{"ej cpi gu'kp'y' g'wug'qh'f khtgtpv'cr r tqcej gu'cpf 'y' g'tgcuqpu' hqt'y' qug'ej cpi gu"}

"

K'ku'ko r qtvcpv'v'pqv'y' cv'y' ku'y' cu'c' uwtxg{"qh'y' g'qr kpkpu'qh'gZR gt w' h'qo 'f khtgtpv'pwerget'ci gpeku0Vj g'4233 B4'uwf {"y' cu'pqv.'cpf 'y' cu' pqv'kpvgpf gf 'v'dg.'gkj gt'c'tgr tgugpv'v'xg'uco r ng'qh'cm'gZR gt w'qp'pw/ erget'r qy gt'tgi wrcvt'qt'y' g'qh'kecn'r quk'qp'qh'cp{"eqwpt{"qt'ci gp/ e{0Vj g'h'pf kpi u'tghge'v'y' g'gZR gtlkpeg'qh'y' qug'kpf kxf wcu'tgur qpf kpi " v'y' g'uwtxg{"cpf 'cwgpf kpi 'y' g'o gg'vpi u0Cnj qwi j 'y' g'tgur qpf gpw' ctg'pqv'c'tgr tgugpv'v'xg'uco r ng'qh'cm'pwerget'tgi wrcvt{"uc'h' 'y' g'kpf k' xkf wcu'tgur qpf kpi 'v'y' g'uwtxg{"tgr tgugpv'c'uki p'k'ecpv'co qwpv'qh' gZR gtlkpeg'kp'pwerget'uwr gtxkukqp0Cm quv': 2'r gt'egpv'qh'tgur qpf gpw' j cf 'qxgt'32"{"gctv'qh'gZR gtlkpeg'cu'pwerget'tgi wrcvtu'cpf 'cm quv'j' cih' qh'y' qug'j' cxg'qxgt'42"{"gctv'qh'gZR gtlkpeg'cu'pwerget'tgi wrcvtu0"}

"

Vj g'4233 B4'uwf {"y' cu'gZR mtevt{"kp'pcwtg0K'y' cu'hqmq'kpi 'hqt'eqo / o qp'gZR gtlkpegu'y' cv'ecp'r tqxkf g'lpuki j v'v'v'tgi wrcvt{"ci gpeku'y' kj " tgi ctf 'v'uwr gtxkukqp'{"r tceveku0Vj g'uwf {"f'kf 'pqv'guy' {"r qy' gugu'cpf " y' cu'pqv'gZR ge'v'f 'v'q'r tqf weg'r tqh'qh'y' g'gh'kece{"qh'cp{"r ct'v'wrc' cr r tqcej "qt'ugv'qh'cr r tqcej gu0"}

"

Vj g'tgo c'kpf gt'qh'y' ku'tgr qtv'r tqxkf gu'cp'qxgtxky' qh'y' g'o gy' qf 'wugf " hqt'y' g'uwf {"y' g'h'pf kpi u'h'qo 'y' g'uwf {"c'uw' o ct {"cpf "eqpenwukqpu0' Vj g'tgr qtv'ku'qti c'pk' gf 'kp'y' g'hqmqy' kpi 'ej cr vgtu<"}

"

Ej cr vgt'4<'T'gugctej 'r rcp'cpf 'ko r ngo gpv'v'kqp'"

"

- F gh'kpi 'y' g'v'gto u"
- F g'xgmr kpi 'y' g's'wug'k'ppck'g"
- C'f o' k'p'v'gt'kpi 'y' g's'wug'k'ppck'g"
- E'qo r ng'v'kpi 'k'p'k'cn'c'p'cn' uku'"
- O'gg'v'kpi 'y' kj 'r ct'v'ekr cv'kpi 'ci gpeku"
- C'p'cn' uku' 'y' tkv'gp'eqo o' gpw'cpf 'f'kuewukqp'"

"

Ej cr vgt'5<'I' gpgtcnh'kpf kpi u'tgi ctf kpi 'y' g't'qng'qh'cr r tqcej gu'kp'tgi wrcvt{"uwr gtxkukqp"}

"

Ej cr vgt'6<'Hqmqy /w' "qp'h'kpf kpi u'h'qo 'y' g'4225 I26'uwf {"tgi ctf kpi '"

"

- D'gpg'gh'ku'cpf 'f'k'k'ew'ku'qh'f khtgtpv'cr r tqcej gu"

- Wug'qh'tgi wrcvt {"cr r tqcej gu"
- Eqpugs wpegu'qh'f hgtgp'cr r tqcej gu"
- Kuwgu'vj cv'go gti gf "h'qo "gzco r ngu'tgi ctf kpi 'tgi wrcvt {"cr / r tqcej gu"

Ej cr vgt'7<Ektewo ucpegu'vj cv'chgevt'gi wrcvt {"uwr gt/"
xkukqp""

Ej cr vgt'8<Wughwpguu."wug."go r j cuku."cpf "ej cpi g'qh'tgi wrcvt {"cr / r tqcej gu<qxgtcm'cpf 'y kj k'ctgcu'qh'uwr gtxkukqp"

Ej cr vgt'9<F kuewukqp'qh'gcej "cr r tqcej <F ghpkkqp."wughwpguu."wug."
go r j cuku"cpf "ej cpi g"

Ej cr vgt': <Uwo o ct {"qh'vj g'hpf kpi u'cpf "eqpenw kpi 'tgo ctmu""

2. Research plan and implementation

Vj g'tgugctej "o gj qf "hqt"vj g"4233 B4"uwf { "y cu"vq"eqmgev'kphqto cvkqp" htqo "pwenget"tgi wrcvt { "gZR gtvu"vukpi "c"y tkwgp"s wgunkqppckt g'uwxg { " cpf "hggf dcent"htqo "o ggkpi u'cv'r ctv'ekr cvkpi "ci gpekgu"Vj g'cpcn { uku" kpenmf gf "uwo o ctk kpi "tgr qpugu" cpf "eqv'gpv'cpcn { uku"qh'y tkwgp" eqo o gpw"qp"vj g's wgunkqppckt gu"cpf "o ggkpi "f kuewukqpu"0"

Vj g'tgugctej "r np"y cu"vq<"

- F ghkg"vgt o u"*40+"
- F gxrqr "vj g's wgunkqppckt g"*40+"
- Cfo kpkvgt "vj g's wgunkqppckt g"*40+"
- Eqo r ngv"kpkkcn'cpcn { uku"*40+"
- O ggvy kj "r ctv'ekr cvkpi "ci gpekgu"*40+"
- Cpcn { ug'y tkwgp"eqo o gpw'cpf "f kuewukqpu"*40+"

2.1. Defining terms

Kp"qtf gt "vq"cuwtg"eqpukv'gpe { "qh'tgr qpugu"vq"vj g's wgunkqppckt g."k'y cu" ko r qtcv'vq"erctkh { "f ghkpkkqpu"ht"tgi wrcvt { "uwr gtxkukqp."vj g'cr / r tqcej gu'dgkpi "gxcnvcvf."cpf "vj g'ctgcu"qh'uwr gtxkukqp"dgkpi "cuugugf 0" Vj gug" f ghkpkkqpu"y gtg'tgxky gf "d { "UO "uxh"vq"cuwtg"vj cv'vj g { "eq/ kpek gf "y kj "vj g'tgugctej "i qcn"0Vj g'f ghkpkkqpu"qh"vj gug"vgt o u'y gtg" r tqxf gf "y kj "vj g's wgunkqppckt g"0

2.1.1. Regulatory supervision

Hqt"r wtr qugu"qh"vj g"4233 B4"uwf { ."tgi wrcvt { "uwr gtxkukqp"y cu" f ghkgf " cu'gpeqo r cuukpi "vj g'uwr gtxkukqp"qh"vj g'gpvtg"qti cpk cvkqp"vj cv'ku"qr / gtcv'kpi "vj g'r ncv'ô kpenmf kpi "vj g'o cpci go gpv'cpf "r ncv'kpi "qti cpk c/ vkpu"0T ghgtgpegu"vq"vj g'ötgi wrcv'kpo"cpf "öuwr gtxkukqpo"qh'pwenget" r qy gt "r ncv'u'y gtg"vq"t ghgt "vq"cm'cur gew"qh'tgi wrcvt { "uwr gtxkukqp"ô kpenmf kpi "eqo o wplecv'kqp."kpu' gev'kqp"cpf "gphqtego gpv'qh'tgi wrcv'kqp." cu'y gm'cu'y tkwgp"tgi wrcv'kqp"cpf "r qre { "r tcevegu"0Vj g"vgt o "öqxgt/ uki j ö'y cu"vugf "kp"vj g'kpv'qf vev'kqp"vq"vj g's wgunkqppckt g"cpf "kp"vj g" s wgunkqppckt g"cu"cp"cnv'pvc'xg"vq"vj g"vgt o "öuwr gtxkukqpo"0Kp"qtf gt "vq" ko r tqxg"erctkh { ."qpn { "vj g"vgt o "öuwr gtxkukqpo"ku"vugf "kp"vj ku'tgr qt"0

.....

9: Summary statistics of responses, including percentages, means, and standard deviations were obtained. No inferential statistics, such as correlations, were derived as the data are not appropriate for that type of statistical analysis.

2.1.2. Approaches

Ugxgp"cr r tqcej gu'y gtg'vj g'hqek'qh'vj g"4233 B4"uwf {0Vj g"cr r tqcej gu" y gtg'dcugf "qp'vj g'ukz"cr r tqcej gu'htqo "vj g"4225 D26"uwf {0Vj g'vgtu u" wugf "cpf "vj g'f ghpkkqpu'y gtg'tgxkugf "vq'tgur qpf "vq'eqo o gpvu'cpf " uwi i guvkqpu'htqo "kpvgtxkgy ggu'cpf "y qtmij qr "r ctvlek cpv0Kp"cf f kkp." *education and influence*"y cu'cf f gf "cu'cp"cr r tqcej "dcugf "qp'uw i gu/ vkqpu"o cf g'hqmjy kpi "vj g"4225 D26"uwf {0Vj g'ugxgp"cr r tqcej gu'kp/ enw gf "y gtg'prescriptive, facility based, outcome based, risk or hazard based, process based, self-assessment, and education and/or influence based. F ghpkkqpu'qh'vj gug"cr r tqcej gu'ctg'r tqxkf gf "kp"Vcdrg" 4B04."dgmjy ³²OGzco r ngu'qh'vj g'wug'qh'gcej "cr r tqcej "kp"vj g'ctgc"qh" r gtuqppgnleqo r gvgpe { "y gtg'r tqxkf gf "kp"vj g'f ghpkkqpu"Qpg'tgewtiki pi" eqo o gpv'qp"vj g'f ghpkkqpu'y cu'vj cvk'y qwf "dg'wughwi'vq'j cxg'gzco / r ngu'qh'gcej "cr r tqcej "htqo "gcej "ctgc"qh'uw r gtxkukp0Y j kg'vj ku'y cu" pqv'r quukdrghqt"vj ku'r tqgcv."k'ku'c"vughwi'uw i guvkqp'ht'ht'vj gt'y qtm' kp"vj ku'ctgc0'

2.1.3. Areas of supervision

UUO "y cu'kpvgtgugf "kp"nqmipi "cv'tgi wrcvt { "r tceveku'kp"gli j v'ctgcu'qh" uw r gtxkukp0Vj g"4225 D26"uwf { "j cf "cf f tguugf "vj tgg'ctgcu="hcekw/ " f guki p"cpf "o qf kkecvkqpu="s wrcv/ "u{ ugo u="cpf "v'ckpki "cpf "s wrcv/ kkecvkqpu"0Vj g"4233 B4"uwf { "tgxkuku"o clqt "r rcpv'o qf kkecvkqpu"*r ctv'qh" òf guki p"cpf "o qf kkecvkqpu"htqo "vj g"4225 D26"uwf { "+cpf "nqmi"cv'ugx/ gp"cf f kkpnc'ctgcu="o cpci go gpv'u{ ugo u."o ckpvpcpeg."qr gtcvkqpu." uchgv{ "ewmwg."npi "vgtu "qr gtcvkqp "kpenw gu'r rcpv'rhg"gz vgpukp"cpf " rkegug'tgpgy cn:"cpf "r qy gt'wr "tcvgu"cpf "eqputwvkqp³³"*ugg"Vcdrg" 4B05"ht'f ghpkkqpu'qh'vj gug'ctgcu+0" " " " "

10: A comparison of the definitions of these approaches with the “strategies” used in the 2003/04 study is provided in Appendix 2.

11: Some functional areas, such as power up rates and construction of new nuclear power plants, are not relevant for some agencies. In this case only those agencies engaging in the activity filled out the questionnaire.

Vcdrg'4004<Tgi wævqt { 'Crr tqcej gu'çpf 'F ghpkkkqpu' P qvg<vj gug'crr tqcej gu'ctg'pqv'f ghpqf "cu"o wwcm' "gzenwukxg"	
Crr tqcej "	F guet lr vkgp "
Rt guet lr vkg "	C'r tguetlr vkg'crr tqcej "gucdrkuj gu'ur gekhle'tgs vkt go gpw'ht'eqp/ f vevpi "cevxkkkgu'kpenmf kpi "gcej plecrl'ucnwkkqpu'Example: In the area of personnel competency, requirements for specific educational degrees or experience for a position would be prescriptive"
Hcekkk' "	C'hcckk'f/ducgf "crr tqcej "f gvtgto kpgu'vj g'uchgv' "tgs vkt go gpw'ht' gcej "hcegugg'vj tqwi j "kpf kxk' wcn'cuuguo gpv'qh'ku'f guki p'çpf "qr gtc/ vkgp."eqpukf gtpi "vj g'wpls wg" kuxqt { "qh'gcej "hcckk'f. Example: In the area of personnel competency, requirements for different positions based on the characteristics of the facility would be a facility based approach"
Qweqo g "	Cp'qweqo g'crr tqcej "gucdrkuj gu'ur gekhle'r gthqto cpeg'i qcn'qt" qweqo gu'ht' hceguggu'v'cvc'p'dw'f qgu'pqv'ur gekhl' "j qy "vj g' { "uj cm' dg'cvc'k'p'g'f' hceguggu'f gvtgto kpg'j qy "vj g' { "y kn'eqpf vev'vj gk' "y qtn' cevxkkkgu'Example: In the area of personnel competency, performance on a simulator would be outcome based.
Tkmiqt " J c ctf " kphqto gf "	C'f gvtgto kpcv'k'p'qh'vj g'tkmiqt' "j c ctf "cuuqekcv'f "y kj "cp'ctgc'ku'vugf " v'g'x'cn'cv'g' "j g'crr tqej tk'v'g' h'x'gn'qh't'gi wævqt { "cwgpv'k'p'0" C'tkmi'k'p'k'p'qto gf "crr tqcej "vugu'c'ur gekhle'o g'j qf qm'j { "kpenmf kpi " r tqdcdk'k'f "çpf "r qv'p'v'cn'ht' "j cto "v'k'f gp'v'k' { "ctgcu'qh'i tgc'v'v't'k'nd' Vj gug'ctgcu'tgegk'g'r tk'q'k'v' "ht' "tgi wævqt { "cwgpv'k'p'0" C' "j c ctf "crr tqcej "vugu'ur gekhle'et'k'g'k'c'ht' "vj g'k'f gp'v'k'c'v'k'p'qh' ctgcu'qh'i tgc'v'v'r qv'p'v'cn'ht' "j cto "çpf "vj gug'ctgcu'tgegk'g'r tk'q'k'v' "ht' "tgi wævqt { "cwgpv'k'p'0"
Rt qegu' "	C'r tqegu'crr tqcej "k'f gp'v'k'g'ur gekhle'ng' { "r tqegu'g' "vj cv'hc'f "v' " uch'g' "r gthqto cpeg'çpf "tgs vkt gu'hceguggu'v'gucdrkuj "çpf "ko r rgo gpv' vj gug' "r tqegu'g'gh'ge'v'k'gn' "Example: In the area of personnel competency, a requirement that licensees use a systematic approach to training to determine requirements would be process based.
Ugn' " Cuuguo gpv' "	Nceguggu'f g'x'gn'r "çpf "ko r rgo gpv' "ugn' /cuuguo gpv'r tqi tco u'kpenmf / kpi "vj g'k'f gp'v'k'c'v'k'p'qh' "d'q'j "i q'q'f "r tce'v'k'g'u'çpf "r tqd'rgo "ctgcu" pggf kpi "ko r tqxgo gpv' "k'p'v't'p'cn't'g'x'k'g' u'çpf "h'q'm'q' "w' "0'V'j g't'gi wæ/ vqt "g'x'cn'cv'g'u' "vj g'hcegugg' "ugn' /cuuguo gpv'r tqi tco . "t'g'x'k'g' u' "vj g' "t'g'u'v'v' "qh' "vj g'hcegugg' "cuuguo gpv' "çpf "ugn'ge'v'k'gn' "k'p'ur g'ew' "vj g' "hceguggu' "h'q'm'q' "w' "qp' "ugn' /cuuguo gpv't'g'u'v'v' "Example: In the area of personnel competency, a requirement that licensees do an evaluation of how effective and complete their training program is would be an example of self-assessment.
kphw'p'eg'qt " Gf wæv'k'p' " " "	Vj g't'gi wævqt "r tqx'k'f gu'k'p'qto cv'k'p'çpf "t'c'k'p'k'pi "qr r qt'w'p'k'k'g' "ht' " vj g'k'p'f wæv' { "kpenmf kpi "y qtm'j q'r u' "hgg'f dcem' "t'gug'ctej "t'g'u'v'v' "çpf " q'v' g't' "k'p'qto cv'k'p'ô "k'p' "qt'f g't' "v' "ko r tqx'g' "k'p'f wæv' { "r gthqto cpeg. Example: In the area of personnel competency, the regulator sponsoring a seminar on training for licensees or presenting at a regulatory information conference regarding training activities would be education or influence based. "

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Vcdrg'4065<F ghpkkqpu'qh'Ct gc u'qh'T gi wrc vqt { 'Uwr gt xkukqp' "	
Management systems"	T gi wrc vqt { 'uwr gt xkukqp'qh' <i>management</i> 'lu{ u ngo u'cv'qr gtcvki " pwerget'r qy gt'r rcpvu" "
Maintenance"	T gi wrc vqt { 'uwr gt xkukqp'qh' <i>maintenance</i> 'cevkxkku'cv'qr gtcvki " pwerget'r qy gt'r rcpvu" "
Operations	T gi wrc vqt { 'uwr gt xkukqp'qh' <i>operations</i> 'cv'qr gtcvki "pwerget'r qy gt'r rcpvu" "
Safety Culture	T gi wrc vqt { 'uwr gt xkukqp'qh' <i>safety culture</i> 'cv'qr gtcvki "pwerget'r qy gt'r rcpvu" "
Plant Life Extension	T gi wrc vqt { 'kpur gevqpp'cpf "cuuguuo gpv'lur gtxkukqp'kp'eqppge/vkqp'y kj "f gekukqpu'qp"Nqpi "Vgt o "Qr gtcvki "LTO)/ <i>plant life extension</i> /itegpug't gpgy cil" "
Major Plant Modifications	T gi wrc vqt { 'kpur gevqpp'cpf "cuuguuo gpvlur gtxkukqp'qh' <i>major plant modifications</i> "
Power Up Rates	T gi wrc vqt { 'kpur gevqpp'cpf "cuuguuo gpvlur gtxkukqp'qh' <i>power up rates</i> ."Hqt'r vtr qugu'qh'y ku'uwf { ."c'r qy gt'wr "tcvg'ku'f ghkpgf "cu" y j g'r tqegu'qh'kpetgcukpi "y j g'o czko wo "itegpugf'r qy gt'ixxgn'cv" y j lej "c"eqo o gtekn'pwerget'r qy gt'r rcpv'o c { "qr gtcvgo'Vj g'r qy / gt'wr "tcvg'ku'f gpgtem' "ecvci qt k g f "dcugf "qp'y j g'o ci plwaf g'qh'y j g" r qy gt'kpetgcug'cpf "y j g'o gj qf u'wugf "v"cej kxg'y j g'kpetgcug" "
Construction	T gi wrc vqt { 'uwr gtxkukqp'qh' <i>construction</i> 'cpf "eqo o kuukqplpi "qh' pgy "pwerget'r qy gt'r rcpvu'cu'c'dcuku'v'vcng'y j g'r rcpv'kpq'qr gtc/vkqp "gzenw'kpi "y j g'tgi wrc vqt { "cevkxkku'ht'kuukpi "c'eqpwt we/vkqp'itegpukpi lr gto k+" "

2.2. Developing the questionnaire

C's wguvkqppck g'y cu'f gxgnr gf "v'cf f tguu'y j g's wguvkqpu'qh'kpvgt gu'vq" UUU 0"

"

- Kf gpvkh{ "y j g'cr r tqcej gu'wugf "qxgtcm'cpf "kp"gej "ctgc'qh'lur gtxk ukqp"
- Uwtxg{ "gZR gtlgpeg'qh'tgi wrc vqt { 'uchh'tgi ctf kpi "y j g'ghgevx gpguu' qh'f khtgtpv'cr r tqcej gu"
- Kf gpvkh{ "ej cpi gu'lp'y j g'wug'qh'f khtgtpv'cr r tqcej gu'cpf "y j g'tgcuqpu' hqt'y j qug'ej cpi gu"
- Uwtxg{ "gZR gtlgpeg'qh'tgi wrc vqt { 'uchh'y kj "tgi ctf "v'y j gj gt'y j g" cr r tqcej gu'wugf "chgev<"
 - y j q'vcngu'r tko ct { "tgur qpukdkk{ "hqt "uchgv{ "
 - j qy "engct'y j g'tgs vkt go gpw'cpf "gZR gevckqpu'ct'v'q'itegpuggu"
 - tguqnwkqp'qh'ko r qtvcv'uchgv{ "kuuwgu"

- gʒr gtvkug'tgs wktgf "qh'hegpuggu'cpf 'tgi wɔvqtu"
- tguqwtēgu'tgs wktgf "qh'v' g'hegpuggu'cpf 'v' g'tgi wɔvqtu"
- hɔzkdtkv' 'i kxgp'v' "hegpuggu'"
- r wdne'etgf kdkkv' "qh'v' g'hegpuggu'cpf 'v' g'tgi wɔvqtu"
- uchgv' "ewwv'g'qh'v' g'hegpuggu'cpf 'v' g'tgi wɔvqtu"

"

Gcej 's wɔvkvppck'tg'y cu'ur gekhe'v'q'ppg'ctgc'qh'uwr gtxkukqp'dw'cm'
 s wɔvkvppck'gu'eqvckp'gf 'v' g'uco g's wɔvkvpu0Vj g's wɔvkvppck'g'dgi cp"
 d{ 'tgs wɔvkvpi 'kphqto cvkqp'qp'v' g' { gctu'qh'gʒr g'kēpeg'gcej 't gur qpf gpv'
 j cf 'y kv' 'tgi ctf 'v'dgkpi 'c'tgi wɔvqt. 'y qtnkpi 'kp'v' g'pwenct 'kpf wɔv { ."
 cpf 'dgkpi 'c'tgi wɔvqt 'kp'v' g'pwenct 'kpf wɔv { 0C 'hkvpi 'qh'v' g'cr /
 r tqcej gu'cpf 'f ghpkkqpu'y cu'r tqxkf gf 'y kv' 'gcej 's wɔvkvppck'tg'cpf "
 t gur qpf gpv'y g'g'cungf 'v'dcug'v' g'k'cpuy gtu'qp'v' g'g'f ghpkkqpu0"
 "

Vj g'tguv'qh'v' g's wɔvkvppck'tg'y cu'f kxkf gf 'kv'v'v' tgg'ugevkvpu0Vj g'htuv'
 ugevkp'tgs wɔvkv' 'vy q'ur gekhe'ecug'uwf { 'gzco r ng'u'ó'qpg'qh'c'uwēgu/
 hwi'ecug'cpf 'qpg'qh'c'nguu'uwēguhwi'ecug0Hqt'gcej 'gzco r ng'v' g'tg/
 ur qpf gpv'k'gp'v'k'gf 'v' g'cr r tqcej gu'wugf. 'v' g'ngxgn'qh'go r j cuku'ht "
 v' qug'cr r tqcej gu. 'v' g'ghgevkxgp'gu'qh'v' qug'cr r tqcej gu. 'cpf 'v' g'ghge'
 qh'v' g'qxgtcm'tgi wɔvqt { 'uwr gtxkukqp'qh'v' g'ecug'qp'v' g'ngewu'qh'uchgv' "
 t gur qpukdkkv'. 'emtkv' 'qh'tgs wktgo gpv. 'tguqnwkv'qh'uchgv' 'kuwgu. 'gz/
 r gtvkug'pggf gf 'd { 'hegpuggu'cpf 'tgi wɔvqtu. 'cpf 'tguqwtēgu'wugf 'd { 'rk/
 egpuggu'cpf 'tgi wɔvqtu0Vj g'ugeqpf 'ugevkp'cungf 'cdqw'v' g'cr r tqcej /
 gu'wugf 'kp'v' g'wuwēn'cr r tqcej 'ht'cf f tguvkpi 'tgi wɔvqt { 'uwr gtxkukqp'kp'
 v' g'tgur qpf gpv'u'ctgc=y j gv' g't'v' g'tg'j' cf 'dggp'ej cpi g'kp'v' g'cr r tqcej /
 gu'wugf 'cpf. 'khuq. 'y j { =cpf 'v' g'r gtegxgf 'ghgevu'qh'v' g'cr r tqcej gu'qp"
 hɔzkdtkv' 'r tqxkf gf 'v'hegpuggu. 'r wdne'etgf kdkkv'. 'cpf 'uchgv' "ewwv'g0'
 Vj g'v' k'f 'ugevkp'tgs wɔvkv' 'kphqto cvkqp'qp'v' g'emtkv' 'qh'v' g'f ghpk/
 vkpu'qh'v' g'cr r tqcej gu³⁴"cpf 'v' g'qxgtcm'wughwv'gu'qh'gcej 'cr r tqcej "
 kp'v' g'tgur qpf gpv'u'ctgc0Vj g'g'ugevkvpu'ctg'f guetkdgf 'kp'o qtg'f gckn"
 dgny 0'
 "

C'owo o ct { 'qh'v' g's wɔvkvppck'tg'ku'r tqxkf gf 'kp'Vcdng'40'cpf 'c'eqo /
 r ngv'eqr { 'qh'v' g's wɔvkvppck'tg'ku'r tqxkf gf 'cu'Cr r gpf kz'30Vj g's wɔv/
 kvppck'gu'y g'g'r tqf wegf 'kp'RF Hhqtto cv'cpf 'y g'g'kngf 'kp'cpf 't g/
 wtpgf 'grgvtqplecm'0"

2.2.1. Section I: Case study examples

Kp'qtf gt 'v'gxcnvc'v'v' g'cr r tqcej gu'wugf 'kp'tgi wɔvqt { 'uwr gtxkukqp.'v' g'
 4225 l26'uwf { 'wugf 'kp'v'gtxkgy u'v'q'qdvckp'ecug'uwf kgu'qh'tgi wɔvqt { ""

12: Respondents were asked whether they found the definitions clear, with options for response of 1 (very clear) to 5 (very unclear). The ratings for the clarity of the definitions were similar across all of the approaches. The proportion of those responding that the definition was between somewhat to very clear (a rating of 3, 2, or 1) ranged from 85% to 93% (see Tables 7.1 through 7.7). Because the definitions of approaches were reported as relatively clear by the majority of the respondents, lack of understanding of the approaches should not substantially impact the validity of the results.

Vcdng'404<S wgnkppck g'Eqpvpw'	
Uqo g's wgnkpu'ctg'r cter j tcutg'0Ugg'Cr r gpf kz '3'ht 'hwn's wgnkppck g'	
Dcem i t qwpf " "	<ul style="list-style-type: none"> ▪ P co g''' ▪ Ewtgpv'r qukkqp'cpf "qj gt'r qukkpu'j grf "lp'yj g'r cuv'32" { gctu" ▪ P wo dgt'qh' { gctu'y qtnkpi "lp'yj g'pwerct'r qy gt'ctgc' *gkj gt'lp'tgi wr/vkqp'qt'lpf wwt { +" ▪ P wo dgt'qh' { gctu'cu'c'tgi wrvqt' *kp'cp { 'ctgc'qh'tgi wrvkqp+ " ▪ P wo dgt'qh' { gctu'y qtnkpi "cu'c'pwerct'r qy gt'tgi wrvqt"
Rct v'K' Ecug'gz/ co r ngu'qht' " uweeguhwi' ecug'bpf 'u less successful case " "	<ul style="list-style-type: none"> ▪ Ki'gzco r ng'dcugf "qp'r gtuppcil'gzr gtlppeg'qt'qjy gt'hpqy rgi gA" ▪ Rrgcug'p'qvg'yj g'cr r tqcej gu'yj cv'y gt'wugf "cpf 'yj g'go r j cuku'ht'gcej " cr r tqcej '00 wnr ng' *qt'cm+cr r tqcej gu'o c { 'j cxg'c' 'oj ki j o'go r j cuku'0" ▪ Kp' { qwt'qr kpkp. 'lp'yj cv'y c { u'y cu'yj g'cr r tqcej "qt'eqo dlp'cvkpu'qh' cr r tqcej gu'wugf "lp'yj ku'gzco r ng'ghge'v'k'gA'] Hqt'nguu'ghge'v'k'g'ecug' < In your opinion, in what ways was the approach or combinations of approaches used in this example <i>less than effective?</i>] Gzr r klp" ▪ Kp'yj ku'gzco r ng. 'y j cv'y gt'g'yj g'cf xcp'ci gu'qh'yj g'cr r tqcej "qt'eqo dlp'cvkqp'qh' cr r tqcej gu'wugf "] Hqt'nguu'ghge'v'k'g' < "Were there any advantages_A'Gzr r klp" ▪ Y gt'g'yj gt'g'cp { "] what were the _f gh'el'g'p'el'g'u'qt' f tcy dcem'u'q' wulpi 'y ku' cr r tqcej A' " ▪ Y qwf 'yj g'cr r tqcej "dg'o qtg'qt'nguu'ghge'v'k'g'w'p'f g't'f h'ht'gpv'ektewo / ucp'eguA" ▪ F kf 'yj g'cr r tqcej 'r nreg'yj g'r tko ct { 't'gur qpukdkk'v' "ht'uchgv' { 'qp'yj g' rlegpugg'qt'qp'yj g'tgi wrvqt'AEqo o gpw" ▪ J qy 'engct'y gt'g'yj g'tgs wktgo g'p'ulg'zr g'ev'v'k'p'u'v'q'yj g'h'egpugg'A" ▪ Y gt'g'ko r qt'w'p'v'uchgv' { 'kuuwgu'kf g'p'v'k'g'f "cpf 'cf f t'guugf A'Rrgcug'eqo / o g'p'v'q'p'yj { 'ko r qt'w'p'v'uchgv' { 'kuuwgu'y gt'g'qt'y gt'g'p'v'k'f g'p'v'k'g'f '0" ▪ Kp'qt'f g't'q' b' g'v'tgi wrvqt { 'tgs wktgo g'p'u. 'y j cv'h'x'gr'qh'g'zr g't'w'g'lp' o cpci go g'p'v'u { u'go u' *qjy gt'yj cp'hpqy kpi 'yj g'tgi wrvkqp+ y cu'tgs wktgf " d { 'yj g'h'egpuga'AEqo o gpw" ▪ Y j cv'h'x'gr'qh'g'zr g't'w'g'lp' o cpci go g'p'v'u { u'go u' *qjy gt'yj cp'hpqy kpi " yj g'tgi wrvkqp+ y cu'tgs wktgf " d { 'yj g'tgi wrvqt'AEqo o gpw" ▪ Y j cv'h'x'gr'qh'g'zr g't'w'g'lp' o cpci go g'p'v'u { u'go u' *qjy gt'yj cp'hpqy kpi " yj g'tgi wrvkqp+ y cu'tgs wktgf " qh'yj g'h'egpugg'AEqo o gpw" ▪ Y j cv'h'x'gr'qh'g'zr g't'w'g'lp' o cpci go g'p'v'u { u'go u' *qjy gt'yj cp'hpqy kpi " yj g'tgi wrvkqp+ y cu'tgs wktgf " qh'yj g'tgi wrvqt'AEqo o gpw"
Rct v'K' I gpgt'cn' s wgnkpu' qp' 'yj g' wuwent'gi w n'vqt { " cr/ r tqcej *gu+ " lp' b' cp/ ci go g'p'v' u' u'go u'ht' " qrgt'cvkpi " r qy gt' " r n'p'w' "	<ul style="list-style-type: none"> ▪ Y j cv'ku'yj g'wuwent' cr r tqcej "qt'eqo dlp'cvkqp'qh' cr r tqcej gu'yj cv'ku'wugf " lp'yj g'ctgc'qh' o cpci go g'p'v'u { u'go uA" ▪ Rrgcug'p'qvg'cp { 'ej cpi gu'lp' { qwt'gzr gtlppeg'lp'yj g'cr r tqcej gu'wugf " d { { qwt'ci gpe { "" ▪ Y j cv'y cu'yj g'dcuku'ht' 'yj g'ej cpi g'u+lp' cr r tqcej *gu+yj kj 'tgi ctf "vq" o cpci go g'p'v'u { u'go uA" ▪ J qy "o wej "h'z'g'k'k'k'v' f qgu'yj ku'wuwent' cr r tqcej *gu+ i kxg'yj g'h'egpugg'v'q' cff t'gu' o cpci go g'p'v'u { u'go uA'AEqo o gpw" ▪ F qgu'yj ku' cr r tqcej "ch'ge'v'r wdrle'et'gf kdkk'v' "tgi ctf kpi 'yj g'uchgv' { 'qh'yj g' rlegpugg' h'ek'k'v' A'Y j { "qt' y j { "p'q'v'A" ▪ F qgu'yj ku' cr r tqcej "ch'ge'v'r wdrle'et'gf kdkk'v' { 'qh'yj g'tgi wrvqt' A'Y j { "qt' y j { "p'q'v'A" ▪ Y j cv. 'kh'cp { . "f q" { qw'yj kpniku'yj g'ghge'v'qh'yj g'cr r tqcej *gu+ wugf "ht' o cpci go g'p'v'u { u'go u'qp'yj g'uchgv' { "ewmw'g'qh'yj g'h'egpugg'AEqo o gpw" ▪ Y j cv. 'kh'cp { . "f q" { qw'yj kpniku'yj g'ghge'v'qh'yj g'wuwent' cr r tqcej "qt'eqo dlp'cvkqp'qh' cr r tqcej gu'ht' o cpci go g'p'v'u { u'go u'qp'yj g'uchgv' { "ewmw'g'qh' yj g'tgi wrvqt'AEqo o gpw"
Rct v'K' Eret'k'v' { 'qh' f gh'p'k'k'p' cpf 'wug/ h'w'p'gu' { 'qh' cr r tqcej gu' "	<ul style="list-style-type: none"> ▪ Tgur qpf g'p'u'yj gt'g'cungf "v'g'x'c'w'v'g'cpf "r tqx'k'f g'eqo o g'p'u'cdq'w'gcej " cr r tqcej " ○ yj g'ent'k'v' { 'qh'yj g't'f gh'p'k'k'p' ○ yj g'w'gh'w'p'gu' { 'qh'yj g'cr r tqcej "lp'yj g'kt'ctgc" ▪ Y j g'yj gt'qjy gt'cr r tqcej gu'lj qwf "dg'cf f g'f "v'q'yj ku'k'u'v'cpf "qjy gt's wgu'vkpu'qt'eqo o g'p'u'tgi ctf kpi "uwt'xg { "

uwr gtxkukqp'lp'vj tgg'tgi wrvqt { 'ctgcu0K'y cu'f gvto kpgf 'vj cv'k'y qwf " dg"vq"qpgtqwu'hqt'vj qug"cpuy gtlpi 'vj g's wguvkppckt g'vq'y tkg'wr "ecug" uwf kgu'lp"c"s wguvkppckt g0J qy gxgt. 'k'y cu'f guktcdng"vq'j cxg"cpuy gtu" vq"s wguvkpu'cdqw'vj g'ghgevkxgpguu'qh'cr r tqcej gu'vq'tgi wrvqt { 'uw/ r gtxkukqp'dcugf "qp"cewcn'ecugu'tcvj gt'vj cp"cu'qxgtcm'cuuguuo gpw0Kp" qtf gt'vq"qdvckp'kphqto cvkqp'cdqw'vj g'qweqo gu'qh'ur gekhke"ecugu. 'vj g' hktu'ugevkqp'qh'vj g's wguvkppckt g'tgs wguv'vj cv'vj g'tgur qpf gpv'ej qqug" vy q'ur gekhke"ecugu"cpf 'y tkg"cxg { 'dtkgh'f guetkr vkp'qh'gcej "ecug"*qpn { " gpqwi j "hqt'vj g'tgur qpf gpv'vq"dg"cdng"vq'kf gpvkh { 'vj g'ecug."g0 O"c"vkwg"qt" ugpv'peg"cpf "vq"cpuy gt's wguvkpu'lp'vj ku'ugevkqp'tghgtgpeki 'vj qug" ur gekhke'kpucpegu'qh'tgi wrvqt { 'uwr gtxkukqp"*ecug"uwf { "gzco r ngu³⁵0' Vj g'wug'qh'cewcn'ecug"gzco r ngu'cu'vj g'dcuku'hqt'vj ku'ugevkqp'y cu'kp/ vpgf gf "vq'r tqxkf g'eqpetgv'gzco r ngu"cpf "vq'cxqkf "ör qrke { ö'ucvgo gpw" cdqw'j qy 'tgi wrvqp'y cu'cee'qo r kuj gf 0T gur qpf gpw'y gtg'cungf "vq" r tqxkf g'qpg'uweeguuhw'gzco r ng"cpf "qpg'nguu'uweeguuhw'gzco r ng0Vj g' wug'qh'öuweeguuhw"cpf "önguu'uweeguuhw"gzco r ngu'y cu'pqv'kpvpgf gf " vq'f ktgevl "cf f tguu'vj g'xcnw'qh'ur gekhke"cr r tqcej gu'ukpeg'vj g'ecug'kv/ ugh'y cu'g'zr gev'vq'j cxg"cxg"v'v'qpi 'kphw'peg"qp"dqvj "vj g'r quukdkk'v'qh' uweegu"cpf "vj g'cr r tqcej gu'ugr'ev'v'0T gur qpf gpw'y gtg'cungf "vq'gxcn' wcv'y j cv'kphw'pegf "vj g'ghgevkxgpguu'qh'vj g'tgi wrvqt { 'uwr gtxkukqp'lp" gcej "ecug."y j cv'y gtg'cf xcpvi gu'cpf "f tcy dcemu'qh'vj g'y c { 'vj g'ecug" y cu'o cpci gf .³⁶cpf "y j gvj gt'vj g'tguwu'y qwf "j cxg'dggp"f khtg'gpv' wpf gt'f khtg'gpv'ektewo ucpegu0T gur qpf gpw'y gtg'vj gp'cungf "vq'gxcn' c'v'vj g'ghgew'qh'vj g'y c { 'vj g'ecug'y cu'j cpf ngf "qp'vj g'hw'qh'vj g" r tko ct { 't'gur qpukdkk'v' "hqt'uchgv' . "erctk'v' "qh'tgs wktgo gpw. "cf f tgu'kpi " qh'uchgv' "kuu'gu."vj g'zr gt'v'kug'wugf "cpf "vj g'tguq'wtegu'wugf 0Cp"qr r qt/ wpl'v' "vq'o cng'eqo o gpw"qp"gcej "qh'vj gug's wguvkpu."gzegr v'öerctk'v' "qh' tgs wktgo gpwü. "y cu'r tqxkf gf 0"

2.2.2. Section II: Usual approach or combination of approaches

Vj g'ugeqpf "ugevkqp"cnq"cf f tguugf "vj g'cr r tqcej gu'wugf "lp'tgi wrvqp." dw'o qxgf "vq"o qtg'i gpgtcn'ngxgn'qh'tgi wrvqt { 'r qrke { "cpf "r tcevkxg0K' eqpv'kpgf "s wguvkpu'tgi ctf lpi "vj g'öuwcn"cr r tqcej "qt'ugv'qh'cr / r tqcej gu'wugf "d { 'tgi wrvqtu'hqt'gcej "ctgc"qh'uwr gtxkukqp0S wguvkpu'lp" vj ku'ugevkqp'y gtg'wugf "vq'cuugu'vj g'rxg'nu'qh'wug"cpf "go r j cuku'qh'f kh/ hgt'gpv'cr r tqcej gu."y j gvj gt'vj gtg'j cxg'dggp"ej cpi gu'k'vj g'wug'qh'f kh/ hgt'gpv'cr r tqcej gu."cpf "vj g'r gtegl'xgf "ghgew'qh'vj gug"cr r tqcej gu"qp" vj g'ngz'kdkk'v' "i kxgp"vq'ike'gpuggu."r wdrke"etgf kdkk'v' . "cpf "uchgv' { "eww'w'g0" "

13: Although respondents were only asked to write a short description, they were also told that more detail would be appreciated. Most respondent wrote clear descriptions of the activities in the cases and some respondents wrote very detailed descriptions of the cases.

14: As will be discussed in the findings, there were a few instances in which respondents suggested that a different approach might have been better, however, the majority of comments regarding the outcome of the case were about the characteristics of the case and the effects of regulator and licensee characteristics.

2.2.3. Section III: Approach definitions and usefulness

Vj g'vj kf "ugevqp"qh'vj g's wguvkppckt g'y cu'wugf "vq'cuuguu'vj g'emtkv' "qh' vj g'tgxlugf "f ghpkkqpu'cpf "vj g'tgur ppf gpvu'gxcnvcvqp"qh'vj g'wughwv/ pguu'qh'gcej "cr r tqcej "kp"j ku'qt"j gt'ctgc0Vj ku'ugevqp"cuuq'r tqxkf gf "vj g" qrr qtwpkv' "vq"o cng'eqo o gpw'qp'vj g'cr r tqcej gu.'uvi i gu'cf f kkkpcn' cr r tqcej gu.'cpf "o cng'cp { "i gpgtcneqo o gpw'cdqw'vj g'4233 B4"uwf {0"

2.2.4. Response categories and requests for comments

Tgur qpug'ecvgi qtkgu'hqt "f khhgtgpv's wguvkpu'xctkgf "f gr gpf kpi "qp"vj g" s wguvkp0Hqt"gzco r rg."S wguvkp"4: . 'y j lej "cumi'cdqw'hrz kdkkv' "r tq/ xkf gf "vq"vj g'negpugg."eqpvkpu'cpuy gtu'htqo "öpqqgö"2+"vq"öc"i tgev' f gcrö"7+'y j krg"S wguvkp"4; . 'y j lej "cumi'cdqw'vj g'ghge'v'qh'uwv gtxkuq/ t { "r tceveg'qp"r wdike"etgf kdkkv' . "eqpvkpu'cpuy gtu'qh'öf getgcugf "etgf / kdkkv'ö"3"qt"4+."pq"ej cpi g"5+"cpf "ökpctgcugf "etgf kdkkv'ö"6"qt"7+0Kp" Ugevqp"KKVj g'tgur qpug'ecvgi qtkgu'eqpvkpgf "tcvpi u'qh'gkj gt "vj g'emtkv' v' "qh'vj g'f ghpkkqpu'qh'cr r tqcej gu'qt"vj g'wughwvpguu'qh'cr r tqcej 0" Vj gug'tcvpi "ueqtgu'tcpi gf "htqo "c'ueqtg'qh'3"ht"öxgt { "engctö"qt"öxgt { " wughwv"vq"7"ht"öxgt { "wpergctö"qt"öpqv'wughwv0"

2.3. Administering the questionnaire

Ci gpekgu'htqo "hxg'eqwvptkgu'r ctvkr cvgf "kp"vj g'uwtxg{³⁷0"

"

- Vj g'Ecpcf kcp"P wergct"Uchgv' "Eqo o kuukqp"*EP UE+"
- Eqpuglq"f g'Ugi wtkf cf "P wergct."Ur clp"*EUP +""
- Uy gf kuj "Tcf kvkqp"Uchgv' "Cwj qtkv' "*UUO +""
- Qh'leg'qh'P wergct" Tgi wrcvqp."Wpkvgf "Mkpi f qo "*QP T+""
- Wpkvgf "Ucvgu'P wergct" Tgi wrcvt { "Eqo o kuukqp"*P TE+0

"

Cv'gcej "ci gpe { "c'eqqtf kpcvt'y cu'cungf "vq'ugrgev'gzr gt w'lp"gej "qh' vj g'gki j v'ctgeu."r tqxkf g'vj go 'y kj "kphqto cvkqp"cdqw'vj g'4233 B4" uwf { . 'j cxg'vj go "eqo r rvg'c"s wguvkppckt g'lp"vj gkt'ctgc'qh'gzr gt wug. " cpf "tgwtp"vj g's wguvkppckt g'vq"UUO 0C" f guetkr vqp"qh'vj g'4233 B4" uwf { "y kj "gzr rpvkqp"qh'vj g'r wtr qug"cpf "eqpvv'v'qh'vj g's wguvkp/ pckt g."cmqi "y kj "s wguvkppckt gu'lp"RF Hhqtö cv'y gtg'ugpv'vq"gej "eq/ qtf kpcvt"grgvtqplecm{³⁸0Vj g'eqqtf kpcvt"o cpci gf "vj g'cf o kpkmtcvkqp" qh'vj g'uwtxg { "cpf "vj gp'tgwtpgf "vj g'eqo r rvgf "s wguvkppckt gu'vq"UUO 0" "

15: Agencies that participated in the 2003/04 study were asked to participate. The criteria used for the 2003/04 study were that the agency regulates a well developed commercial nuclear program, that the agency be willing to participate, and that the costs associated with researchers visiting the site and completing the in-person interviews would be reasonable. All of the countries participating in the 2003/04 study were able to participate in the 2011/12 study except Finland.

16: The instructions and introductory materials are provided in Appendix 3.

Vj g's wguvkppck gu'y gtg'tgwtpgf "dgy ggp"Hgdtwct {"cpf "Lwn"qh'42340'
 Hhvt/hqwt's wguvkppck gu'y gtg'eqo r rvgf "d {"hqtv{/plpg"fhhtgpvtg/
 ur qpf gpwOHxg'tgur qpf gpw'j cf "gZR gt vug'k"o qtg'vj cp"qpg"ctgc"cpf "
 eqo r rvgf "y q's wguvkppck gu'0"Vj g'tgur qpf gpw'y gtg'xgt {"gZR gtl
 gpegf "pwegct'tgi wvqtu0Cm quv': 2' "tgr qtvgf "o qtg'vj cp"32"{"gctu"cu"
 c'tgi wvqt"cpf "o qtg'vj cp"62' "j cf "o qtg'vj cp"42"{"gctu0"
 "

Kp'cf fklqp"vq'vj g'hqto cni'cf o kpxtcvqp"qh'vj g's wguvkppck g'vj tqwi j "
 yj gug'eqqtf kpcvtu."37"kvgtpcvqpcn'gZR gt w'hmgf "qw's wguvkppck gu'cu"
 r ctv'qh'cp"kvgtpcvqpcn'Cvqo le"Qpgti {"Ci gpe {"*KGC+"Kvgti tcvf "
 Tgi wvqt {"Tgxky "Ugtxleg"*KTU+"o kuukqp"vq"Uy gf gp'k'Hgdtwct {"qh"
 4234³: 0Vj gug's wguvkppck gu'y gtg'gxcnvcvgf "ugr ctevgn {"cpf "vj g'tguwmu"
 eqo r ctgf "vq'vj qug'qh'vj g'wvxg{0"
 "

Vj g'pwo dgt"qh's wguvkppck gu'tgwtpgf "xctkgf "d {"ctgc"qh'uw' gtxkukqp"
 *ugg'Vcdrg"405+0T gcuqpu'hqt "f hhtgpegu'kpenmf gf "vj cv'uo g'tgi wvqtu"
 f kf "pqv'tgi wv'k"p'c'r ctvewrt"ctgc"cpf "vj cv'uo g'ctgcu'y gtg'pqv'tgrg/
 xcpv'hqt"cm'ci gpegu"*g0 0'pqv'cm'eqwv'kgu'ctg'eqputwv'kpi "pgy "pw
 erget"r qy gt "r ncpw+0"
 "

Vcdrg'405<Pwo dgt 'qh'Tgur qpf gpw'd { 'Ctgc''			
Ctgc''	Rt lo ct {" S wguvkppck gu'	KTU'' s wguvkppck gu'	Vqwd'
O cpci go gpv'U' wgo u'	9"	3"	: "
O clpvpcpeg''	: "	3"	: "
Qr gt cvkqp''	: "	6"	34"
Uchv' { 'E wvwt g''	32"	3"	33"
Rrv pv'Nht'Gzvgpukqp''	7"	3"	8"
O clqt 'Rrv pv'' O qf Hlec vqpu'	: "	6"	34"
Rqy gt 'W' T cvgu'	7"	4"	9"
Eqput wv'kqp''	5"	3"	6"
Vqwd'	76"	37"	8; "

.....

17: Some respondents did not mark an answer to one or more questions. This resulted in missing data for some questions. The total number of responses across the questions included in this report varied from 51 to 54. Overall there were very few missing answers.

18: Although questionnaires from IRRS mission experts did not specify the name or agency of the respondent, the countries/agencies represented included: Albania, Belgium, Canada, Finland, France, Germany, Greece, IAEA, Mexico, Netherlands, Pakistan, Republic of Korea, Spain, Switzerland, United Kingdom, United States

2.4. Completing initial analysis

Hqt"vj g"lpskncn'cpcn{uku'wci g."vj g'hsg wpekgu'cpf "f guetkr vxg'fcv'htqo " vj g'emqgf/gpf gf "s wguvkqpu'y gtg'wwo o ctq gf "kp"vcdngu0Vj g'vcdngu" tgr qt'vj g'r gt'egpv'qht'gur qpf gpw'kp"gej "t'gur qpug'ecvgi qt {"cpf "vj g" pwo dgt'qht'gur qpf gpw'ht'gcej "t'gur qpug'ecvgi qt {ORgtegpvci gu'y gtg" tqwpf gf "vq"vj g'pgctguv'y j qng'pwo dgt "kp"cm'vcdngu0

T'gur qpug'ecvgi qt'kgu'y gtg'eqo dkgf "hqt"vj g'vcdngu'vq'hcekrcvq"vj g'kp/vgr tgv'vq'qht'guwu0Hqt'gzco r ng."t'gur qpugu'tgi ctf kpi "vj g'wug'qht' ur gekhe'cr r tqcej gu'kp"cp'ctgc'y gtg'eqo dkgf "kp"vq'vj tgg'ecvgi qt'kgu' P qv'wugf "2+"uqo g'go r j cuku"3."4."qt"5+"cpf "j gcx {"go r j cuku"6"qt"7+0"

Vj g't'guwu'qht'vj g'ug'cpcn{ugu'y gtg'wugf "vq"r tqxkf g'cp"qxgtcm'r kwgt" qht'vj g'wug'qht' kht'gpv'cr r tqcej gu'cpf "vq"eqo r ctg'vj g'cr r tqcej gu'wugf " kp"fh'ht'gpv'ct'gcu0Vj g{"y gtg'cnuq'wugf "f wtkpi "vj g"o ggvkpi u'y kj "r ct/vlekr cvkpi "ci gpekgu'vq'cuuguu"vj g'hceg'xcrkf kv "qht'vj g'lpkncn'kpf kpi u0

Kp'qtf gt "vq"gxcmvq"y j gvj gt "vj g'KCGC"o kuukqp'r ct'vlekr cpw'u't'gur qpugu" y gtg'uko krt "vq"vj qug'hqo "vj g'hqto cn'wuxg{"vj g't'guwu'qht'emqg/ gpf gf "s wguvkqpu'y gtg'eqo r ctg' "y kj "cpf "y kj qw'vj g'KCGC"t'gur qpugu0 Qxgtcm'vj g't'guwu'y gtg'xktwcm {"vj g'uco g'0Dgecvug'vj g'KCGC"s wgu/ vkppcktu'y gtg"o kuukpi "cpuy gtu'vq"o cp {"qht'vj g's wguvkqpu."kv'yu'cu'f g/ ekf gf "vj cv'vj g'KCGC"t'gur qpugu'vq'emqg/gpf gf "s wguvkqpu'y qwf "pqv'dg" kpenf gf "kp"vj g'f'kuewuukqp'qht'vj g'emqg/gpf gf "s wguvkqpu0Vj g'eqo / o gpw'cpf "ecug'uwf kgu'htqo "vj g'KCGC"s wguvkppcktu'y gtg'wugf "kp"vj g" eqpvgpv'cpcn{uku'cpf "kpuki j w'r tqxkf gf "htqo "vj g'ug's wguvkppcktu'y gtg' f'kuewuugf "kp"vj qug't'guwu0"

2.5. Meeting with participating agencies

Vj g't'guwu'qht'vj g'lpkncn'cpcn{uku.'cnp'i "y kj "c" f'kuewuukqp'qht'vj g'r tq/ lgev."y gtg'r t'gugpvgf "cv'ci gpe {"o ggvkpi u'cv'gcej "qht'vj g'r ct'vlekr cvkpi " ci gpekgu0C wgp'ggu'cv'vj g"o ggvkpi u'y gtg'gk'j gt'r ct'vlekr cpw'kp'vj g" uwtxg {"qt"hc'o kkt"y kj "vj g"4233134"uwf {"0Rct'vlekr cpw'y gtg'cungf " y j gvj gt "vj g'lpkncn'cpcn'w'gtg'eqpuk'vgp'v'y kj "vj gkt"gzr g'k'p'eg"40" f'kf "vj g't'guwu"j cxg'hceg'xcrkf kv "+cpf "vq" f'kuewu"vj g'wug'qht'cr r tqcej gu' kp'tgi wvq { "uwr gtxkukqp0"

Eqo o gpw'htqo "vj g"o ggvkpi u'ctg'dcugf "qp"pqvu'cngp"fwtkpi "vj g" o ggvkpi u'cpf "ctg"i gpgtcm {"r cter j teugu'tcvj gt "vj cp'xgtdcvk'o "s wqv'qht' y j cv'y cu'uck' f'wtkpi "vj g"o ggvkpi u0P qvu'qp"vj g'f'kuewuukqp'u'y gtg" t'g'kgy gf "cpf "kpenf gf "kp"vj g'eqpvgpv'cpcn{uku0"

2.6. Analysing written comments and discussion

Eqpv'cpcn{uku'qh'vj g'ecug'gzco r ngu."qr gp/gpf gf "s wgvkqpu."cpf "f ku/
ewuukqpu'htqo "vj g'ci gpe{ "o ggkpi u'y cu'wugf "vq" f gxgnr "eqo o qp"
vj go gu'tgi ctf kpi "vj g'tgur qpf gpwø'gxcn'wv'kqp"qh'f k'htgpv'cr r tqcej gu"
vq'tgi wv'kqp0Vj g"eqo o gpw'cpf "f k'ewuukqpu'htqo "vj g'KTU's wgvkqp/
pck'gu'y cu'cnuq"eqpukf gtgf "k'vj g'eqpv'cpcn{uku0"
"

Gzco r ngu'qh'eqo o gpw'ctg'r tqxkf gf "vj tqwi j qw'vj g'tgr qtv'vq'uw r n' "
gzco r ngu'qh'vj g'ecvi qtkgu'cpf "vj go gu'kf gpw'htgf 0Vj gug'eqo o gpw'ctg"
pqv'xgt'c'vko "s wv'gu'htqo "vj g'f k'ewuukqpu'qt "vj g's wgvkqppck'gu'dw'ctg"
r cter j tcugf 0Kp "cf f k'kqp."pco gu'qh'ur gek'ke"ci gpek'gu."hegpuggu."cpf "
tgi wv'kqpu'y gtg'tgo qxgf "cpf 'tgr m'egf "y kj "i gpgt'le'v'to u'*g0 0"UUO "
ku'tgr m'egf "y kj "övj g'ci gpe{ö+00 cp{ "eqo o gpw'y gtg'uj qv'p'gf "vq"
o cng'vj g'tgr qtv'o qtg'tgcf cdng'cpf "i tco o ct'cpf "ur gmk'pi "y gtg"
ej cpi gf "vq"Dtk'kuj "Gpi nkuj "hqt"eqpuk'v'p'e{0Kp"o cni'pi "vj gug'ej cpi gu"
gxgt {"gh'ht'v'y cu'o cf g'vq'ecr wtg'vj g'k'p'v'p'v'qh'vj g'eqo o gpw'0"
"

3. General findings regarding the role of approaches in regulatory supervision

Ɔp'vj g'eqo o gƆu'qp'vj g's wgu'kƆppcƆt gu'cƆf 'vj g'f kƆwukƆpu'cƆv'ƆqƆmƆy / w' r' o gƆv'Ɔp' u'uo g'f gƆgƆcƆn'qƆxƆgƆtƆej Ɔp' . 'vj go gu'go gƆt' g'f 'tƆg' cƆf Ɔp' 'vj g' tƆqƆg'qƆh'cƆr r tƆqej gu'Ɔp' tƆg' w'cƆvƆt { 'uwr gƆxƆkƆkƆp'0'Vj gug'vj go gu'y gƆg' "

- TƆg' w'cƆvƆt { 'uwr gƆxƆkƆkƆp'Ɔu'c'f { ƆcƆo Ɔe' r tƆqeguu' "
- QƆxƆgƆcƆm'vj g'cƆr r tƆqej gu'y gƆg'f gƆuƆtƆkƆdƆg' "cƆu'vƆqƆm' "
- CƆr r tƆqej gu'cƆtƆg'eqo r ƆgƆo gƆvƆcƆt { 'vƆqƆm' . ƆqƆv'eqo r gƆv'Ɔp' 'qƆr vƆƆpƆu' "
- CƆr r tƆqej gu'f ƆhƆgƆtƆg' 'Ɔp' go r j cƆuƆkƆ'dw'y gƆg'wugƆf "cƆf 'wugƆhƆw'cƆetƆquu' cƆm'cƆtƆgƆu' "
- Vj g'tƆgƆr ƆqƆf gƆpƆu'tƆgƆr qƆtƆvƆf 'vj cƆv'vj g'f "gƆz r gƆtƆgƆpƆegƆf "cƆp' ƆpƆetƆgƆcug' Ɔp' 'vj g' wug'qƆh'vj gug'cƆr r tƆqej gu'Ɔp' tƆg' w'cƆvƆt { 'r tƆcƆeƆkƆg' "
- EƆkƆewo uƆcƆpƆegƆu'qƆh'c'ur gƆeƆkƆe'ecug'f gƆvƆtƆo Ɔp'g'vj g'cƆr r tƆqej *gƆu'wugƆf " cƆf 'vj g'gƆhƆgƆvƆxƆgƆpƆguu'qƆh'vj g'qƆwƆeqo g' "
- TƆgƆuƆwƆeg'cƆf "gƆz r gƆvƆkƆg'pƆgƆgƆf u'ecƆp'dƆg'j Ɔi j 'y ƆkƆj "cƆp' { 'cƆr r tƆqej " "
- RƆtƆgƆuƆtƆkƆr vƆxƆg'cƆf "gƆf wƆcƆvƆkƆp' Ɔp' hƆwƆgƆpƆeg'cƆr r tƆqej gu'tƆgƆr tƆgƆpƆv'Ɔo w'cƆk' r Ɔg'vƆqƆm' "

3.1. Regulatory supervision is a dynamic process

F ƆkƆwukƆkƆpu'cƆpƆf 'eqo o gƆpƆu'vƆpƆf gƆtƆkƆpƆgƆf 'vj g'f { ƆcƆo Ɔe' ƆcƆw'g'qƆh'vj g'tƆg' w' w'cƆvƆt { 'r tƆqeguu'cƆpƆf 'vj g'tƆgƆuƆw'Ɔp' 'pƆgƆgƆf 'hƆq' 'hƆgƆz ƆkƆkƆv' { 'Ɔp' 'vj g' uwr gƆxƆkƆkƆp' qƆh'pƆwƆerƆcƆt' hƆcƆkƆkƆgƆu'0'cƆu' Ɔp' 'vj g'4225 126' hƆpƆf Ɔp' u'cƆpƆf 'y qƆtƆmƆj qƆr . 'vj gƆg' y gƆg'eqo o gƆpƆu'vj cƆv'c' o cƆr r Ɔp' 'qƆh'vj g'tƆg' w'cƆvƆt { 'r tƆqeguu'Ɔu' Ɔo r qƆtƆcƆp' cƆpƆf 'pƆgƆgƆf gƆf 0'Vj g' r tƆqeguu'qƆh' tƆg' w'cƆvƆt { 'uwr gƆxƆkƆkƆp' y cƆu'cƆuƆq' ƆpƆqƆvƆf 'Ɔp' ecug'gƆz cƆo r ƆgƆu' y ƆkƆj 'f ƆhƆgƆtƆgƆp'v'cƆr r tƆqej gu'dƆg' Ɔp' 'wugƆf "cƆv'f ƆhƆgƆtƆgƆp'v'ƆuƆc' / gu'0'cƆmƆj qƆw' j 'o cƆr r Ɔp' 'vj g' r tƆqeguu'qƆh' tƆg' w'cƆvƆkƆp' Ɔu'dƆg' { ƆpƆf 'vj g' u'eqƆr g'qƆh' vj Ɔu'w'w'f { . 'uƆo g'qƆh'vj g' r qƆkƆp' u' o cƆf g' Ɔp' 'vj g'f ƆkƆwukƆkƆpu'cƆpƆf 'eqo o gƆpƆu' cƆtƆg' y qƆtƆv'j 'pƆqƆv'Ɔp' 'j gƆg'0' "

F ƆkƆwukƆkƆp'v'cƆv'qƆp'g'c' i gƆpƆe { 'pƆqƆvƆf 'vj cƆv' uwr gƆxƆkƆkƆp' Ɔu'f qƆp'g'kƆgƆtƆvƆxƆg' Ɔc'cƆu' uwr gƆxƆkƆkƆp' eqƆp'v'Ɔp'wƆg'f ƆhƆgƆtƆgƆp'v'cƆr r tƆqej gu'eqo g' Ɔp'v'Ɔr Ɔc' { 0'Vj g' r tƆq/ eguu' o c' { 'f' q' dƆcƆm'cƆpƆf 'hƆq' vj 'cƆo qƆp' i 'f ƆhƆgƆtƆgƆp'v'cƆr r tƆqej gu'0'Vj Ɔu' y cƆu'cƆuƆq' erƆgƆt' Ɔp' 'vj g'f gƆuƆtƆkƆdƆg' qƆh'qƆp'g'ecug' . y j gƆg'c' tƆgƆr ƆqƆf gƆp'v'f gƆuƆtƆkƆdƆg' 'j qƆy " uƆcƆpƆf cƆf u'y gƆg' Ɔp'kƆkƆm' { 'ug'v'cƆu'v'cƆt' i gƆu' . cƆpƆf 'vj gƆp' . cƆu' o qƆtƆg' Ɔp' hƆq' tƆo cƆv'ƆkƆp' y cƆu'qƆdƆv'ƆkƆpƆg'f . 'o qƆtƆg' r tƆgƆkƆg' . 'ug'v' uƆcƆpƆf cƆf u'y gƆg' Ɔp' u'kƆwƆwƆg'f 0' "

QƆv' gƆtƆu' r qƆp'vƆf "qƆw'vj cƆv' tƆg' w'cƆvƆt u'tƆg' { "qƆp' Ɔp' r w'cƆp'f "cƆuƆgƆuƆo gƆp'v'cƆp'f " vj cƆv'vj g' hƆu'v'qƆh'cƆr r tƆqej gu'f qƆg' u'pƆq'v'ecr w'g'vj g' qƆp' / i qƆkƆp' i "eqƆmƆgƆv'ƆkƆp' cƆpƆf " wug'qƆh' Ɔp' hƆq' tƆo cƆv'ƆkƆp' 0' hƆq' tƆg' cƆo r Ɔg' . qƆr gƆtƆv'Ɔp' i "gƆz r gƆtƆgƆpƆeg' Ɔu' cƆr r r Ɔg'f " cƆtƆquu'cƆm'cƆtƆgƆu'qƆh' uwr gƆxƆkƆkƆp' cƆpƆf 'uƆi pƆkƆeƆp'v'gƆxƆgƆp' u'cƆtƆg' i ƆxƆgƆp' c'j Ɔi j "

ngxgn'tgxlgy "cpf 'f kuewuugf "cv'c'f ckn{ "qp/i qkpi "o ggkpi 0Vj g's wguakp"
y cu'cungf . "Where does experience feedback fit into these approaches?"
"

Cpqj gt'cur gev'j cv'y cu'f kuewuugf "cu'pqv'ecr wtgf 'kp'j g'hku'qh'cr /
r tqcej gu'ku'j g'ko r qtvcpeg'qh'o qxlpi "tqo 'r tqi tco u'cu'f guki pgf "
y kj 'r cr gt'tgxlgy +'q'cewcn'y qtn'cu'dwkn0Vj cv'ku.'tgi wrcvtu'o wuv'
mqm'cv'dqvj "öcu'r rpppgf ö'cpf "öcu'gzgewgf ö'cur gewu'qh'r rpv'r gthqt/
o cpeg"
"

Ki'cr r tqcej gu'ctg'wvf gtuvqf "cu'vqnu'kp'j g'r tcew'eg'qh'tgi wrcvt { 'uw
r gtxkukp'j gp'k'ku'ko r qtvcpv'q'gZR mtg'j gk'wughwrguu'y kj kp'j g'
qxgtcm'eqpvz'v'qh'j g'r tqegu'qh'tgi wrcvt0C'tgur qpf gpv'pqvf 'j cv."
*All of the approaches are used but listing them is not how they are
used.* Cpqvj gt'y tqv'j cv."The total picture of regulation should in-
clude ways of looking at each and every part of the regulating loop
(e.g., how to measure the effectiveness of regulation), how regulators
counteract challenges (e.g., new techniques) and how to achieve pro-
activeness."
"

Vj gug'eqo o gpw'qp'j g'tgr'v'kp'j k'qh'cr r tqcej gu'v'j g'qxgtcm'r tq/
egu'qh'tgi wrcvt'uj qwf "dg'ngr v'kp'o kpf 'y j gp'eqpuk'gtkpi 'j g'hkpf /
kpi u'qh'j ku'uwf { 0

3.2. Approaches used in combination and described as tools

Qpg'qh'j g'emgct gu'qweqo gu'qh'j g'4225 126'uwf { 'y cu'j cv'tgi wrcvtu'
wug'eqo dkpc'v'kp'j'qh'cr r tqcej gu'v'cej kxg'j gk' 'i qcn0Vj ku'hkpf kpi "
y cu'utqpi n' 'uwr r qtvgf 'kp'j g'4233 134'uwf { 0Vj g'eqo o gpw'cpf 'f ku/
ewukpu'tgi ctf kpi 'j g'wug'qh'cr r tqcej gu'uw i guvgf 'j cv'tgi wrcvtu'wug'
ugw'qh'cr r tqcej gu'cu'c'v'qndqz 'v'j' gir 'tguqrg'f k'htg'gpvtgi wrcvt { "
kuwgu0T gur qpf gpw'cpf 'f kuewuucpw'kp'j g'4233 134'uwf { 'i gpgtcm' "
f guet'kgf 'eqo dkp'j 'j g'cr r tqcej gu'v'cf f tgu'c'r ct'wrcvt'ecugö
eqpuk'gtkpi 'j qy 'j g'utgpi vj u'qh'c'r ct'wrcvt'cr r tqcej "eqwf "eqp'kd/
wg0Cu'qpg'tgur qpf gpv'pqvf . "Using a single approach is impractical0
Eqo dkpc'v'kp'j'gtg'wugf "v'q'o czko k' g'j g'qxgtcm'gh'g'v'kp'j'qh'j g'
tgi wrcvt { 'uwr gtxkukp0Y j gj gt'c'r ct'wrcvt'dgpg'k'qt 'f k'hw' 'y cu'
tgr'xcpv'y cu'eqpuk'gtgf 'kp'j g'ugr'v'kp'j'qh'cr r tqcej gu'ht'j g'ecug0"

3.3. Approaches are complementary tools, not competing options

Kp'j g'4225 126'uwf { 'j gtg'y gtg'uw i guk'pu'qh'uqo g'eqph'ev'tgi ctf /
kpi 'ej cpi gu'kp'j g'cr r tqcej gu'wugf "qt"go r j cuk'gf "d { 'tgi wrcvtu0Kp'
r ct'wrcvt . "v'puk'p'tgi ctf kpi 'j g'tgr'wego gpv'qh'f gvgto k'p'k'c'pcn' uku'
y kj 'tkm'cpcn' uku'y cu'f kuewuugf 0Kp'j g'4233 134'uwf { 'j g'f kuewuukpu'

cpf "eqo o gpv'f kf "pqv'tghgev'yj ku'nkpf "qh'v'g'pukqp0Cr r tqcej gu'y gtg" f k'uewugf "cu'v'q'qm'yj cv'j cxg"o qtg"qt'rguu'uweegu'f gr gpf kpi "qp'yj g" r ct'v'ewrct'ecug0Cnj qwi j "f k'hlewnk'gu'y kj "gcej "cr r tqcej 'y gtg'o gp/vkppgf . 'yj gug'y gtg'f k'uewugf "cu'eqpukf gtc'v'k'p'u'lp'yj g'ej qleg"qh'cr / r tqcej "v'c'f'f'fguu'c"ur gek'ke"ukwcv'k'p'0Cr r tqcej gu'y gtg'f k'uewugf "cu' dgkpi "v'ughw'v'q'cf'f'fguu'f k'htg'gp'v'kuu'guo y kj "qpg"cr r tqcej "dgkpi " wugf "kp'cf'f'k'k'q'v'q'cp'q'v'j gt'tcv'j gt'yj cp'k'p'uv'gcf "qh'cp'q'v'j gt'0"

3.4. Approaches differed in emphasis but used/useful across all areas

Cnj qwi j 'yj gtg'y gtg'f k'htg'p'egu'cet'quu'ct'gcu'lp'yj g'cr r tqcej gu'yj cv' y gtg"go r j cuk'gf "cm'cr r tqcej gu'y gtg'tgr qt'v'gf "cu'wugf "kp'yj g'öwuwcn' cr r tqcej ö'd { "cv'rgcu'v'q'p'g't'gur q'p'f'gp'v'0Cr r tqcej gu'y gtg'cu'q't'gr qt'v'gf " cu'w'ughw'id { "t'gur q'p'f'gp'v'lp'g'cej "ct'gc'0"

Cm'qh'yj g'cr r tqcej gu'y gtg'tgr qt'v'gf "cu'wugf "d { 'yj g'o clqt'kv' "qh'tg/ ur q'p'f'gp'v'cet'quu'cm'qh'yj g'ecugu'0Vj g'o qu'v'wugf "cpf "go r j cuk'gf "cr / r tqcej . "ugh'cu'guuo gpv.'y cu'tgr qt'v'gf "cu'wugf "kp'yj g'öwuwcn'cr r tqcej ö' d { "cm qu'v'; 2' "qh'tgur q'p'f'gp'v'0Vj g'rgcu'v'wugf "cpf "go r j cuk'gf "cr / r tqcej . "c'hc'ek'kv' { "cr r tqcej . 'y cu'tgr qt'v'gf "cu'wugf "kp'yj g'öwuwcn'cr / r tqcej ö'd { "cm qu'v'97' "qh'yj g'tgur q'p'f'gp'v'0Cnj qwi j "uqo g'cr r tqcej / gu'y gtg'uggp'cu'o qtg"go r j cuk'gf "cpf "v'ughw'v'yj cp'q'v'j gtu. "cm'y gtg'r tg/ ugp'v'gf "cu'wugf "cpf "v'ughw'v'lp'r ct'v'ewrct'ecugu'0"

3.5. Increase in the use of approaches

Kp'yj g'4225 126'uwf { 'yj gtg'y gtg'uqo g'tgr qt'v'qh'cp'k'p'et'g'cug'lp'yj g'wug" qh'r tqegu'dcugf "cpf "t'kum'idcugf "cr r tqcej gu'cpf "c'f'get'g'cug'lp'yj g'wug" qh'c'r t'g'uet'kr v'xg"cr r tqcej 0Kp'yj g'4233 134'uwf { "t'gur q'p'f'gp'v'yj gtg'ht" o qtg'rk'ng'v' "v'q't'gr qt'v'yj cv'lp'yj g'kt "g'zr g't'k'p'eg'yj gtg'j' cf "d'ggp'cp'lp/ et'g'cug'lp'yj g'wug'qh'cm qu'v'cm'qh'yj g'cr r tqcej gu'lp't'gi w'v'qt { 'r t'ce/ v'egô uwi i gu'kpi 'yj cv'wug'qh'yj gug'cr r tqcej gu'j cu'd'geqo g'o qtg'y gm' gu'cd'rkuj gf "qxgt'v'ko g'ug'g'U'ge'v'k'p'8005'hq't'c'f'g'v'k'ng'f "f'k'uewuk'p'0"

3.6. Circumstances often determine the approach(es) used, and effectiveness of outcomes

Cnj qwi j 'yj g'h'q'ewu'qh'yj ku'uwf { 'y cu'yj g'wug'cpf "gh'g'ewu'qh'ug'x'gp'f'k' h'gt'gp'v'cr r tqcej gu'wugf "lp't'gi w'v'qt { "uwr g't'x'k'k'q'p.'yj g'eqo o gp'v'lp'yj g' s'v'g'u'k'p'p'ck'gu'cpf 'yj g'f'k'uewuk'p'u'cv'yj g'o g'g'v'kpi u'eq'x'g'g'f "c'dt'q'cf'gt" ueqr g'qh't'gi w'v'qt { 'r t'ce'v'eg'cpf "q'weqo g'0Y j k'ng'yj gtg'y cu'uqo g'f'k' u' ewu'k'p'qh'yj g'cr r tqcej gu'ch'g'ev'kpi 't'gi w'v'qt { "gh'g'ev'k'g'p'guu.'k'y cu" o qtg'eqo o qp'yj cv'q'v'j gt'g'rgo gp'v'qh'yj g'ecug'ch'g'ev'gf "dq'v'j 'yj g'ej qleg" qh'cr r tqcej *gu'cpf 'yj g'q'weqo gu'0Cu'p'q'v'gf "g'ct'ng't. "cr r tqcej gu'y gtg" f'k'uewugf "cpf "eqo o gp'v'gf "qp'cu'v'q'qm'yj cv't'gi w'v'qtu'ecp'wug'lp'yj g"

r wtuwk'qh'uchg"qr gtcvkqpu'cv'pwenget'r qy gt'r rpwu0Cu"qpg'tgur qpf gpv'
r w'k'"
"

I see the different approaches as a tool kit to be used for regulatory purposes on a case by case basis with a contextual analysis planned well in advance of the actual assessment. This implies the identification of the applicable approaches and a grading of their 'intensity'. The application of whatever regulatory approach is used requires training and a supporting regulatory framework.

3.7. Resources, expertise requirements can be high regardless of approach

Cqo o gpwu'qp"gzr gt vkug"cpf "tguqwtegu"kp"vj g"4233 B4"uwf { "uwi i guv'c"
f khtgtpv'kpvtgtr tgcvkqp'htqo "vj qug'qh'vj g"4225 B6"uwf { 0k'vj g"
4225 B6"uwf { "r tguetkr vkxg"cpf "r tqegu"cr r tqcej gu'y gtg'kf gpv'k'kf "cu"
j cxkpi "j ki j "gzr gt vkug"cpf "tguqwtg'tgs wkt go gpw'0Vj g"4233 B4"uwf { "
cnuq"eqpvc'kpgf "eqo o gpw'tgi ctf kpi "j ki j "gzr gt vkug"cpf "tguqwtg'wug"
pggf u'htq"vj gug"cr r tqcej gu'0J qy gxgt."j ki j "tgs wkt go gpw'htq"gzr gt vkug"
cpf "tguqwtegu'y gtg"cnuq"o gpvkqpgf "cetquu'cm'cr r tqcej gu'd { "cv'ngcu"
qpg'tgur qpf gp'0F khtgtpv'cr r tqcej gu'tgs wkt gf "j ki j "tguqwtegu'cv'f kh/
hgtgpv'r qkpw'kp"vj g'tgi wrcvt { "r tqegu'0Hqt"gzco r ng."y j kng"cr tguetkr /
vkxg"cr r tqcej "tgs wkt gu"j ki j "gzr gt vkug"cpf "tguqwtegu'htq" f gxgnr kpi "
*cpf "tgxkukpi +f gvc'kngf "tgs wkt go gpw."c"r tqegu"cr r tqcej "tgs wkt gf "j ki j "
gzr gt vkug"cpf "tguqwtegu'htq"kpur gev'kqp"cpf "vj g"gx'cnv'kqp"qh'kpur gev'kqp"
h'kf kpi u'0Cp"qweqo g"cr r tqcej "tgs wkt gu"j ki j "gzr gt vkug"cpf "tguqwtegu"
htq"kf gpv'k'kf kpi "r gthqto cpeg'kpf kecvtu"cpf "c'tkum'icugf "cr r tqcej "htq"
f cv'eqng'ev'kqp."cpcn'uku"cpf "kpvtgtr tgcvkqp'0Cnj qwi j "ugrh/cuuguu gpv'
y cu'bo qtg'rkngn' "vq'dg'pqvgf "cu'tgs wkt kpi "gzr gt vkug"cpf "tguqwtegu'htqo "
vj g'rk'epuggu."kp'cv'ngcu"vy q'ecugu'vj g'f k'k'k'w'w' "qh'gxc'ncv'kpi "c'rk'ep/
uggau'ugrh/cuuguu gpv'cpf "vj gp'r wtuw'kpi "r tqdrgo u'kf gpv'k'kf "kp"vj g"
rk'epuggau'ugrh/cuuguu gpv'etgcvgf "j ki j "tguqwtg'f go cpf u'qp"vj g'tgi w/
rcvt'0Qxgtcm'icv'kpi u'qh'vj g'ngxgn'qh'gzr gt vkug"cpf "tguqwtegu'wugf "kp"vj g"
ecugu'r tgu'pvgf "y gtg'tg'rc'vkxgn' "j ki j "ugg'f k'uewukqpu'qh'vj gug's wgu/
vkqpu'kp"Ugevkqpu'606"cpf "607+0Qxgtcm"vj g'hqmqy "w'uwf { "uwi /
i guw'vj cv'cm'cr r tqcej gu'tgs wkt g"gzr gt vkug"cpf "tguqwtegu" cpf "vj cv'vj g"
ngxgn'f gr gpf u'qp"vj g'ur gek'k'le"ecug'0Wug'qh'r tguetkr vkxg'tgi wrcvkpu'tg/
i ctf kpi "j ki j n' "uc'p'ctf k'gf "cpf "uc'drg'grgo gpw'uggo u'vq'dg"ci qqf "
wug'qh'tguqwtegu" v { kpi "vq'etgcvg"cr tguetkr vkxg'tgi wrcvkqp'htq"pgy "
cpf "f { pco le"grgo gpw'g'0"uchgv' "ewmw'g+"o c { "dg'rguu'gh'k'k'p'0Vj g"
ko r rk'ev'kqp'qh'vj g'f k'uewukqpu'cpf "eqo o gpw'y gtg'vj cv'ej qqkpi "vj g"
y tqpi "cr r tqcej "htq"cr ur gek'k'le"ecug'ecp'kpetgcug'vj g'tguqwtg'tgs wkt g/
o gpw'0Hwtvj gt'tgugctej "kp"vj ku'ctgc"o c { "dg'wugh'w'f' }

3.8. Prescriptive and education/influence approaches represent multiple tools

Cnj qwi j "o quv'tgur qpf gpw'tcvgf 'y g'f ghkpkqpu'qh'vj gug'cr r tqcej gu' cu'engct. 'y g'f kuewuukpu'lpf kcvgf 'y cv'vj g{ 'y gtg'dgkpi 'wugf 'vq'f g/ uetldg'o wnr ng'tgi wrcvt { 'vqqu0"

"

Vj g'rtguetk vkg'cr r tqcej 'y cu'wugf 'vq'f guetldg'"

"

- Tgi wrcvqpu'dcugf "qp'y gm/guxdrkuj gf 'tgs wktgo gpwô uwej "cu'kp/ vgtpcvkqpcn'uxpf ctf u'qt'f guki p'dcuku"
- F gvckrgf 'tgs wktgo gpw'vj cv'r tqxkf g'hwg'hwzdkrkv{ 'hqt'vj g'hwgpugg' qt'vj g'tgi wrcvt "
- Czgtvkqp'qh'tgi wrcvt { 'cwj qtkv{ "

"

Vj g'gf wecvkqp lphwpeg"cr r tqcej 'y cu'wugf 'vq'f guetldg'"

"

- Eqo o wplecvkqp'dgy ggp'tgi wrcvtu'cpf "hwgpuggu'cpf "dgy ggp" tgi wrcvtu'cpf 'y g'r wdrk "
- Gf wecvkqp'"
- Kphwpeg"
- Rtqo qvkv'p'd{ 'y g'tgi wrcvt'qh'ur gekk'o gyj qf u'"

"

Vj g'f khgt gpv'grgo gpw'kpenf gf 'kp'f kuewuukpu'qh'vj gug'cr r tqcej gu' j cxg'f khgt gpv'ko r kcvkqpu'hqt'tgi wrcvt { 'ghgevk gpguu'hwvt g'ty qtn' qp'f gxgr kpi 'ugr ctcv'cr r tqcej gu'hqt'gcej "grgo gpv'o c { 'dg'wughw0"

"

Vj gug'qxtcm'vj go gu'uj qwr 'dg'ngr v'kp'o kpf 'y j gp'eqpukf g'kpi 'y g' o qtg'ur gekk'kpf kpi u'kp'vj g'pgz'vej cr vgtu0"

"

- Ej cr vgt'6. 'y j lej 'wugu'vj g'kpf kpi u'htqo 'y g'4225 126'uwf { "cu'c" dcugrkpg'vq'f guetldg'vj g'tguwu'qh'vj g's wguvkppckg'uwtxg{ 'cpf 'y g' o ggkpi u'tgi ctf kpi 'j qy 'cr r tqcej gu'cpf "ekewo ucpegu'ko r cev'vj g' ghgevk gpguu'qh'tgi wrcvt { 'r tcevkegu0"
- Ej cr vgt'7. 'y j lej 'r tqxkf gu'uqo g'qh'vj g'grgo gpw'qvj gt'vj cp'cr / r tqcej gu'vj cv'y gtg'kf gp'kkgf "cu'j cxkpi "cp'ko r cev'qp'vj g'ghgevk g/ pguu'qh'tgi wrcvt { 'r tcevkegu0k'p'o cp { 'ecugu'vj g'f kuewuukpu'cpf " eqo o gpw'hwewugf "qp'j qy "ekewo ucpegu'uwttqwpf kpi "c'r ctvkwrt" tgi wrcvt { 'wrgt'xkukp'chwgdqvj 'y g'cr r tqcej gu'wugf "cpf 'y g' uweegu'qh'vj g'qweqo g0"
- Ej cr vgt'8. 'y j lej 'r tqxkf gu'vj g'tguwu'qh'vj g'4233 134'uwtxg{ 'y kj " tgi ctf 'vq'wughwpguu'qh'vj g'cr r tqcej gu. 'y g'cr r tqcej gu'wugf "cpf " go r j cuk gf. "cpf "ej cpi gu'kp'cr r tqcej gu0Vj g'ej cr vgt'hwv'r tguvpu' y g'kpf kpi u'cetquu'cm'ctgcu'*808-'cpf 'y gp'ht'gcej "ctgc'ugr ctcvgn{ '*804-0"
- Ej cr vgt'9. 'y j lej 'r tqxkf gu'vj g'tguwu'qh'vj g'4233 134'uwtxg{ 'cpf " f kuewuukpu'tgi ctf kpi "gcej "qh'vj g'tgi wrcvt { "cr r tqcej gu'kpf kkf w cm{0"

4. Follow up of 2003/04 findings

Vj g'4233 B4'uwf { 'y cu'f guki pgf 'v' hqmy 'wr 'qp'vj g' hpf kpi u'htqo 'vj g' gctrkt. '4225 B6'uwf { 0'k'vj ku'ugevqp'vj g' gctrkt' hpf kpi u'ctg'r t gupvgf " cpf 'vj gp'vj g'ko r rkecvkpu'qh'vj g'pgy ' hpf kpi u'ctg'f kuewuugf 0Cnj qvi j " o cp{ 'qh'vj g' hpf kpi u'htqo 'vj ku'uwf { 'y gtg'eqpukvgpv'y kj 'vj qug'htqo " vj g'4225 B6'uwf { . 'vj gtg'y gtg'uqo g'ko r qtvcpv'f khtg ppegu'0O qtg'f g/ vckgf 'f kuewuukpu'qh'vj g' hpf kpi u'htqo 'vj g'4233 B4'uwf { 'ctg'r t gupvgf " kp'ej cr vtu'7. '8. 'cpf '90 "

- Ugevqp'60B'f kuewuugu'vj g' hpf kpi u'qp'vj g'dgpghku'cpf 'f khlewnku' hqt'gcej "cr r tqcej "
- Ugevqp'60A'f kuewuugu'vj g' hpf kpi u'tgi ctf kpi 'j qy "cr r tqcej gu'ctg" wugf 'kp'tgi wrcvt { 'uwr gtxkukp' "
- Ugevqp'60C'f kuewuugu'vj g' hpf kpi u'tgi ctf kpi "ur gekhle'eqpugs wpegu' qh'f khtg p'cr r tqcej gu"
 - Y j gy gt 'vj g' hkegpugg'qt'tgi wrcvt 'cngur' tko ct { 'tgur qpukdkk' { " hqt'uchgv' "
 - J qy "engt'tgs wktgo gpw'cpf "gZR gevkvkpu'ctg'v' hkegpuggu' "
 - Uki pkhecepeg'qh'uchgv' "kuwgu'kf gpvkhgf " "
 - GZR gtvkug'pggf gf "d { 'tgi wrcvtu'cpf 'hkegpuggu' "
 - Tguqwtegu'wugf "d { 'tgi wrcvtu'cpf 'hkegpuggu' "
 - Hgzkdkk' 'i kxgp'v' hkegpuggu' "
 - Rwdrke'etgf kdkk' { " "
 - Uchgv' "ewwtg' "
- Ugevqp'60D'f kuewuugu'4225 B6'tgr qtv'kuwgu'vj cv'go gti gf 'htqo " gZco r ngu'tgi ctf kpi 'tgi wrcvt { "cr r tqcej gu"
 - Tgukucpeg'v'ej cpi kpi 'tgi wrcvt { "cr r tqcej gu" "
 - Vgpukp'eqpegtkpi 'vj g'wug'qh'tkum'cpcn'uku' hqt'tgi wrcvt { 'f g/ ekukpu' "
 - F khtg ppegu'kp'kp'vtr tgvkpu'qh'tgi wrcvt { "cr r tqcej 'f ghpk/ vkpu' "
 - K r qtvcpeg'qh'eqo dkpcv'kpu'qh'cr r tqcej gu' hqt'tgi wrcvt { 'gh/ hgev'xgpugu' "

4.1. Benefits and difficulties of regulatory approaches

Vj g'eqo o gpw'tgi ctf kpi 'vj g'dgpghku'cpf 'f khlewnku'qh'cr r tqcej gu' y gtg'uko krt'kp'vj g'4233 B4'uwf { 'v'vj qug'kf gpvkhgf 'kp'vj g'4225 B6' uwf { 0'Ur gekhle'dgpghku'cpf 'f khlewnku'f guetkdgf 'kp'gcej 'uwf { 'ctg' r t gupvgf "hqt'gcej "cr r tqcej "dgmj 0'Vy q'qxgtcm' hpf kpi u. 'f kuewuugf " gctrkt'kp'ej cr vtu'5. 'uj qwf "dg'pqvgf "cu'tgrxcpv'cetqu'cm'cr r tqcej gu'0"

- Tguqwtegu'cpf "gZR gtvkug'wug'y cu'uqo g'ko gu'j gcx { 'hqt'gcej "cr / r tqcej 0'k'petgcugf "wug'qh'tguqwtegu'y cu'kp'uqo g'ecugu'cuuqekvgf " y kj 'vj g'wug'qh'vj g'y tqpi "cr r tqcej "hqt'vj g'ektewo ucpegu'qh'vj g' ecug'0"

- Hgy gt "f khhewnkgu"y gt g" f kweuugf "tgi ctf kpi "ur gekhle"cr r tqcej gu0
O quv'f kweuukqpu'f guetkdgf "o wnr rg"cr r tqcej gu'dgkpi "wugf "vq"
o gg'v'j g" f khhgtgpv'f go cpf u'qh'c"ecug0"

Vj g'uwu o ct { "qh'dgpgghku"cpf "f khhewnkgu"ht" gcej "cr r tqcej "hqwpf "kp"
vj g"4225 l26"uwf { "ku'r tqxkf gf "dgmjy "y kj "c"dtlgh'f guetk vkap"qh'v'j g"
hkf kpi u'htqo "vj g"pgy "uwxg{0F ghkpkkqpu"qh'v'j g"cr r tqcej gu'f khhgtgf "
uqo gy j cv'dgvy ggp"vj g"vy q"uwf lgu="ugg"Cr r gpf kz "4"ht"c"eqo r ctkuqp"
qh'v'j g" f ghkpkkqpu0

4.1.1. Prescriptive

Kp'dqj "vj g"4225 l26"cpf "4233 l34"uwf lgu"c"o clqt "dgpghk'kf gpvkhgf "ht"
c'r tguetk vxg"cr r tqcej "y cu'vj g"erctk'f "qh'v'j g"cr r tqcej "ht"dqj "vj g"
tgi wrvqt"cpf "vj g"kp'f wut {0F khhewnkgu'kf gpvkhgf "kp'dqj "uwf lgu'kp/
enmf gf "vj cv'vj g"cr r tqcej "rgf "vq"vj g"tgi wrvqt "cnkpi "t'gur qpukdkk'f "ht"
uchgv'f "y cu'tguqwtg'kpvgpukxg."cpf "y cu'kphgzkdng0"

Kp'cf f kkkp."dqj "uwf lgu'kpenmf gf "f kweuukqpu"qh'v'j g" wug"qh'c"r tguetk /
vxg"cr r tqcej "ht"cevkqp"cpf "enquwtg"y j gp'vj gtg"ctg" f kuci tgggo gpw"
dgy ggp"vj g"tgi wrvqt"cpf "vj g"hegpugg0

4.1.2. Case-based and Facility-based

Kp'vj g"4233 l34"uwf { "vj g'hcekk'f "dcugf "cr r tqcej "tgr megf "vj g"ecug/
dcugf "cr r tqcej 0Kp'vj g"4225 l26"uwf { ."c"ecug/dcugf "cr r tqcej "y cu'f g/
uetkdgf "cu"j cxkpi "dgpghk'f hgzkdkk'f "ht"cf cr vki "tgi wrvqt { "t g/
ur qpugu"v'q"vpls w'g'ukwcvkpu."dw'vj g" f khhewnkgu"qh'dgkpi "eqpuk'gtgf "
ctdkct { ."kpeqpukvgpv"vphck'f "cpf "tgs wtkpi "j gcx { "tguqwtg" wug0T g/
ur qpugu'tgi ctf kpi "c'hcekk'f "dcugf "cr r tqcej "kp'vj g"4233 l34"uwf { "kp/
enmf gf "vj cv'tgi wrvqtu"j cxg"o qxgf "vq"o qtg"qxgtcej kpi "tgi wrvkqpu"
vj cv'dqj "i gpgtcr'cpf "ukxg"ur gekhle"cr r tqcej gu'ctg'pggf gf "cpf "vj cv'
vj gtg"ctg"tgcup'u"v'j cxg"c'hcekk'f "dcugf "cr r tqcej "cxckrdng"wpf gt"
uqo g'ektewo ucpegu0"

4.1.3. Outcome-based

Kp'vj g"4225 l26"uwf { "c"ng { "dgpghk'f qh'cp"qweqo g/dcugf "cr r tqcej "y cu"
vj cv'k'cmjy gf "hegpuggu"v'q" f gekf g'vj g'dgu'v'y c { "vq"qr gtcv'g'kp"qtf gt"vq"
o gg'v'uchgv'f "i qcn0Kp'vj g"4233 l34"uwf { "vj g"qweqo g"dcugf "cr r tqcej "
dgpghku'kpenmf gf "gpeqwtci kpi "hegpuggu"v'q"ko r tqxg'r rpv'r gthqto cpeg"
cpf "r rckpi "vj g'tgur qpukdkk'f "ht"uchgv'f "y kj "vj g"hegpugg0Kp'dqj "
uwf lgu'f khhewnkgu'kp'f gpvkh'f kpi "i qqf "qweqo g'o gcuwtgu'y gtg'pqvgf 0

4.1.4. Risk-based and Risk/hazard-based

Kp'vj g'4225 l26'uwf { 'y g'o clqt "dgpghk'qh'c'tkum'cr r tqcej 'y cu'ku'wug' vq'r tkqt kkl g'uchgv' 'kuwgu'cpf 'cmqecvg'tguqwtegu0'Kp'vj g'4233 l34'uwf { " tgr qpf gpw'o gpvqpgf 'y g'wug'qh'c'tkumj c| ctf "cr r tqcej "vq'hqewu'tgi / wrcvt { 'cwgpvqp'cpf "vq'ko r tqxg'uchgv' 'r gthqto cpeg'cu'dgpghku'qh'vj g' cr r tqcej 0F khlewnkgu'qh'vj g'cr r tqcej "kp'vj g'4225 l26'uwf { 'y gtg'vj cv' k'y cu'eqpukf gtgf "kpcr r tqr tkvg'vq'wug'cu'c'ucpf / cmqpg'cr r tqcej "cpf " yj cv'vj g'cr r tqcej 'j cf "ugtqwu'o gjv qf qm' kecn'cpf "f cv'r tqdngo u0F kh/ hlewnkgu'o gpvqpgf "kp'vj g'4233 l34'uwf { "kpenw'gf "hko kcvkpu'vq'vj g' o gjv qf . "wpegtvckp'vku'kp'vj g'tguwmu'vj cv'ctg'qh'wgp'qxgtmqngf "y j gp" cr r n'kp'ij g'cr r tqcej "cpf "vj cv'wukpi "c'tkumj c| ctf "cr r tqcej "ecp'tguwmu' kp'uqo g'ctgcu'tgegk'kp'ij xgt { "hkwg'cwgpvqp'htqo "gkj gt'vj g'tgi wrcvt" qt'vj g'hlegpugg0

4.1.5. Process-based

Kp'vj g'4225 l26'uwf { "c'o clqt "dgpghk'qh'vj g'r tqegu'dcugf "cr r tqcej " y cu'f guetkdgf "cu'r tqxkf kpi "kp'f gr vj "wvf gtucpf kpi "qh'c'hlegpuggu'r gt/ hqto cpeg0Uko krcn' . "kp'vj g'4233 l34'uwf { "k'y cu'f guetkdgf "cu'etk'kecn' hqt "kf gpvkh'kpi "ng { "nggo gpw'htq'uchgv' "o cpci go gpv0" "

Kp'vj g'4225 l26'uwf { "c'o clqt "f tcy dcm'qh'vj g'r tqegu'cr r tqcej "y cu' yj cv'k'y cu'pqv'eqpukf gtgf "ghgevkxg'wprguu'vj g'r tqegu'gu'y gtg'hpngf "vq" qweqo gu0'Kp'dqvj "uwf kgu'f khlewnkgu'y gtg'f guetkdgf "tgi ctf kpi "vj g" eqo r r'gzkv' "qh'f gh'k'kpi "cpf "gxcn'w'kpi "r tqegu'gu'cpf "c'tgs wkt go gpv'htq" xgt { "j ki j "gZR gt'vug'd { "tgi wrcvt { "uch0"

4.1.6. Self-assessment based

Kp'vj g'4225 l26'cpf "vj g'4233 l34'uwf kgu'c'o clqt "dgpghk'qh'c'ugr/ cuugu'o gpv'cr r tqcej "y cu'vj cv'k'r wu'tgur qpukdk'v' "htq'uchgv' "qp'vj g' rlegpugg0'Kp'vj g'4233 l34'uwf { "y g'dgpghku'cnuq'kpenw'gf "y cv'k'r tq/ o qvgf "eqpvkpwqu'ko r tqxgo gpv'd { "y g'hlegpugg0O clqt "f khlewnkgu" o gpvqpgf "kp'dqvj "uwf kgu'y gtg'vj cv'k'uj qwf "pqv'dg'wugf "cu'c'ucpf / cmqpg'cr r tqcej . "y cv'k'uj qwf "dg'o qpkqtf "d { "y g'tgi wrcvt "cpf "y cv'k" qh'wgp'f qgu'pqv'j cxg'etgf kdk'v' "y kj "y g'i gpgtcnr wdne0"

4.1.7. Education/influence approach

Vj ku'cr r tqcej "y cu'pqv'kpenw'gf "kp'vj g'4225 l26'uwf { "dw'y cu'wi i guv' gf "cu'cp'cf f k'k'apcn'cr r tqcej 0Vj g'dgpghku'qh'vj ku'cr r tqcej "kf gpvkh'gf " kp'vj g'4233 l34'uwf { "y gtg'vj cv'k'y cu'c'ng { "vqnr'htq'tgi wrcvtu. "gur g/ ekcm' "y j gp'k'vtqf welpi "pgy "r tqi tco u'wej "cu'uchgv' "ewmw'g'cpf "y cv' k'y'ku'ko r qt'v'p'v'q'r tqxkf g'k'phqto cvk'p'vq'vj g'hlegpuggu'cpf "y g'r wdne0 F khlewnkgu'kpenw'gf "y cv'k'tgs wkt gu'c'i tgc'v'f gcn'qh'gZR gt'k'p'eg'cpf "

gzt g'v'k'g'qp'y' g'r'ctv'qh'y' g'tgi w'v'qt'cpf'y' cv'k'f'gr'gp'f'u'w'r'qp'f'ke'gp'ugg'
ceegr'cpeg'0'

4.2. Use of approaches in regulatory supervision

Vj g'4225'126'uwf { 'k'gp'v'k'g'f'f'q'w't'o'ckp'y' go'gu'tgi'ctf'kpi'y' g'v'w'g'qh'
cr'r'tqcej'gu'k'p'y' g'y' tgg'ctgcu'qh'uwr'gt'x'k'k'qp'k'pen'f'gf'k'p'y' cv'uwf { 0'
"

- Ego d'k'p'c'v'k'p'u'qh'cr'r'tqcej'gu'y'gt'g'w'ug'f'k'p'cm'f'ct'gcu"
- Vj g't'g'y'cu'f'gu'u't'g'k'c'peg'qp'c'r't'g'uet'k'v'x'g'cr'r'tqcej'cpf' 'o'qt'g'v'w'g'qh'
c'r't'q'eg'u'd'c'ug'f'cr'r'tqcej' .d'w't'g'w't'p'v'q'c'r't'g'uet'k'v'x'g'cr'r'tqcej' 'h'q't'
c'v'k'p'c'p'f' 'e'q'u'w't'g'"
- W'ug'q'h't'k'u'm'cr'r'tqcej' 'h'q't'r't'k't'k'k'k'v'k'p'q'h'uch'g'v'f' 'k'u'u'g'u'c'p'f' 'c'v'k'p'
k'g'o' u"
- K'p'eq't'r'q't'c'v'k'p'q'h'c't'k'u'm'cr'r'tqcej' 'k'p'v'g'i'w'v'qt' { "q'x'g't'uki' j'v'q'h'r'nc'p'v'
f'g'uki'p'c'p'f' 'o'q'f'k'h'c'v'k'p'u'v'g'p'uk'p'c'p'f' 'd'c'r'peg'"

4.2.1. Combinations of approaches used in all areas of supervision

Q'p'g'q'h'y' g'ng' { 'h'p'f'k'p'i' u'f'q'o' 'y' g'4225'126'uwf { 'y'cu'y' cv'o'w'k'r'ng'cr'/
r'tqcej'gu'y'gt'g'w'ug'f'k'p'cm'y'tgg'ctgcu'qh'tgi'w'v'qt' { 'uwr'gt'x'k'k'qp'k'pen'f/
gf'k'p'y'cv'uwf { 0'f'k'v'k'p'ev'f'k'h'g't'g'p'eg'u'k'p'y'g'cr'r'tqcej'gu'w'ug'f'k'p'g'cej'
ct'g'c'y'gt'g'p'q'v'g'f'ô' y'k'y' 't'k'u'm'r't'g'uet'k'v'x'g'c'p'f'r't'q'eg'u/d'c'ug'f'cr'r'tqcej'
gu'o'qu'v'eq'o'o'q'p'k'p'y'g'ct'g'c'q'h'r'nc'p'v'f'g'uki'p'c'p'f' 'o'q'f'k'h'c'v'k'p'u'c'p'f'
r't'q'eg'u/d'c'ug'f'cr'r'tqcej'gu'o'qu'v'q'h'v'g'p'w'ug'f' 'k'p'eq'o' d'k'p'c'v'k'p'y'k'y' 'q'v'j'gt'
cr'r'tqcej'gu'k'p'y'g'ct'g'c'q'h't'c'k'p'k'p'i' 'c'p'f' 's'w'ek'h'c'v'k'p'u'c'p'f' 's'w'ek'v'f' "
u'f'v'g'o'u'0'"
"

K'p't'g'ur'q'p'ug'v'q'y' g't'g's'w'g'u'f'q't'y' g'cr'r'tqcej'gu'w'ug'f'k'p'y'g'y'q'ec'ug'u'c'p'f' "
h'q't'y'g'w'u'w'nc'r'r'tqcej' 'q't'cr'r'tqcej'gu'w'ug'f'k'p't'gi'w'v'qt' { 'uwr'gt'x'k'k'qp'k'p'
y' g'4233'134'uwf { .t'g'ur'q'p'f'g'p'w'q'x'g't'y' j'g'r'o'k'p'i'n'f' 't'g'r'q't'v'g'f' 'o'w'k'r'ng'
cr'r'tqcej'gu'v'q't'gi'w'v'qt' { 'uwr'gt'x'k'k'qp'c'u'y'g'ö'w'w'w'nc'r'r'tqcej' 'q't'eq'o' /
d'k'p'c'v'k'p'q'h'cr'r'tqcej'gu'v'g'g'g'E'j'cr'v'g't'8'h'q't'c'f'g'v'k'g'f'f'g'uet'k'v'k'p'q'h'y'g'
cr'r'tqcej'gu'w'ug'f'q'x'g't'cm'c'p'f'y'k'y'k'p'ct'g'c'q'h'uwr'gt'x'k'k'qp-0'Q'x'g't'cm' "
t'g'ur'q'p'f'g'p'w't'g'r'q't'v'g'f' 'c'p'c'x'g't'c'i'g'q'h'o'q't'g'y'c'p'h'k'x'g'cr'r'tqcej'gu'w'ug'f'k'p'
t'gi'w'v'qt' { 'uwr'gt'x'k'k'qp'c'et'q'u'c'm'ec'ug'u'0'V'j'g'p'w'o'd'g't'q'h'cr'r'tqcej'gu'
k'pen'f'gf'k'p'y'g'eq'o'd'k'p'c'v'k'p'u'qh'cr'r'tqcej'gu'w'ug'f'k'p'y'g'ec'ug'u'f'g/
u'et'k'd'g'f'x'c't'k'g'f'f'q'o' "q'p'g'v'q'ug'x'g'p'0'V'j'g'p'w'o'd'g't'q'h'cr'r'tqcej'gu'w'ug'f' "
q'h'v'g'p't'g'h'g'e'v'g'f'y'g'eq'o'r'ng'z'k'v'f'c'p'f' 'u'eq'r'g'q'h'y'g'ec'ug'r't'g'ug'p'v'g'f'0'K'p' "
u'q'o'g'q'h'y'g'ec'ug'u'y'g't'g'ur'q'p'f'g'p'v'f'g'uet'k'd'g'f'y'g'k'p'k'c'v'k'p'i' 'g'x'g'p'v'c'p'f' "
k'p'k'c'nc'uwr'gt'x'k'k'q't' { 't'g'ur'q'p'ug'ô' q'h'v'g'p'p'q'v'k'p'i' 'y'cv'y'gt'g'y'gt'g'c'f'f'k'k'q'p'nc'
cr'r'tqcej'gu'w'ug'f'k'p'u'w'd'u'g's'w'g'p'v't'gi'w'v'qt' { "c'v'k'p'u'0'Q'v'j'gt'ec'ug'f'f'g'uet'k'r/
v'k'p'u'k'pen'f'gf'c'd't'q'c'f'gt'f'g'uet'k'r'v'k'p'q'h'cm'q'h'y'g'r'j'c'ug'u'q'h'y'g'ce/
v'k'p'ô'c'p'f' 'k'pen'f'gf' 'o'q't'g'cr'r'tqcej'gu'0'k'p'o'c'p' { "ec'ug'u'y'g'cr'r'tqcej'gu'
w'ug'f' 'h'q't'y'g'o'q't'g'c'p'f' 'g'u'u'u'w'ee'g'u'u'w'f'ec'ug'u'y'gt'g'y'g'uc'o'g'0'Cu'q'p'g'"

tgur qpf gpv'pqvgf. *The same approach was used as for the more successful example, the difference lay in the capability and approach of the licensee* Ugg'Cr r gpf kz '6'hqt'c'dtgcnf qy p'qh'cr r tqcej gu'd { 'wuwcn' o qtg'cpf 'rguu'uweeguuhw'ecugu0

Cu'y kj 'vj g'4225 126'uwf { . 'vj gtg'y gtg'f khhgtgpegu'kp'vj g'cr r tqcej gu' wugf 'cpf 'go r j cuk gf 'lp'f khhgtgpv'ctgcu'qh'tgi wrcvt { 'uwr gtxkukqp '*ugg' Ugevkqp'804-0J qy gxgt. 'cm quv'cm'cr r tqcej gu'j cf 'cv'hgcuv'qpg'tg/ ur qpf gpv'htqo 'gcej 'ctgc'tgr qt v'vj cv'k'y cu'wugf '*ugg'Ugevkqp'803-0"

4.2.2. Less reliance on a prescriptive recently, moving toward process-based with prescriptive for action/closure when necessary

Cnj qwi j 'c'f getgcug'kp'tgkpep'qp'c'r tguetr vxg'cr r tqcej 'y cu'tgr qtv gf 'kp'vj g'4225 126'uwf { . 'vj g'eqo o gpw'tgi ctf kpi 'ej cpi gu'kp'wug'qh' cr r tqcej gu'kp'vj g'4233 B4'uwf { 'f'kf 'pqv'ui i guv'o qxgo gpv'htqo 'r tg/ uetr vxg'v'q'r tqegu'dcugf 'cr r tqcej gu'OCdqw'qpg'vj kf 'qh'tgur qpf gpw' kp'vj g'4233 B4'uwf { 'tgr qtvgf 'vj cv'kp'vj gkt 'gzr gkpep'vj gtg'j cu'dggp' cp'kpetgcug'kp'vj g'wug'qh'gcej 'qh'vj gug'cr r tqcej gu'0J qy gxgt. 'vj gtg' y gtg'c'uwducp'kcn'pwo dgt'qh'eqo o gpw'vj cv'ui i guvgf 'vj g'wug'qh'c' r tguetr vxg'cr r tqcej 'hqt'cev'kp'cpf 'emqwtg'kp'dqj 'uwf kgu0

4.2.3. Risk-based to prioritize for quality systems and plant design/modifications

Kp'vj g'4225 126'uwf { 'cpf 'vj g'4233 B4'uwf { 'c'tkunj c| ctf 'cr r tqcej ' y cu'f kuewugf 'd { 'tgur qpf gpw'cu'c'y c { 'v'q'r tkqtkk' g'uchgv' 'kuwgu'cpf ' vq'cmqecvg'tgi wrcvt { 'tguqwtegu0Kp'vj g'4233 B4'uwf { 'k'y cu'cnuq'o gp/ vkppgf 'cu'c'y c { 'v'q'dgwt'kf gp'kh { 'uchgv' 'kuwgu'cv'r rcpw0

4.2.4. Risk-based for plant design/modification: tension and balance

C'pwo dgt'qh'eqo o gpw'kp'vj g'4225 126'uwf { 'tghgtgf 'v'v'gpukqpu'tg/ i ctf kpi 'vj g'wug'qh'c'tkum'cr r tqcej 'kp'ngw'qh'qj gt'cr r tqcej gu.'r ctvkw rctn' 'kpugcf 'qh'c'f gvgto kpkw'cuuguu gpv'qh'uchgv'0Kp'vj g'4233 B4' uwf { 'vj g'tkunj c| ctf 'cr r tqcej 'y cu'pqv'f kuewugf 'cu'tgr mckpi 'qj gt' cr r tqcej gu'dw'cu'wugf 'hqt'egt'v'kp'r wtr qugu'OCnj qwi j 'vj gtg'y gtg' eqo o gpw'qp'f khhew'ku'y kj 'vj ku'cr r tqcej 'k'y cu'pqv'kp'vj g'eqpv'z'v' qh'c'v'gpukqp'dgy ggp'vj g'wug'qh'vj ku'cr r tqcej 'cu'c'tgr mego gpv'v'qj gt' cr r tqcej gu0"

4.3. Consequences of regulatory approaches

Ɔp'vj g'4225 126'tgr qt v'vj gtg'y gtg'ugxgp'ur gekhke'hkpf kpi u'tgi ctf kpi " j qy "cr r tqcej gu'chgevtgi wrcvt { "qweqo gu' "

- y j q'vcngu'r tko ct { "t'gur qpukdkrkv' hqt'uchgv' "
- j qy "engct'vj g'tgs wktgo gpw'cpf "g'zr gev'v'kqpu'ctg'vq'hkegpuggu"
- tguqnwkkp'qh'ko r q'vcpv'uchgv' "kuwgu"
- g'zr gt'vug'tgs wktgf "qh'hkegpuggu'cpf 'tgi wrcvtu"
- tguqwt'egutgs wktgf "qh'vj g'hkegpuggu'cpf 'vj g'tgi wrcvtu"
- h'gzkdkrkv' 'i kxgp'vq'hkegpuggu'"
- r wdrke'etgf kdkrkv' "qh'vj g'hkegpuggu'cpf 'vj g'tgi wrcvtu"

Ɔp'vj g'4233 134'uwf { "t'gur qpf gpw'y gtg'cungf 'vq'tcv'g'gcej "qh'vj gug'r q/ v'p'v'k'neq'pugs w'p'egu'cpf "vq'r tqxkf g'eqo o gpw'0'Ɔp'cf f k'k'q'p. 't'gur qpf / gpw'y gtg'cunq'cungf "cdq'w'eq'pugs w'p'egu'qp'uchgv' "ew'w'wt'g'0'Ɔp'cf f k'k'q'p" vq'vj g'ur gekhke'kgo u'cun'kpi "cdq'w'vj gug'eq'pugs w'p'egu. 'o cp { "t'gur qpf / gpw'eqo o gpw'v'q'p'vj gug'ct'gcu'y j gp'vj g { "f k'ue'w'w'ugf "vj g'cf xcp'vci gu " f k'ucf xcp'vci gu. 'cpf "vj g'gh'gew'qh'ek'ewo u'c'p'egu'tgi ctf kpi "vj g'ec'ug'0' Vj g't'gu'w'w'uhqt'gcej "qh'vj gug's w'g'u'k'q'pu'ctg'r t'gug'p'v'g'f "dg'ny 0'Hqt'gcej " s w'g'u'k'q'p'vj g't'cv'kpi u'cpf "eqo o gpw'ctg'dt'k'gh' "uwo o ctk'gf 0'Uqo g'gz/ co r ngu'qh'eqo o gpw'ctg'r tqxkf gf 0'

4.3.1. Primary responsibility for safety on licensee or regulator?

T'gur qpf gpw'cf f t'gu'ugf 'y j gvj gt'vj g'hkegpugg'qt'vj g'tgi wrcvt'j cf 'r tk' o ct { "t'gur qpukdkrkv' hqt'uchgv' 'k'p'vj g'y q'ecug'uwf k'gu'0'Vj g'k'p'v'p'v'qh' vj k'u's w'g'u'k'q'p'y cu'vq'hq'mjy "w' "q'p'vj g'qr k'p'k'q'p'qh'uqo g'k'p'v'g't'x'k'ey g'gu'k'p' vj g'4225 126'uwf { "vj cv'vj g'w'ug'qh'c'r t'g'uet'k'v'x'g'cr r tqcej "eq'w'f "o cng" vj g'tgi wrcvt. 'tcvj gt'vj cp'vj g'hkegpugg. 't'gur qpukdr'g'hqt'uchgv' 0' "

Ɔp't'gur qpug'vq'vj g'em'ugf / g'p'f gf "f k'gev's w'g'u'k'q'p'tgi ctf kpi "y j gvj gt'vj g' hkegpugg'qt'vj g'tgi wrcvt'j cf "o qtg't'gur qpukdkrkv' hqt'uchgv' . 'cmo quv' : 2' "qh'c'm't'gur qpf gpw't'gr qt'v'g'f "vj cv'hkegpuggu'j cf 'r tko ct { "t'gur qpuk' d'k'rkv' hqt'uchgv' 'k'p'vj g'o qtg'u'wee'g'u'w'w'ne'cug'cpf '96' "k'p'vj g'ng'u'u'we/ egu'w'w'ne'cug'0'Vj g'o quv'eqo o qp'eqo o gpv'cet'quu'cm'ci g'p'ek'gu'tgi ctf / kpi 't'gur qpukdkrkv' hqt'uchgv' 't'gh'g't'g'p'egf "c'ngi c'nt'gs wktgo gpv'vj cv'tg/ ur qpukdkrkv' hqt'uchgv' 't'guk'f gu'y kj "vj g'hkegpugg'0'Q'x'g't'cm'vj gtg'y gtg' vj tgg'ec'vgi qt'k'gu'qh'eqo o gpw' "

- Nkegpuggu'ctg'ngi cm' { "t'gur qpukdr'g'hqt'uchgv' "
- Nkegpuggu'ctg'w'w'ko cv'ng' { "t'gur qpukdr'g'hqt'uchgv' "
- Vj g'tgi wrcvt'vq'q'm'uqo g'qh'vj g't'gur qpukdkrkv' hqt'uchgv' "

C'nj qwi j "c'r t'g'uet'k'v'x'g'cr r tqcej "y cu'uqo g'ko gu'cuu'q'ek'cv'g'f "y kj "vj g' hkegpugg'vcn'kpi "t'gur qpukdkrkv' hqt'uchgv' . 'k'y cu'w'w'cm' { "r t'gug'p'v'g'f "cu" vj g't'gur qpug'qh'vj g'tgi wrcvt'vq'r qqt'hkegpugg'r g'hqto c'p'eg'tcvj gt'vj cp' "

cu'vj g'lpkkc'kpi 'ecwug'qh'vj g'tgi wrcvt 'dglpi 'tgur qpukdngô cmj qwi j " dqvj 'y gtg'o gpv'kppgf 0Gzco r ngu'qh'gcej 'ecvgi qt { "qh'tgur qpug"ctg'r tq/ xkf gf "dgmjy 0 "

According to the laws regarding nuclear materials and related regulations, it is the licensee's responsibility to ensure the safety of its facility.

Although the agency put their finger on the important parts of the problem, when the demands were clarified, the licensee had to come up with a sufficient solution that the agency reviewed and accepted.

Independently it is the prime responsibility of the license holder; it is equally true that the assessment process performed by the regulatory body conveys a share of this responsibility, at least to a certain degree, to the regulator. The regulatory body's responsibility may arise from the inadequacy of the regulation or the poor exercise of his functions that may impact safety.

It was clear that the regulator took a primary role in driving the safety decision, but the approach taken also pushed the licensee to think about the whole situation with analysis results as signals to act upon relating to operational readiness.

4.3.2. Clear requirements and expectations of licensee?

kp'tgur qpug'v'vj g'lpk'kpi 'htqo 'vj g'4225 126'uwf { "vj cv'tgi wrcvt { "cr / r tqcej gu'o c { "ch'gev'j qy "engct'tgs wkt go gpw'cpf "gZR gev'v'kpu'ctg'v" r'k'epuggu."c's wgu'kqp'y cu'cungf "cdqw'vj g'ertkv' { "qh'gZR gev'v'kpu'htq" gcej "ecug0E'ertkv' "qh'vj g'tgi wrcvt { "tgs wkt go gpw'y cu'cuuqek'v'f'y kj " y j gvj gt 'vj g'tgur qpf gpw'hgn'vj g'tgi wrcvt { "gh'ht'v'y cu'o qtg'qt'rguu" uweeguuhw'0Cdqw'98' "qh'cm'tgur qpf gpw'tgr qt'v'f'y cv'vj g'gZR gev'v'kpu'qh'vj g'rk'epugg'y gtg'engct'kp'vj g'o qtg'uweeguuhw'ecug'cpf "qpn' " cdqw'68' "tgr qt'v'f'y cv'vj g'gZR gev'v'kpu'y gtg'engct'kp'vj g'rguu'uwe/ eguuhw'ecug0Tgur qpf gpw'y gtg'pq'v'cungf 'htq'eqo o gpw'tgi ctf kpi " ertkv'."dw'o cp { "o gpv'kppgf "ertkv' "qh'tgs wkt go gpw'y j gp'f guetkdkpi " y j cv'o cf g'vj g'tgi wrcvt { "uwr gtx'kukqp"o qtg'qt'rguu'gh'gev'kxg0K'cf f k' v'kqp."c'w'p'f ggu'cv'vj g'ci gpe { "o gg'v'kpi u'f k'uewuugf "ertkv' "kp'tgur qpug'v" uqo g'qh'vj g'lpkkc'kpi'kpi u'htqo 'vj g'tgr qt'v'vj cv'vj qy gf "vj cv'tgur qpf / gpw'y gtg'o qtg'h'kngn' { "v'q'tgr qt'v'vj cv'vj g'tgs wkt go gpw'y gtg'engct'v'vj g' r'k'epugg'kp'vj g'o qtg'uweeguuhw'vj cp'kp'vj g'rguu'uweeguuhw'ecugu0Qpg" h'qewu'qh'vj g'f k'uewu'kqp'y cu'vj g'tgr'v'kpuj k' "dgy ggp'r t'guetk'v'xg'v'qt" o cpf cvqt { +tgs wkt go gpw'cpf "ertkv' 0Vj g'ko r r'k'ec'v'kqp'qh'o cp { "qh'vj g' eqo o gpw'qp'vj g's wgu'kppck'g'cpf "kp'v'g'x'kgy u'htqo 'vj g'4225 126'uwf { " y cu'vj cv'r t'guetk'v'xg'tgs wkt go gpw'y gtg'engct'gt."j qy gxgt.'vj g'eqpen'w' ukqp'qh'vj g'f k'uewu'kqp'y cu'vj cv'ertkv' { "ku'p'q'v'p'geguuct'k' { "cuuqek'v'f " y kj "r t'guetk'v'xg'tgi wrc'v'kqp'dw'vj cv'cm'qh'vj g'cr r tqcej gu'ecp'dg'f qpg"

y kj "o qtg"qt'rguu'ertkv\ "kp"vj g"gzr gewvqpu"qh'vj g'tgi wrcvt0Ertkv\ "uj qwf "dg"ci qcn'tgi ctf rguu'qh'cr r tqcej 0Qpg'eqo o gpv'utguugf "vj g"grgo gpv'qh'ertkv\ "cpf "r tgf kevcdk\ "kp" f guetkdkpi "i qqf "tgi wrcvqk."

A regime of clear unambiguous expectations that allows flexibility in how to achieve results—with an expectation that there is a strong commitment to safety.

4.3.3. Important safety issues identified and addressed?

Kp'tgur qpug'vq'vj g'hkpf kpi "kp"vj g"4225 126'uwf { "vj cv'tgi wrcvt { "cr / r tqcej gu'chtgevgf "vj g'kf gpv'khec vqk"cpf "tguqnwqk"qh'uchgv\ "kuuwgu." tgur qpf gpv'u'y gtg'cumgf "y j gyj gt'ko r qtcvp'uchgv\ "kuuwgu'y gtg'kf gpv'k hgf "cpf "cf f tguugf "kp"vj g'o qtg'cpf "rguu'uweeguuhw'ecugu'f guetkdgf "kp" vj gk'gzco r ngu0Qxgtcm'tgur qpf gpv'utgr qtvgf "vj cv'uchgv\ "kuuwgu'y gtg" o qtg'rkng\ "vq"j cxg'dggp'kf gpv'k hgf "cpf "cf f tguugf "kp"vj g'o qtg'uweeguuhw'v' cp'kp"vj g'rguu'uweeguuhw'ecug0kp"vj g'o qtg'uweeguuhw'ecug'65' " tgr qtvgf "vj cv'cm'uchgv\ "kuuwgu'y gtg'kf gpv'k hgf "cpf "cf f tguugf "c'tcvkpi " qh'7+cpf ": 7' "tgr qtvgf "cm'qt"o quv'y gtg'kf gpv'k hgf "qt'cf f tguugf "c" tcvkpi "qh'6"qt'7+0kp"vj g'rguu'uweeguuhw'ecug'4: ' "tgr qtvgf "vj cv'cm'uchg/ v\ "kuuwgu'y gtg'kf gpv'k hgf "cpf "cf f tguugf "cpf '76' "tgr qtvgf "vj cv'o quv" y gtg'kf gpv'k hgf "cpf "cf f tguugf 0"

Eqo o gpv'utgi ctf kpi "vj g'kf gpv'khec vqk"cpf "cf f tguukpi "qh'uchgv\ "kuuwgu" qh'gp'pqvgf "vj cv"gxgp'kp"vj g'rguu'uweeguuhw'gzco r ngu."gxgpwcm\ "vj g" uchgv\ "kuuwgu'y gtg'tguqk'gf 0kp"uqo g'ecugu'vj gtg'y gtg'tgo ckpki "kuuwgu0Cmj qvi j "vj gtg'y cu'pq'engct'tgrv'kpuj kr "dgvy ggp"ur gekke'cr / r tqcej gu'cpf "vj g'kf gpv'khec vqk"cpf "tguqnwqk"qh'uchgv\ "kuuwgu."vj gtg" y gtg'eqo o gpv'utgi ctf kpi "vj g'wug"qh'tkunj c\ ctf "cr r tqcej "cpf "r t/ uetkr vxg'cr r tqcej "cu'tguv'kpi "kp"o kuugf "uchgv\ "kuuwgu'cu'y gm'cu'vj g" kf gpv'khec vqk"qh'uchgv\ "kuuwgu0Eqo o gpv'kpenmf gf "

Once the problem became known, the agency did act strongly on the situation including immediate inspection, demands on the licensee to make in depth analysis of how it could happen, etc.

4.3.4. Level of expertise required of licensee? Of regulator?

Uqo g'kp'vgtxky ggu'htqo "vj g"4225 126'uwf { "uwi i guvgf "vj cv'f khtg'gpv" cr r tqcej gu'tgs vktgf "f khtg'gpv'rgxgnu"qh'gzr gt v'ug'htqo "rkegpuggu0Cp" kgo "qp"vj g's wguv'kppck'g'cumgf "cdqaw'vj g'tgs vktgo gpv'htq' "rkegpugg" gzr gt v'ug'kp"vj g'ecug'uwf lgu0O quv'tgur qpf gpv'utgr qtvgf "vj cv'ci qqf " f gcn'qh'gzr gt v'ug'y cu'tgs vktgf "d { "vj g'rkegpugg"cetqu'cm'ecugu0kp"vj g" o qtg'uweeguuhw'ecug": 4' "qh'tgur qpf gpv'utgr qtvgf "vj cv'rkegpugg'r gt/ uqppgn'tgs vktgf "c"j ki j "rgxgn'qh'gzr gt v'ug0kp"vj g'rguu'uweeguuhw'ecug" 94' "y gtg'tgr qtvgf "cu'tgs vktkpi "c"j ki j "rgxgn'qh'gzr gt v'ug0Eqo o gpv'ut"

tgi ctf kpi "vj ku's wguwqp. "cu'y gni'cu'tgur qpugu'vq'vj g's wguwqp'tgi ctf kpi " y j gj gt "vj g"qweqo g"qh'c"ecug'y qwf "j cxg'dggp" f khtgpv'wvf gt "f khtg/ gpv'ektewo ucpegu'qh'wgp" cwtkdwgf "hgxgn'qh'uweegu'vq'vj g"gzr gt wug'qh' rkegpugg'qt'tgi wrcvt { 'r gtupppgn'Vj gtg'y gtg'cnuq'c'pwo dgt'qh'eqo / o gpw'tgi ctf kpi "vj g'pggf "hqt"eqvtcevqtu'vq'uwr r qtv'vj gkt "y qtm'qp" uqo g'j ki j n' "ur gekhe"vgej plecn'ctgcu0"

All major plant modifications in this country generally require a high level of expertise by the licensee, as the licensee has to engineer changes to the plant while still fulfilling all the original licensing bases.

In our country the regulator is expected to maintain as high a level of expertise as the licensee, if not higher.

To meet the regulations the level of expertise in management systems could be relatively low for the licensee. However to implement an effective process having a consistent outcome required more expertise regarding management systems. The regulator requires a high level of expertise in management systems to apply the approach. As regulations for safe operation tend to be broad in nature, the regulator needs to be knowledgeable regarding the purpose of such regulation and have an ability to determine the adequacy of the outcome in complying with the regulation.

It was a new issue in the nuclear industry and there were no formal standards or regulation at the beginning. So a great deal of knowledge and expertise in management systems was needed. Additionally, this was a new approach of developing something without relying on the previous work of others.

4.3.5. Level of resources required of licensee? Of regulator?

k'vj g'4225 126'uwf { 'kpvtxkgy ggu'umi i guvgf "vj cv'vj g'cr r tqcej "wugf " j cf "cp'lo r cev'qp"vj g'tguqwtegu'tgs wktgf "qh'vj g'hkegpugg'cpf "vj g'tgi wrc/vqt'OT gur qpf gpw'lp'vj g'4233 134'uwtxg{ "y gtg'cungf "cdqw'vj g'tg/ uqwtegu'wugf "lp'vj g'y q'ecugu'vj g{ 'f guetkdgf OT gur qpf gpw'tgr qtv'gf " urki j w' "j ki j gt "wug"qh'tguqwtegu'lp'vj g'hguu'uweegu'hw'ecugu"*8; ' 'tg/ r qt'kpi "j ki j "tguqwtg'wug'hqt'hkegpuggu'cpf "75' "hqt'tgi wrcvtu+'vj cp" hqt"o qtg'uweegu'hw'ecugu"*87' "hqt'hkegpuggu'cpf "66' "hqt'tgi wrcvtu+0' Ego o gpw'htqo "vj g'tgur qpf gpw'tgi ctf kpi "tguqwtegu'y gtg'o qtg'hkngn' " vq'cwtkdwgf'vj g'co qwpv'qh'tguqwtegu'wugf "vq'vj g'ektewo ucpegu'qh'vj g" ecug'tcvj gt'vj cp'vj g'cr r tqcej gu'OT hqt'gzco r ng. "y j gp'vj g'tgi wrcvt "cpf " vj g'hkegpugg'ctg'f gxmqr kpi "c'pgy "r tqi tco . "uwej "cu'uchgv{ "eww'wg." vj gtg'ctg'j ki j "f go cpf u'hqt"gzr gt wug'cpf "tguqwtegu'OT guqwtegu'cnuq" y gtg'pqvgf "cu'j ki j "kp'ukwcvkqpu'y j gtg'vj g'tgi wrcvt "cpf "vj g'hkegpugg" f kuci tggf "cdqw'vj g'cr r tqr tkvg"cev'kq0"

"

The regulator has been extensively involved with safety culture programs since the very beginning of the process with an education/influence approach. At the early stages both regulator and utilities took part in a joint research project to agree on a methodology for safety culture external assessments at nuclear power plants, including a pilot phase to verify the results of its application. Also the implementation period has entailed a great number of interactions between regulator and licensees and several inspections and reviews have been conducted to check the status of these programs.

ƧƧ'j g'f kuewukqp"qh'c"ecug'y j gtg'c"rkegpugg'y cu'cmqy gf "vq'uwdo k'cp" kpeqo r rgy'cr r rkecvkqp'hqt'tgxlgy 'vj g'tgur qpf gpv'eqo o gpv'f 'vj cv'"

Much more time was needed than foreseen, which caused us to send them an extra invoice for the review. The review, including planning, took 1.5 years. Even so, in the end their application was not accepted and we needed to put even more time into review of a new Preliminary Safety Analysis Report (PSAR).

ƧƧ'c"ecug'y j gtg'yj g'tgi wrcvt'f gxgnr gf 'f gvckrgf'tgi wrcvt { 'i wkf gu'yj g' tgur qpf gpv'eqo o gpv'f "

The licensees assume responsibility that agency regulations and guidance are satisfied in the power up rate application. Agency staff had to establish regulatory guidance and defend its position to the agency and outside reviewers. Resource constraints resulted in delayed power up rate reviews.

4.3.6. Flexibility given licensee with usual approach(es)?

ƧƧ'j g'4225 126'uwf { 'kpvtxkgy ggu'umi i guvf 'vj cv'yj g'cr r tqcej 'wugf " chhgevf 'vj g'hgzkdkk' "ceeqt f gf "rkegpugg'kp'tguqk'pi 'r tqdrgo u0' Qxgtcm'lo quvtgur qpf gpw'kp'yj g'4233 134'uwxg{ '*99' +tgr qtvgf 'vj cv' yj g'wuwcn'eqo d'kpcv'kqp'qh'cr r tqcej gu'i cxg'yj g'rkegpugg'c'i tgevf gen'qh' hgzkdkk'0Xgt { 'hgy 'tgur qpf gpw'*8' +tgr qtvgf 'vj cv'yj g{ 'vj qwi j v'yj cv' yj g'wuwcn'eqo d'kpcv'kqp'qh'cr r tqcej gu'i cxg'xgt { 'hwr'g'hgzkdkk' 'vq'yj g' rkegpugg0"

"

Although the agency published guidance documents that identify one acceptable way of managing safety significant criteria's within the scope of the license review an applicant is not bound to follow the guidance verbatim as long as it can demonstrate that the same goal can be achieved through an alternative or comparable way.

The agency identifies areas of weakness that the licensee is expected to address when the agency conducts an organization and manage-

ment review. The licensee has the flexibility to determine which corrective actions are best suited to addressing the identified weakness. When a self-assessment is performed, the licensee also has the flexibility to select the methods used to assess safety culture. Those involved in the assessment process are bound to have the deepest understanding of the safety culture of a site. The licensee also has the flexibility to determine which corrective actions to pursue. However, once a corrective action plan is reviewed and accepted by the agency, the licensee would need to justify changes to it.

There is a comprehensive regulatory framework—including technical guidelines and methodologies for performing safety analyses and writing licensing documentation in the power up rates field. Therefore the margin for flexibility in this process is little. However, the licensee has significant flexibility in several aspects such as technical solutions adopted (concept and design of plant modifications) or organization of the power up rate projects.

4.3.7. Do approach(es) affect public credibility regarding safety of licensee facility? Regarding regulator?

T gur qpf gpw'lp'vj g'4233 B4"uwf { 'y gtg'cungf 'y j gvj gt'vj g'cr r tqcej "qt" eqo d'kpc'kqp"qh'cr r tqcej gu'wugf "chgevgf 'r wdrle"etgf kdkrk\ "q'cf f tgu" vj g'tgr qt'w'd { 'lpvgtxky ggu'lp'vj g'4225 B6"uwf { 'vj cv'vj g'cr r tqcej " wugf "eqwf "chgevr wdrle"etgf kdkrk\ 0Qxgtcm'tgur qpf gpw'tgr qt'vgf "vj cv' vj g'cr r tqcej "qt"eqo d'kpc'kqp"qh'cr r tqcej gu'wuwcm\ "wugf "lp'vj gk'tcgc" gk'j gt'f k'f "pq'v'j cxg'cp"ghgevgf'qp'r wdrle"etgf kdkrk\ "qt'ko r tqxgf "k0Qpn\ " ;' 'tgr qt'vgf "vj cv'vj g' { 'vj qwi j v'vj cv'r wdrle"etgf kdkrk\ 'f getgcugf "hqt'vj g' r'egpugg"cpf "35' 'hqt'vj g'tgi wrcvtu+0Vj g'tgo ck'kpi "tgr qpf gpw'y gtg" cdqw'gs wcm\ "hkn\ "q'tgr qt'v'vj cv'r wdrle"etgf kdkrk\ 'y cu'pq'v'chgevgf " *74' 'hqt' r'egpuggu"cpf "67' 'hqt'tgi wrcvtu+"qt'y cu'kpetgcugf "*5; ' 'hqt' r'egpuggu"cpf "63' 'hqt'tgi wrcvtu+0Ego o gpw'tgi ctf kpi 'r wdrle"etgf k dkrk\ 'hgm'lp'v'vj tgg"o ck'p"ecvgi qtkgu0"

"
The public doesn't really know enough about the activities of the licensee or the regulator for the approaches used to have an impact on public opinion." Vj ku'eqo o gpv'y cu'o quv'qh'gp"o cf g'd { 'tgr qpf gpw' y j q'tgr qt'vgf "vj cv'vj g'eqo d'kpc'kqp"qh'cr r tqcej gu'j cf "pq'ko r cev'qp" r wdrle"etgf kdkrk\ 0"

"
Increased transparency improves public credibility. Vj ku'kpenxf gf " tghgt'p'egu'v'q'r wdrle"o gg'kpi u'cpf "eqo o gpv'r g'kqf u0Vj ku'v'r g'qh' eqo o gpv'y cu'o quv'qh'gp"o cf g'd { 'vj qug'y j q'vj qwi j v'r wdrle"etgf kdkrk\ k\ 'y cu'ko r tqxgf "d { 'vj g'eqo d'kpc'kqp"qh'cr r tqcej gu0"

"
The public prefers that the regulator be “tough”, to use a more prescriptive approach, and to have a more direct and independent super-

vision of the licensee0Vj ku'eqo o gpv'y cu'bo cf g'd{ "uqo g'y j q'tgr qtvgf " cp'go r j cuku'qp'yj g'wug'qh'r tguetr vkg'cr r tqcej gu'cu'ko r tqxkpi "r wdrke" etgf kdkkv{. 'd{ "uqo g'y j q'pqvgf "vj cv'yj gtg'y cu'hwng'ghgev'qp'r wdrke" etgf kdkkv{ "cpf 'd{ "uqo g'y j q'tgr qtvgf "go r j cuku'qp'pqp/r tguetr vkg' cr r tqcej gu'cu'f getgcukpi "r wdrke"etgf kdkkv{0 "

Qpg'eqo o gpv'yj cv'kpenmf gf "cm'yj go gu'y cu'yj cv' *Non-prescriptive approaches require more interaction between the regulator and the licensee, which can be viewed by the public as lack of independence, and possibly a lack of transparency. The public needs to be convinced that they can trust the licensee to operate the facility safely. There may be a trust factor from a sceptical public—it is better to have transparency and clarity in regulatory requirements and expectations.*

Kp'cf f kkkp'vq'yj gug'o qtg'eqo o qp'v{r gu'qh'eqo o gpwu."qpg'tgur qpf gpv' eqo o gpvgf "vj cv'yj g'eqo dkpcvkqp"qh'r tqegu'cpf "ugrh/cuuguo gpv'j gr u" r wdrke"etgf kdkkv{ "dgecvug"the public understands that it's better if the licensee personnel develop their own routines because they are the experts on their own plant and situation0"

4.3.8. Do approach(es) affect safety culture of licensee? Of regulator?

Kp'cf f kkkp'vq'yj g'eqpugs wpegu'tgr qtvgf "kp'yj g'4225 126'uwf { . 'tg/ ur qpf gpw'y gtg'cnuq"cumgf "y j gvj gt 'yj g'cr r tqcej "wugf "chgevgf "uchgv{ " ewnwtgô c'uw i gukqp'htqo "yj g'y qtmij qr "chgt'yj g'htuv'uwf {0Xgt{ " hgy 'tgr qpf gpw'tgr qtvgf "vj cv'kp'yj gk'tqr kkkp'yj g'wuwcn'eqo dkpcvkqp" qh'cr r tqcej gu'wugf "kp'yj gk'tctgc'qh'uw' gtxkukqp" f getgcugf "yj g'uchgv{ " ewnwtg'qh'yj g'rkpugg"8' +qt'qh'yj g'tgi wrcvt"8' +0Vj gtg'y gtg'uqo g" f khtgpegu'kp'yj g'qr kkkp'qh'yj j gvj gt 'yj g'eqo dkpcvkqp"qh'cr r tqcej gu" j cf "cp"ghgev'qp'yj g'uchgv{ "ewnwtg'qh'yj g'rkpugg"cpf "yj g'tgi wrcvt0 Vj g'o clqtkv{ "qh'yj g'tgr qpf gpw"92' +tgr qtvgf "vj cv'kp'yj gk'tqr kkkp" yj g'eqo dkpcvkqp"qh'cr r tqcej gu'ko r tqxgf "yj g'uchgv{ "ewnwtg'qh'yj g'rk/ epgugg=j qy gxgt. 'hgy gt'tgr qpf gpw"5; ' +tgr qtvgf "vj cv'yj g'eqo dkpc/ vkqp"qh'cr r tqcej gu'kpetgcugf "yj g'uchgv{ "ewnwtg'qh'yj g'tgi wrcvt0Uqo g" ng{ "eqo o gpwu'tgi ctf kpi "yj g'ghgev'qh'yj g'wuwcn'cr r tqcej "qt'eqo dkpc/ vkqp"qh'cr r tqcej gu'qp'uchgv{ "ewnwtg'y gtg'yj cv' "

Safety culture is improved by regulatory attention (regardless of approach).

Safety culture is decreased when the regulator signals that safety is not important in the area (regardless of approach).

The support given to regulator staff and internal agency safety culture assessments improve the safety culture of the regulator.

A combination of outcome based and self-assessment approaches improved the feeling of responsibility on the part of the licensee (increasing safety culture) and increased the competence of the regulatory staff (increasing safety culture).

The safety culture of the regulator affects the approaches used rather than the other way around.

I think that the continuous innovation and improvement in approaches and methods of work and the use of a combination of regulatory approaches favour the safety culture of the regulator. Obviously it is important to preserve the culture of compliance of the binding requirements of the regulations.

4.4. 2003/04 report issues that emerged from examples regarding regulatory approaches

Kp"vj g"4225 l26'tgr qt v'ugx gtcn'vj go gu"go gti gf "kp"vj g"gzco r ngu'r tqxkf / gf "d { "kpvgtxkgy ggu"

- Tgukucpeg"vq"ej cpi g"kp"tgi wrcvt { "cr r tqcej gu"
- Vgpukqp"eqpegtkpi "vj g"vug"qh'tkum'cpcn { uku'hqt'tgi wrcvt { "f gek ukpu"
- F khtg ppegu"kp"kpvt r tgv'kpu"qh'tgi wrcvt { "cr r tqcej "f ghpkkpu"
- K r qt v'peg"qh'eqo dkpc'kpu"qh'cr r tqcej gu'hqt'tgi wrcvt { "ghge/vkxgpguu"

4.4.1. Resistance to changing regulatory approaches

Kpvgtxkgy u'y kj "gzr gt w'kp"vj g"4225 l26"uwf { "uwi i guvgf "vj cv'vj gtg'y cu" uqo g'tgukucpeg"vq"ej cpi g"kp"tgi wrcvt { "cr r tqcej gu'y kj kp"ci gpekgu" cpf "htqo "h'egpuggu"Vj ku'y cu'r ct v'wrcn { "cp'kuuwg'y kj "vj g'kpvtqf we/vkqp"qh'tkum'cpcn { uku"Vj ku'kuuwg" f kf "pqv'go gti g'htqo "vj g'eqo o gpw'kp" yj g"s wgu'kppckt g'pqt "kp"vj g'f kuewukpu"cv'r ct v'ek cvkpi "ci gpekgu"kp"vj g" 4233 B4"uwf { 0Cr r tqcej gu'y gtg'f kuewugf "cu'eqo r ngo gpvt { "tcvj gt" vj cp"cu'eqo r gv'kpi 0"

4.4.2. Tension concerning use of risk analysis for regulatory decisions

Kp"vj g"4225 l26"uwf { "uqo g'kpvgtxkgy ggu"gzr tguugf "f luci tgggo gpv'y kj " vj g'kpetgcugf "vug"qh'tkum'cpcn { uku'hqt'tgi wrcvt { "uwr gtxkukp0Cnj qwi j " vj gtg'y gtg'eqo o gpw'htqo "uqo g'tgur qpf gpw'kp"vj g"4233 B4'tgi ctf kpi " vj g'f k'hewm { "qh'wukpi "tkum'cpcn { uku'hqt"uqo g'ctgcu'cpf "y kj "vj g'r tqd/ ngo "qh'ki pqt kpi "ctgcu"vj cv'y gtg'pqv'cuugugf "cu"j cxkpi "c"j ki j "uchgv { "

uki pkkcepeg. 'y gug'y gtg'o gpvkqpgf 'cu'kuuwgu'vq'dg'eqpukf gtgf 'kp'y g' wug'qh'y ku'cr r tqcej 'y kj qw'y g'kpf kcvkqp'qh'vcpukp0

4.4.3. Differences in interpretations of regulatory approach definitions

Kp'y g'4225 126'kpvgtxky u'k'dgeco g'ergct 'y cv'cnj qwi j 'y g'f ghpkkqpu' wugf 'kp'y cv'uwf { 'r tqxkf gf 'c'wughw'uvct'kpi 'r qkp.v' y gtg'y gtg'ukmf kh' hgtgpegu'kp'o gcplpi 'cpf 'kpvtr tgvkqp'cetquu'y g'kpvgtxky ggu'0Vj ku' y cu'cnj 'twg'kp'y g'4233 134'uwf { 0"

Vj g'4233 134'uwf { 'wugf 'tgxkugf 'f ghpkkqpu'0Vj g'tgxkukqpu'y gtg'dcugf " qp'y g'kpr w'htqo 'kpvgtxky ggu'kp'y g'4225 126'uwf { 'cpf 'htqo 'y g' y qtmj qr 'j gn' 'chgt'y cv'uwf { 0'k'cf f kkkp. 'c'pgy 'f ghpkkqp'qh'ögf w' ecvkqp'kphwpgpegö'y cu'cf f gf 0Cnj qwi j 'y g'tcvkpi u'qh'entkv' 'qh'y g' f ghpkkqpu'y gtg'tgrv'xgn' 'j ki j . 'eqo o gpv'kpf kcvgf 'f khtgpegu'kp' j qy 'y g'tgur qpf gpv'y gtg'wukpi 'y g'vgtu u'0Ugg'Ej cr vgt'9'ht'c'f kuewu/ ukqp'qh'y g'f ghpkkqpu'qh'gcej 'cr r tqcej 0Vj gtg'o c { 'dg'uo g'xcnwg'kp' tghkpi 'cpf kq'ucpf ct f k' kpi 'uo g'f ghpkkqpu. 'gur gekm' 'y g'f ghpk/ vkqp'cpf 'wug'qh'y g'vgtu u'ör tguetkr v'xg'cr r tqcej ö'cpf 'ögf wec/ vkqp'kphwpgpegö'cr r tqcej 0

4.4.4. Importance of combinations of approaches for regulatory effectiveness

Eqo o gpv'cpf 'gzco r ngu'htqo 'y g'kpvgtxky ggu'kp'y g'4225 126'uwf { " f go qpuctv'gf 'y g'ko r qtvcpeg'qh'eqo dkkpi 'cr r tqcej gu'v'q'cf f tguu" eqo r ngz'cpf 'f { pco k'kuuwgu'kp'tgi w'vqt { 'uwr gtxkukqp'0Vj ku'kpf kpi " y cu'utqpi n' 'uwr r qtvgf 'd { 'y g'tguwmu'qh'y g'4233 134'uwf { 0'k'cm'dw' qpg'ecugö cetquu'y g'uweeguuhwn'rguu/uweeguuhwn'cpf 'wuwcn'écuguö tgur qpf gpv'tgr qtvgf 'y g'wug'qh'eqo dkpcvkpu'qh'cr r tqcej gu'0F kuewu/ ukqpu'cpf 'eqo o gpv'utguugf 'y g'xcnwg'qh'j c'kpi 'o wnk'ng'cr r tqcej gu' vq'cf f tguu'f khtg'gpv'kuuwgu'y cv'ctqug'cv'f khtg'gpv'uci gu'qh'y g'tgi w'vq/ t { 'uwr gtxkukqp'r tqegu'cpf 'v'q'cf f tguu'f khtg'gpv'ektewo ucpegu'qh'gcej " ecug0"

5. Circumstances that affect regulatory supervision

C"pwo dgt"qh'cur gevu'qh'tgi wrcvt { "uwr gtxkukqp"qyj gt "vj cp"cr r tqcej gu" y gtg"o gpvkqpgf "d { "tgur qpf gpw'lp"vj g"4233 B4"uwf { "cu"j cxkpi "cp" ko r cev'qp"tgi wrcvt { "ghgevxgpguu" ""

- Gzr gtlgpeg"
- Ej ctcevtkuleu"qh'vj g'lpf wut { "
- Vj g'wug"qh'eqvtcevtu "
- Eqqr gtcvkqp"cpf "ci tgggo gpv'dgwy ggp"vj g'tgi wrcvt "cpf "vj g'hlegpugg "
- Ej ctcevtkuleu"qh'vj g'ecugô ueqr g."gctn { "kpvgtxgpvkqp"
- Rgthqto cpeg"d { "vj g'hlegpugg"cpf "tgi wrcvt"

5.1. Experience

Vj g'ko r qtwcpeg"qh'gzr gtlgpeg"cpf "nguuqpu'ngctpgf "y cu"go r j cuk gf " vj tqwi j qw'vj g'eqo o gpw'd { "tgur qpf gpwô dqvj "k'p'tghgtgpeg"vq"vj g" ej qleg"qh'cr r tqcej "wugf "vq"cf f tguu"r ctcevtkuleu"kuuwg"cpf "vj g'ghgevxg" ko r ngo gpvkqpgf"qh'cr r tqcej gu"lp"tgi wrcvt { "r tcevtkuleu"OZr gtlgpeg"y cu" vj g'ej ctcevtkuleu"o quv'qh'gp"o gpvkqpgf "cu"c"ektewo ucpeg"vj cv'y qwf " j cxg"chgevgf "vj g'qweqo g'qh'vj g'ecugô"Vj g'ko r qtwcpeg"qh'gzr gtlgpeg" qh'hlegpuggu."eqvtcevtu."cpf "tgi wrcvtu"y cu"pqvgf 0" ""

Cm quv'j ch'qh'vj g'eqo o gpw'htqo "s wugvkqppcct g'tgur qpf gpw'o gp/ vkqpgf "uqo g'v { r g'qh'gzr gtlgpeg"cu"c"ektewo ucpeg"vj cv'y qwf "j cxg" ej cpi gf "vj g'qweqo g'qh'vj g'ecugô"K"cf f kqkq."f kuewukqpu"qh'vj g'ghge/ vxgpguu"qh'vj g'tgi wrcvt { "r tcevtkuleu"qh'gp"o gpvkqpgf "vj g'gzr gtlgpeg"qh' vj g'hlegpugg."vj g'k'pur gevqt"qt"vj g'ci gpe { "lp"vj g'eqo o gpw'OEqo o gpw" kpenwf gf " ""

The approach became more and more effective due to higher experience level for both parts.

It would have been more effective if both the licensee and the regulator had more experience with these kinds of assessments.

More approaches, including outcome and prescriptive, would have been needed with a less experienced licensee.

A more experienced manager would have resulted in a faster resolution.

Gzr gtlgpeg"qh'tgi wrcvt { 'r gtuqppgn'y cu'cnuq"o gpvkqpgf "cu'chgevkpi " vj g'rgxgn'qh'r tgf levcdrkx { 'hqt 'y g'hegpuggu0Dqvj "cr r tqcej "wugf "cpf " vj g'gf wecvkqp"cpf "gzr gtlgpeg"qh'tgi wrcvt { "ucfh'y gtg'o gpvkqpgf "cu' tgrcvgf "v'j g'rgxgn'qh'eqpukvpgpe { "cpf 'r tgf levcdrkx { "qh'uwr gtxkukqp0" "

Vj gtg'y gtg'cnuq"pwo dgt"qh'eqo o gpw'tgi ctf kpi "tgi wrcvt"eqo r g/ vgpeg'tgrcvkxg"v'j"cr r tqcej gu'kp" f gvgto kpkpi "ghgevkxgpguu0"

5.2. Characteristics of the industry

O cwtkv { .ci g. "cpf "j gvgtqi gpgkv { "qh'y g'lpf wut { "y gtg'o gpvkqpgf "cu' chgevkpi "tgi wrcvt { "uwr gtxkukqp0" "

O cwtkv { "qh'y g'lpf wut { "y cu'f kuewugf "cu'c'ng { 'hcvqt 'kp'j qy 'tgi wrc/ vqt { "uwr gtxkukqp"ku'eqpf wevgf 0Vj gtg'y cu'uo g'f kuewukqp"qh'y g'o qxg" cy c { 'htqo "o qtg'f guki p'dcuku"cpf 'f gvgto kpkvle'tgs vkt go gpw'cu'hegp/ uggu. "cpf 'y g'lpf wut { "cu'c'y j qrg. "dgeco g'o qtg'hpqy rgi gcdrg"cpf " gzr gtlgpegf "kp"qr gtcvkpu0Cmj qwi j "o cwtkv { "qh'y g'lpf wut { "y cu'f gp/ gtcv { 'f kuewugf "cu'c'r qukxg"cur gev. "kp"qpg'f kuewukqp"y g'tkumi"qh' j cxkpi "c'o cwtg'lpf wut { "y cv'dgeqo gu'eqo r megpv'y gtg'go r j cuk' gf 0' K'y cu'pqvgf "y cv'lpf wut { "cpf "y g'tgi wrcvt+"ecp"dgeqo g'vq"eqo hqt v cdrng"cpf "eqo r megp0Qpg"qh'y g'eqo o gpw'y cv'y cu'kpenf gf "kp"y ku' f kuewukqp"y cu'y cv'" "

Nuclear needs to be less self-referential. Although nuclear is good it needs to look outside. A lot of assumptions in both industry and regulator—know each other well and don't challenge each other. Expectations that are too set can be a problem0 "

Ci g'qh'y g'lpf wut { "kp"vgtu u'qh'ci kpi "r rcpw'tcvj gt"y cp"o cwtkv { "qt" gzr gtlgpeg+y cu"o gpvkqpgf "cu'j cxkpi "cp"ghgevkqp"y g'cr r rdecvkqp"qh' cr r tqcej gu0Hqt"gzco r rg. "qpg'eqo o gpv'wi i guvgf "y cv'y g'tkumi'cu/ uguo gpv'y qwf "j cxg'dggp"j ki j gt "kp"cp"qrf gt'r rcpv0 ej cpi kpi "y g'y c { " yj g'tgi wrcvt"y qwf "j cxg'f gcn'y kj "y g'ecug0" "

J gvgtqi gpgkv { "qh'y g'lpf wut { "y cu'r tguqpgf "d { "c"pwo dgt"qh'tgur qpf / gpw'cu'c'tgcuqp"y cv'qweqo g'dcugf "cr r tqcej gu'y gtg'o qtg'f guktcdrg0' Tgur qpf gpw'pqvgf "y cv'dgecvwug'r rcpw'f khgtgf "kp"v'r g'qh'hcekv { "g0 0" DY T IRY T +. "ci g'qh'r rcpv."gzr gtlgpeg"qh'qr gtcvqtu. "cpf "qvj gt' hcvqtu'k' y cu'pqvr quukdrng"v"etgcvg'f gckrgf "r tguetk vkg'tgi wrcvkqp"qp"j qy "vq" eqpf wev'qr gtcvkpu0"

5.3. The use of contractors

Vj g'wug'qh'eqpvtcevqtu"eco g'wr "kp"c"pwo dgt"qh'y g'ecugu0K"o quv'ecu/ gu'kv'y cu'pqvgf "y cv'c"j ki j n { "vgej pkecn'kuwug'tgs vkt gf "y g'wug'qh'eqp/

vtcevt "gzt gt vug" d { "vj g'tgi wrcvt "cpf lqt "vj g'hegpugg" Qvj gt "eqo o gpw" tgi ctf lpi "eqpvtcevtu'kpenmf gf "vj cv"

*Licensees need to be intelligent and **concerned** customers when using contractors.*

There are differences across contractors in their ability to work within a regulatory framework. Inexperienced contractors can create problems for both the licensee and the regulator.

Loss of experienced contractors has become an important problem.

When safety analysis was done by a supporting organization the operating personnel had difficulties in understanding the result—leading to important safety issues being missed.

kp"qpg'ecug'c'tgur qpf gpv'pqvgf "vj cv'vj g'xgpf qt "f kf "pqv'uj ctg'r tqr tkg/ vct { "lphqto cvkqp"y kj "vj g'hegpugg."o cnkpi "kv'f khlw'v'ht "vj g'hegpugg" vq"vcng'hw'v'qy pgtuj kr "qh'c"v'ej plecn'uq'v'kqp0'

5.4. Cooperation/agreement between regulator and licensee

Eqqr gtcv'kqp "dgw ggp"vj g'hegpugg"cpf "vj g'tgi wrcvt "y cu"q'hwgp"o gp/ v'kppgf "cu"c'ng { "tgcuaq'ht "vj g'ngxgn'qh'uweegu"qh'ecug"uwf kgu'q'htgi w r'vqt { "uwr gtxkukqp0Qpg"cur gev'o gpv'kppgf "cu"ch'ge'v'kpi "eqqr gtcv'kqp"cpf " ci tggo gpv'y cu"vj g'ngxgn'q'hr qv'p'v'cnj cto "gzt gev'f "htqo "vj g'hw'v'q'v'q'v' " vj g'uwr gtxkukqp0Vj gtg'y cu'pqv'o wej "f kuci tggo gpv'dgw ggp"vj g'hegp/ ugg"cpf "vj g'tgi wrcvt "tgi ctf lpi "ecugu'y kj "xgt { "mqy "qt"xgt { "j ki j "uchgv' " uki p'k'lecpeg"dw"vj gtg'y cu"o qtg'f kuci tggo gpv'ht "oi tg { "ctgcu00k'p'ecu/ gu'y kj "nguu'f gh'p'k'x'g"uchgv' "uki p'k'lecpeg"vj g'tg'v'k'p'uj kr "dgw ggp"vj g' tgi wrcvt "cpf "vj g'hegpugg"y cu"o quv'ko r qt'v'p'0'

Eqqr gtcv'kqp "y cu"cuu'q'ek'v'gf "y kj ""

- N'hegpugg"dw{/k'p""
- N'hegpugg"ugg'lpi "uchgv' "ko r tqxgo gpv'cu"i q'qf "qr r qt'w'p'k'v' { "
- N'hegpugg"dg'lpi "c'ng'ct'p'kpi "qti cp'k' cv'kqp""
- N'hegpugg"cnkpi "t'gur qpuk'd'k'v'v' "ht "uchgv' { "

Y j gj gt "vj g'hegpugg"cpf "vj g'tgi wrcvt "ci tgg"cd'q'w'v'j g'oy c { "h'q'ty ctf o' ch'gt "c'hp'f lpi "y cu"q'hwgp"o gpv'kppgf "cu"c'ng { "grgo gpv'k'p'd'q'v' "uweegu/ hw'v'cpf "nguu'v'weegu'hw'v'ecugu0Cu"q'pg't'gur qpf gpv'eqo o gpv'gf "

It could have been less effective under certain circumstances. For example, the licensee may propose a solution to reach the outcome, but

the regulator may not agree that it is an appropriate solution: perhaps it has not been tested sufficiently. That could lead to disagreements.

Vj ku'ukwcvkqp'eco g'wr 'lp'c'pwo dgt'qh'vj g'ecug'gzco r rgu0Qpg'qh'vj g' engct guv'qweqo gu'y cu'cp'kpetgcug'lp'tguqwtg'wug'd{'vj g'tgi wrcvt" cpf lqt'vj g'hkpgugg'y j gp'vj gtg'ku'pqv'cp'ci tgggo gpv'cdqww'vj g'r tqdrgo " qt'vj g'uqmwkqp0k'qpg'ecug'vj g'hkpgugg'y cpvgf 'vq'ej cpi g'vj gkt'cr / r tqcej 'y kj 'tgi ctf 'vq'y cuvg'o cpci go gpv'0Vj g'r tko ct{'cr r tqcej 'wugf " d{'vj g'tgi wrcvt'y cu'gf wecvkqp'cpf 'kphmgpeg0Vj gtg'y gtg'f kuci tgg/ o gpw'qp'dqy 'ukf gu0Gxgpwcm{. 'chgt'o wej 'f kuewuukqp. 'vj g'hkpgugg' y cpvgf 'vj g'erctk{'qh'c'r tguetkr vkg'tgs vktgo gpv'0k'cpqy gt'ecug'vj g' tgi wrcvt'y cpvgf 'vj g'hkpgugg'vq'r gthqto "cpcn{uku'cpf 'tgugctej 'dcugf " qp'kpvgtpcvkvpcn'gzr gtlkpeg0Vj g'hkpgugg'f kf 'pqv'ci tgg'k'y cu'pggf gf 0 Vj g'tgi wrcvt'r gthqto gf 'vj g'tgugctej "cpf "cpcn{uku0 y j lej 'tguwmgf 'kp' c'uchgt'qweqo g'cetqu'vj g'lpf wxt {'dw'tgs vktgf "c"j ki j 'wug'qh'tg/ uqwtgud{'vj g'tgi wrcvt'0k'cpqy gt'ecug'vj g'hkpgugg'y cu'qww'qh'eqo / r rkcpeg'dw'r wuj gf 'dcen'idgecwug'qh'vj g'equ'qh'hkz'kpi 'vj g'r tqdrgo 0Vj g' tgi wrcvt'wugf 'uki pkkcpv'tguqwtg'u'vq'etgcvg'r tguetkr vkg'i wkf gu0Vj g' hkgpugg'j cf 'vq'eqo g'kpq'eqo r rkcpeg'chgt'o qtg'y qtn'd{'gxgt {qpg0

5.5. Characteristics of the case: scope and early intervention

Ej ctcevtkukv'qh'vj g'ecugu'y gtg'o gpv'kqpgf "cu'j cxkpi "cp'ko r cev'qp" vj g'qweqo gu'qh'uwr gtxkukqp0C'pwo dgt'qh'tgur qpf gpw'pqvgf 'vj cv'vj g' ueqr g'cpf 'hqw'u'qh'vj g'cev'kxk{'j cf "cp'ko r cev'qp'vj g'tguw'u'qh'vj g'uw/ r gtxkukqp0E'cug'uwf lgu'kpenw' gf 't'gur qpugu'vq'pqto cnl'pur gev'kqpu. 'tg/ ur qpugu'vq'kpf kpi u'htqo 'vj g'hkpgugg'au'ugr/cuuguo gpv'r tqi tco. 'tg/ ur qpugu'vq'o clqt'gxgpw. "cpf "kpuvc'v'kqpu'qh'p'gy 'tgi wrcv'kqpu'qt'p'gy " vgej pqm'i lgu0Cu'qpg't'gur qpf gpv'pqvgf "cdqww'vj g't'gur qpug'vq'c"o clqt' r rcpv'o qf hkecvkqp'vj cv'y cu'pqv'f qpg'ceeqt'f kpi "vq'uwcpf ctf "

Inspection findings like this example never have efficient solutions; the licensee tries to justify the design modification even though they know the deficiencies. The regulator doesn't receive clear and rational responses to the identified safety issues.

Cpqy gt'ej ctcevtkukv'qh'vj g'ecug'o gpv'kqpgf 'y cu'y j gvj gt'vj g'uw' gtxk ukqp'y cu'r tqcevxg0"

Early engagement allowed identification of problems at an early stage, before they can become embedded and increase cost and disruption.

5.6. Performance by licensee and regulator

C"pwo dgt"qh'tgur qpf gpw'o gpv'kqpgf 'r gthqto cpeg"qh'yj g'tgi wrcvt {"
uxh'ht"j g'hegpugg'k"gzr tgu'kpi 'y j cv'j cf "chgevgf "j g'uweegui'qh'yj g"
tgi wrcvt {"uwr gtxkukqp0'
"

When procedures are not followed, including not reporting actions taken, it is difficult for both licensee's management and authorities to identify problems.

"

The prescriptive regulatory action would have not been necessary if the licensee had properly fulfilled the existing maintenance regulation and would have taken preventive measures before the cards failures.

If the licensee had better quality control and maintenance the problem would have been prevented.

Approach would have been more effective based on the performance level of the inspector.

The foundation for inspection wasn't properly laid out.

The approaches used in the less successful example are not that different from the successful example. The main difference between the examples is how regulatory action is prepared and the knowledge of the inspectors in the particular area.

6. Usefulness, use, emphasis, and change of regulatory approaches: overall and within areas of supervision

Kp'vj g'4225 B26'uwf { 'kp'vgtxkgy ggu'y gtg'cungf 'vq'tgr qtv'qp'vj g'cr / r tqcej gu'wugf 'kp'vj tgg'gzco r ngu'qh'tgi wrcvt { 'uwr gtxkukqp0Qpg'qh'vj g' ng { 'hpf kpi u'kp'qh'vj cv'uwf { 'y cu'vj cv'eqo dlpvcv'qp'qh'cr r tqcej gu' y gtg'wugf 'cpf 'vj cv'vj g'eqo dlpvcv'qp'f hgtgf 'cetquu'f hgtgpv'ctgcu'qh' tgi wrcvt { 'uwr gtxkukqp0K'qtf gt 'vq'hw'vj gt 'gZR mgt'vj ku'hpf kpi 'kp'vj g' 4233 B34'uwf { . 'tgr qpf gpw'y gtg'tgs wugf 'vq'tgr qtv'vj g'cr r tqcej gu' wugf 'kp'vj q'ecugu'qh'tgi wrcvt { 'uwr gtxkukqp'cpf 'kp'vj g'wuwcn'ecug'qh' tgi wrcvt { 'uwr gtxkukqp'kp'vj gkt 'ctgc0Vj g { 'y gtg'cunlv'vcg'vj g'qxgtcm' wughwpguu'qh'gcej 'cr r tqcej 'y kj kp'vj gkt 'ctgc0K'qtf gt 'vq'cuuguu'vj g' wug'cpf 'go r j cuku'qh'gcej 'cr r tqcej 'kp'gcej 'qh'vj g'gki j v'ctgcu'qh'uwr gt / xkukqp'cf f tguugf 'kp'vj g'4233 B34'uwf { . 'vj g { 'y gtg'r tqxkf gf 'y kj 'c'hku' qh'cm'qh'vj g'cr r tqcej gu'cpf 'cungf 'vq'o ctmy j gvj gt 'vj g'cr r tqcej 'y cu' pqv'wugf 'qt'wugf 'cv'hxg'hxgn'qh'go r j cuku hqo '3'*xgt { 'm'y '+v'7" *xgt { 'j ki j +0Vj g { 'y gtg'cuq'cungf 'vq'pqv'hqt'gcej 'cr r tqcej 'y j gvj gt 'kv' j cf 'kpetgcugf 'kp'wug.'wrc { gf 'vj g'ucog . 'qt'f getgcugf 'kp'wug'kp'vj gkt 'gz / r gtlkpeg0' "

Kp'vj ku'ugev'kp'vj g'tguwmu'qh'vj g'cpcn { uku'cetquu'cm'qh'vj g's wugv'kp / pck gu'ctg'r tqxkf gf 'cetquu'cm'ctgcu'*8B'+cpf 'y kj kp'ctgcu'qh'uwr gtxk / ukqp'*804+'y kj 'tgi ctf 'vq<

"

- Tcvkpi 'qh'wughwpguu'qh'gcej 'cr r tqcej 'qxgtcm'"
- Ngxgn'qh'wug'cpf 'go r j cuku'qh'gcej 'cr r tqcej 'qxgtcm'"
- Co qwpv'qh'ej cpi g'kp'vj g'wug'qh'gcej 'cr r tqcej 'qxgtcm'"

6.1. Results across all areas of supervision

Kp'vj ku'ugev'kp'vj g'tguwmu'cetquu'cm'76's wugv'kppck gu'ctg'tgr qtv'vj 'y kj " tgi ctf 'vq'wughwpguu.'wug.'go r j cuku.'cpf 'ej cpi g'qh'vj g'cr r tqcej gu0' Ugev'kp'80B'r tqxkf gu'cuuguo gpw'qh'vj g'qxgtcm'wughwpguu'qh'cr / r tqcej gu0Ugev'kp'804'dgi kpu'y kj 'c'eqo r ctluqp'qh'vj g'hxgn'qh'wug' cpf 'go r j cuku'hqt'cm'cr r tqcej gu'cetquu'vj g'vq'ecugu'o qtg'cpf 'rguu' uweeguuhwn'cpf 'vj g'wuwcn'eqo dlpvcv'qp'qh'cr r tqcej gu0Vj gp'vj g'qxgtcm' wug'cpf 'go r j cuku'qh'vj g'ugxgp'cr r tqcej gu'ku'tgr qtv'vj 'hqt'vj g'wuwcn' eqo dlpvcv'qp'qh'cr r tqcej gu0Ugev'kp'80B'f kuewugu'vj g'qxgtcm'ej cpi g' kp'vj g'wug'qh'cr r tqcej gu.'kpenf kpi 'eqo o gpw'qp'vj g'tgcuqp'u'ht'cp { " ej cpi gu0'"

6.1.1. Overall usefulness of approaches

Qpg'qh'v'j g'o quv'ko r qtvcpv'kpf kpi u'ltqo 'vj g'4225 126'uwf { 'y cu'v'j cv' vj g'kpvgtxky ggu'tgr qtvgf 'vj cv'cm'qh'v'j g'cr r tqcej gu'y gtg'wughwlv'wpf gt" uqo g'ektewo ucpeguo cmj qwi j 'vj gtg'y gtg'ecxgcw'cdqw'v'j g'wug'qh' f khtgtpv'cr r tqcej gu'cu'ou'wcpf "cmj pgo'cr r tqcej gu'qt'k'egt'w'k'ektewo / ucpeguo'k'q'gtf gt'v'q'ht'v'j gt'gzco kpg'v'j ku'kpf kpi . 'k'v'j g'4233 134'uwf { " tgr qpf gpw'y gtg'cungf 'v'q'tcv'v'j g'wughwpgu'qh'gcej "cr r tqcej 'k' vj gk'ctgc'qh'tgi wrcvt { 'uwr gtxkukpp'0'Vj g { 'y gtg'cungf 'v'q'tcv'gcej "cr / r tqcej 'ltqo '3'*xgt { 'wughw'v'q'7'*pqv'wughw'0'Qxgtcm "cetquu'cm'qh'v'j g' cr r tqcej gu. 'vj g'o quv'eqo o qp'tgur qpug'y cu'oxgt { 'wughw'o'*c'tcv'kpi "qh' 3'qt'4'+cpf 'vj g'rgcu'eqo o qp'tgur qpug'y cu'pqv'wughw'i'*c'tcv'kpi "qh'6'qt' 7+0" "

Cm'v'j g'cr r tqcej gu'y gtg'tcv'v'j g'wughw'i'*c'tcv'kpi "qh'3.'4.'qt'5ô ltqo "xgt { " wughw'v'q'uqo gy j cv'wughw'n'd { 'vj g'o clqtkv' { "qh'tgur qpf gpw'ugg'Vcdrg" 800-0'Vj g'cr r tqcej gu'o quv'qh'v'p'i kxgp'xgt { 'wughw'i'tcv'kpi u'y gtg'*self-assessment*'*cm quv'87' "qh'tgur qpf gpw'+cpf "*risk hazard*"cpf "*outcome based*"*cdqw'82' +0" "

Vcdrg'800<Qxgt cm'V guw'u'Wughwpgu'qh'Cr r tqcej gu'"						
Cr r tqcej "	Pqv'wughw'i'6'7'+"		Uqo gy j cv'wughw'i' *5'+"		Xgt { 'wughw'i' *3,4'+"	
	Rgt'egpv'	P "	Rgt'egpv'	P "	Rgt'egpv'	P "
Rt guet kr v'xg'"	46' "	35"	44' "	34"	76' "	4; "
H'eklv' { "	48' "	36"	5; ' "	43"	57' "	3; "
Qweqo g'"	39' "	; "	46' "	35"	7; ' "	54"
Thml' J c ctf "	3; ' "	32"	43' "	33"	7; ' "	54"
Rt qegu' "	39' "	; "	52' "	38"	76' "	4; "
Ughl' Cuguo gpv' "	8' "	5"	52' "	38"	87' "	57"
Gf wecv'qp'l' Kphw'peg'"	43' "	33"	55' "	39"	68' "	46"

, 'Rtegepv'ci gu'j cxg'dggp'tqwpf gf "v'p'gctgu'v'y j qng'pwo dgt" "

Tgur qpf gpw'y gtg'cnuq'cungf 'v'q'eqo o gpv'qp'v'j g'cr r tqcej gu'0'Vj gug' eqo o gpw'ctg'f'kuewu'gf 'k'p'Ej cr vgt'9.'y j gtg'gcej "cr r tqcej 'ku'f ku' ewu'gf "ugr ctcv'n{ 0"

6.1.2. Overall use and emphasis of different approaches

Qxgtcm'cm'cr r tqcej gu'y gtg'tgr qtvgf "cu'wugf "d{ 'y g'o clqtkv{ "qh'tg/ ur qpf gpw'ht'cm'qh'y g'ecugu'uweeguuhwn'rguu'uweeguuhwn'cpf "wuwcn0' Tgur qpf gpw'tgr qtvgf 'y cv'cp'cr r tqcej 'y cu'pqv'wugf "cdqw'46' "qh'y g' vko g'cetquu'cm'ecugu'cpf 'wugf "cdqw'98' "qh'y g'vko g'wugf "dw'pqv' go r j cuk' gf 'j gcxkn{ "cdqw'62' "qh'y g'vko g'cpf "go r j cuk' gf "cdqw'58' " qh'y g'vko g+'ugg'Vcdrg'800c."dgnqy +0Vj g'wug'rgxgn'qh'y g'cr r tqcej / gu'ht'y g'y q'ecug'uwf lgu'cpf 'y g'owuwcn0'cr r tqcej 'y gtg'eqo r ctgf 0' Qxgtcm'wug'rgxgn'xctkgf "uqo gy j cv'cetquu'y g'ecug'uwf lgu'cpf "wuwcn' cr r tqcej gu'0Dqy 'y g'uweeguuhwn'cpf "rguu'uweeguuhwn'ecugu'y gtg'o qtg' rknkn{ "v'tgr qt'v'cr r tqcej gu'cu'opqv'wugf 00Vj ku'qweqo g'ku'eqpukngpv' y kj 'f hgtgpegu'lp'y j cv'oo c{ "dg'wugf 0'lp'y g'wuwcn'ecug'cpf 'y j cv'ku' ceewcn{ "wugf 'lp'y g'ur gekhe'gzco r ngu'0Tgur qpf gpw'y gtg'cnuq'uqo g/ y j cv'rguu'rknkn{ "v'tgr qt'v'y cv'cr r tqcej gu'y gtg'j gcxkn{ "go r j cuk' gf "ht' y j g'rguu'uweeguuhwn'ecug0"

Vcdrg'800c<Wug'Ngxgn/Cet quu'cm'Cr r tqcej gu'd{ 'Wuwcn' O qt g'Uweeguuhwn'cpf 'Nguu'Uweeguuhwn'Ecugu'"						
"	P qv'Wugf "		Wugf 'y kj " uqo g'" go r j cuk'		J gcx{ "' Go r j cuk'	
"	Rgt'egpv'	P "	Rgt'egpv'	P "	Rgt'egpv'	P "
Wuwcn'ecug'"	37' "	78"	68' "	395"	5; ' "	366"
O qt g'" uweeguuhwn' ecug'"	47' "	; 5"	58' "	357"	5; ' "	367"
Nguu'" uweeguuhwn' ecug'"	53' "	328"	62' "	356"	4; ' "	; ; "
Vqcd'	46' "	477"	63' "	664"	58' "	5: : "

%P qv'y cv'y g'wpk'qh'cpcn{ uku'ht'y ku'vcdrg'ku'tgr qtvgf "cr r tqcej " , 'Rtegpvcu' gu'j cxg'dggp'tqwpf gf "v'pgctgu'y j qng'pwo dgt"

Vj g'o clqtkv{ "qh'tgur qpf gpw'tgr qtvgf "y cv'cm'cr r tqcej gu'y gtg'wugf " y kj "gkj gt'ouqo g'go r j cukuo'qt'oj gcx{ "go r j cukuo'lp'y g'wuwcn'ugv'qh' cr r tqcej gu'³: "ugg'Vcdrg'800d-0Hqt'gcej "cr r tqcej "qxgt'92' "qh'tg/ ur qpf gpw'tgr qtvgf "y cv'y g'cr r tqcej 'y cu'wugf "cv'uqo g'rgxgn'qh'go / r j cukuo'Vj g'rti guv'r tq'qt'v'kp'qh'tgur qpf gpw.'qxgt'; 7' . 'tgr qtvgf 'y cv' self-assessment'y cu'wugf =y g'uo cnguv'r tq'qt'v'kp.'rguu'y cp'97' . 'tg/ r qtvgf 'y cv'c'facility dcugf "cr r tqcej 'y cu'wugf 0Cm'qh'y g'cr r tqcej gu' y gtg'tgr qtvgf "cu'j gcxkn{ "go r j cuk' gf "i kxgp'c'ueqtg'qh'6'qt'7'+d{ "uqo g'

19: Only the results for the usual set of approaches used are provided here. Results comparing use and emphasis by approach are provided and discussed in Chapter 7 within the discussion of each approach.

tgur qpf gpw0Vj g'cr r tqcej gu'y cv'y gtg'o quv'ikngn{ "v"dg'tgr qtvgf "cu" j gcxkn{ "go r j cuk gf "y gtg"outcome based, risk/hazard based, process based, and self-assessment based0Cdqwhqtv{/hkg'r gt'egpv'qh'tg/ ur qpf gpw'tgr qtvgf "y gug"cr r tqcej gu'y gtg'j gcxkn{ "go r j cuk gf 0Vj g" cr r tqcej "ngcu'ikngn{ "v"dg'tgr qtvgf "cu"j gcxkn{ "go r j cuk gf "y cu'facility basedô qpn{ "47" "qh'tgur qpf gpw'tgr qtvgf "y cv'y ku"cr r tqcej "y cu" j gcxkn{ "go r j cuk gf 0"

Vcdng'800d<Qxgt cniT gumu<WuwnCrr tqcej gu'cpf 'Go r j cuk'						
Crr tqcej "	Pgxgt 'wugf " *2+ "		Uqo g'go r j cuk' *3.4.5+ "		J gcx{ 'go r j cuk' *6.7+ "	
	Rgt'egpv'	P "	Rgt'egpv'	P "	Rgt'egpv'	P "
Rt guet kr vlxg"	33' "	8"	82' "	54"	4: ' "	37"
Hekkw{ "	48' "	36"	6; ' "	48"	47' "	35"
Qweqo g"	35' "	9"	62' "	43"	69' "	47"
Tkunf c ctf "	35' "	9"	64' "	44"	67' "	46"
Rt qegu'	33' "	8"	66' "	46"	66' "	46"
Ugth' Cuguo gpv'	9' "	6"	68' "	47"	68' "	47"
Gf wecv'qpI' Kphwpeg"	4: ' "	34"	65' "	45"	56' "	3: "

, 'Rtegpvci gu'j cxg'dggp'tqwpf gf "v"pgctgu'v'y j qng'pwo dgt "

6.1.3. Overall change in the use of approaches

Kp'y g'4225 126'uwf { . 'tgur qpf gpw'pqvgf "y cv'uqo g'cr r tqcej gu'j cf " kpetgcugf "qt'f getgcugf "kp'wug0Kp'y g'4233 134'uwf { 'tgur qpf gpw'y gtg" cungf "y j gj gt "kp'y gk "gzr gtlgpeg"y gtg'j cf "dggp"cp{ "ej cpi g'kp'y g" wuwn'ngxgn'qh'wug'qh'y g'f khtg'gpv'cr r tqcej gu'0T gur qpf gpw'y gtg'cungf " y j gj gt "gcej "cr r tqcej "y cu'pqv'wugf "2+."j cf "f getgcugf "kp'wug"*3"qt"4+." pqv'ej cpi gf "5+qt'kpetgcugf "kp'wug"*6"qt'7+0Vj g'o quv'eqo o qp'tg/ ur qpug'cetquu'cm'cr r tqcej gu'y cu'y cv'y gtg'j cf "dggp"pq'ej cpi g'kp'y g" wug'qh'cp"cr r tqcej 0Vj g'pgzv'o quv'eqo o qp'tgur qpug'y cu'y cv'y gtg" j cf "dggp"cp'kpetgcug'kp'cp"cr r tqcej 0T gur qpf gpw'y gtg'ngcu'ikngn{ "v" tgr qt'v'c'f getgcug'kp'y g'wug'qh'cp{ "cr r tqcej 0"

C"self-assessment based"cr r tqcej "y cu'o quv'qhwgp'tgr qtvgf "d{ 'tg/ ur qpf gpw'cu'kpetgcug'kp'wug'kp'y g'wuwn'cr r tqcej "v"tgi wncvt{ 'uw r gtxkukp"*ugg"Vcdng'8005+0Qxgt'ikm{ 'r gt'egpv'qh'tgur qpf gpw'tgr qtvgf " cp'kpetgcug'kp'y ku"cr r tqcej 0C'facility based"cr r tqcej "y cu'ngcu'ikngn{ "v"dg'tgr qtvgf "cu'kpetgcug'kp'wug"*32' -0"

Vcdrg'8085<Qxgt cmlT guwmu<Ej cpi g'lp'vj g'Wug'qhCr r t qcej gu'								
Cr r t qcej "	P qv'wugf "		F get gcugf "		P q'ej cpi g"		Kpet gcugf "	
	*2+'		*3.4+'		*5+'		*6.7+'	
	Rgt'egpv'	P "	Rgt'egpv'	P "	Rgt'egpv'	P "	Rgt'egpv'	P "
Rt guet lr vkg' "	33' "	8"	33' "	8"	65' "	45"	56' "	3: "
Hceklv' "	3; ' "	32"	32' "	7"	84' "	54"	32' "	7"
Qweqo g' "	34' "	8"	: ' "	6"	65' "	44"	59' "	3: "
Tkml' J c ctf "	36' "	9"	: ' "	6"	5; ' "	42"	5; ' "	42"
Rt qegu' "	32' "	7"	6' "	4"	72' "	48"	59' "	3: "
Ugh' Cuguo gpv'	: ' "	6"	6' "	4"	58' "	3; "	75' "	4: "
Gf wecvkpI' Kplwpep' "	39' "	; "	8' "	5"	64' "	44"	57' "	3: "

, 'Rtegpvc i gu'j cxg'dggp'tqwpf gf "v'pgctguv'y j qre'pwo dgt "

Tgur ppf gpw'y gtg'cungf "v'eqo o gpv'qp'vj g'tgcuqpu'ht'ej cpi gu'v'vj g' cr r t qcej gu'wugf 'lp'vj gk'gzr gtlkpeg'0Ukpeg'o cp{ "qh'vj g'tgur ppf gpw' j cf "qxgt'42" { gctu'qh'gzr gtlkpeg. 'lp'uo g'ecugu'vj ku'tghgtt'gf "v'ej cpi g' qxgt'cp'gz'v'pf gf "r gtlqf 0Vj g'qxgtcml'kpetgcug'lp'vj g'wug'qh'vj g'cr / r t qcej gu'ku'eqpukv'p'y kj "qpg'eqo o gpv'I think that in general the basis for the changes is the gradual implementation of modern regulatory approaches and methods'0Qvj gt'eqo o gpw'hgml'kv'uz'i gpgtcr' ecv'i qtku'0Vj gug'ecv'i qtku'ctg'r tqxkf gf "dgm'y 'y kj 'uo g'qh'vj g'f / vcl'r tqxkf gf "lp'eqo o gpw'0"

New regulation

C'pwo dgt'qh'tgur ppf gpw'pqv'gf "vj cv'ej cpi gu'v'vj g'cr r t qcej gu'wugf 'lp' vj gk'ctgc'tguwngf 'htqo 'c'pgy 'tgi wcv'kp'0'k'k'v'qtu'qh'pgy 'tgi wcv'kpu' kpen'f gf ""

- Kphqto cv'kp'qt'cf xleg'htqo 'cp'lpv'gt'pvc'k'p'nc'i gpe{ "qt'vj g'tgi wcv' v'qt'htqo 'cpqj gt'eqw'v' { "
- C'f'ktge'v'xg'htqo 'vj g'j' gcf "qh'ci gpe{ . "c'eqo o ku'k'p'qt'cpqj gt' i qxgtpo gpv'ci gpe{ "
- C'pgy "ctgc"qh'uwr gtx'k'k'p' "g'0'uch'v' { 'ew'w'w'g'+"

Increased use of self-assessment

Tgur ppf gpw'pqv'gf "vj cv'vj g'kpetgcug'lp'vj g'wug'qh'ug'h/cuuguo gpv'eco g' htqo "

- Vj g'pggf "v'wug'ugrh/cuuguuo gpv'v'q"o gg'uchgv'{"ewmwt g'tgs wkt g/ o gpw"
- C"dgwgt"cr r tgekvqp"qh'wughwpguu'qh'yj ku'cr r tqcej "
- Vj g'xcnwg"qh'yj ku'cr r tqcej "kp'yj g'hceg"qh'iko kvgf "tguqwtegu"
- Kpetgcugf "hqewu'qp"rhegpugguø'tgur qpukdkk'v' "hqt'uchgv'{"cpf "j qy "kv" f go qpwtcvgu'kugrh"

Increased use of risk/hazard approach

Tgur qpf gpw'eqo o gpv'v'f "vj cv'vj g'kpetgcug'kp'yj g'wug'qh'yj g'tkumlj c| ctf " cr r tqcej "y cu'f wg'v'q"

- Nko kvgf "tguqwtegu" "hqewu'qp"o quv'ko r qtvcpv'uchgv'{"ctgcu+"
- Ci gpe {"r qike {"

Experience/learning by the agency

Tgur qpf gpw'eqo o gpv'v'f "vj cv'gzr gtlgpeg"qh'qyj gt "ci gpeku'qt "yj gk" qy p'ci gpe {"tguwngf "kp'ngctkpi "vj cv'y cu'cr r rkgf "xlc'pgy "cr r tqcej gu"

- C"fhgtgpv'cr r tqcej "j gr gf "rhegpuggu'v'w'pf gtucpf "yj gk "tqr"
- Kpetgcugf "ghgevxgpguulko r tqxgf "r gthqto cpegldgwt "wug'qh't g/ uqwtegu"
- Ej cpi gf "uvcpf ctf u'kp"ctgc lpgy "kphqto cvkqp"cdqww'ctgc""

Increased use of outcome approach

Vj g'tgur qpf gpw'eqo o gpv'v'f "vj cv'vj g'kpetgcug'qh'wug'qh'yj g'qweqo g" cr r tqcej "y cu'f wg'v'q"cp'ko r tqxgo gpv'kp"gcug'qh'ur gekh{ kpi "qweqo gu0"

- Ukg'ur gekh{ "f guki pu'o cng'k'ku'uko r ngt "v'ur gekh{ "qweqo gu""

An event led to the change

- C"ej cpi g'y cu'pggf gf "v'cf f tguu'pgy "r rcpw"
- C"ej cpi g'y cu'pggf gf "v'cf f tguu'r rcpv'ci kpi ""

6.2. Evaluation of approaches in each area of supervision

Vj g'4233B4'tgr qtv'y cu'dcugf "qp'uwxg {"tguwmu'htqo "gzr gt w'lp"gli j v" ctgcu'qh'uwr gtxlukp0Tgur qpf gpw'kngf "qww's wguv'kppcktgu'yj cv'cungf " yj go "v'tgur qpf "tgi ctf kpi "qpg'qh'yj gug'ur gekh{ "ctgcu"

- O cpci go gpv'u{uwo u"

- O ckwgpcpeg"
- Qr gtcwqpu"
- Uchgv "ewwtg"
- Rrcpv'rhg"gzvpuqp"
- O clqt'r rcpv'o qf hkecwqpu"
- Rqy gt'wr 'tcvgu"
- Eqputwewqpu"

Kp'vj ku'ugevqp'vj g'gki j v'ctgcu'qh'uwr gtxkukqp"ctg"fkuewuugf "y kj "tgi ctf "

- Tcvkpi "qh'wughwpguu'qh'cr r tqcej gu'y kj kp"ctgcu'qh'uwr gtxkukqp"
- Ngxgn'qh'wug"cpf "go r j cuku'qh'gcej "cr r tqcej "kp"gcej "ctgc"qh'uwr gt/xkukqp"
- Co qwpv'qh'ej cpi g'kp'vj g'wug'qh'cr r tqcej gu'd {"ctgc"qh'uwr gtxkukqp"

Vj ku'r tqxkf gu'c'xkgy "qh'y j lej "cr r tqcej gu'ctg"eqpukf gtgf "vq"dg'o quv' wughw'kp"gcej "ctgc."vj g'cr r tqcej gu'o quv'qh'wpg'wugf "cpf "go r j cuk gf "kp" gcej "ctgc"qh'uwr gtxkukqp."cpf "y j gvj gt'vj g'wug'qh'gcej "cr r tqcej "j cu" dggp'kpetgculpi "qt'f getgculpi "kp'vj g'ctgc0"

6.2.1. Management Systems

Uxgp'tgur qpf gpw'tgr qtvgf "qp'vj gk"gzr gtlgpeg'kp'vj g'ctgc'qh'o cp/ci go gpv'u{uvgu u0Rtqegu'dcugf "cpf "gf wecwqpu lphwpgpeg"cr r tqcej gu' y gtg'vj g'o quv'rhgn {"vq"dg'tgr qtvgf "cu"j gcxkn {"go r j cuk gf "d {"tgr qpf /gpw'kp'vj g'o cpci go gpv'u{uvgu u'ctgc"ugg"Vcdng"804B-0Vj gug'vy q" cr r tqcej gu."cnpj "y kj "cp"qweqo g'dcugf "cr r tqcej . "y gtg'cuq'tevgf "cu" xgt {"wughw'd {"vj g'o clqtkv {"qh'tgur qpf gpw'kp'vj ku'ctgc0C'hceknv /dcugf "cr r tqcej "y cu'tgr qtvgf "cu"pqv'wugf "cpf "pqv'wughw'd {"vj g'o clqtkv {"qh'tgur qpf gpw'kp'vj g'ctgc'qh'o cpci go gpv'u{uvgu u0Tgur qpf gpw'kp'vj g'ctgc'qh'o cpci go gpv'u{uvgu u'tgr qtvgf "y q"xgt {"f khtgtpv'qr kpkqpu" tgi ctf lpi "vj g'gf wecwqpu lphwpgpeg"cr r tqcej 0Hqwt'qh'vj g'ugxgp'tg/ur qpf gpw'tgr qtvgf "vj cv'vj ku'cr r tqcej "y cu"go r j cuk gf "cpf "xgt {"wughw' y j kng'vj g'qvj gt'vj tgg'tgr qtvgf "vj cv'ky cu'pqv'wugf "cpf "pqv'wughw'420"

Uqo g'eqo o gpw'htqo "vj g'o cpci go gpv'u{uvgu u"gzr gtw'kpenf gf "

A key principle of quality management is identifying the processes needed for safe operation and understanding their interactions. This is therefore a key part of the assessment of management systems.

.....
20: The bi-modal response to the use and usefulness of education/influence in the area of management was discussed during the meetings at participating agencies. There was agreement that this represented a recognized difference in regulatory policy regarding management supervision across agencies.

Vcdrg'804B<O cpci go gpvU{ uwo u'Ctgc<Wghwpguu'Wig'cpf 'Go / r j culu'Ej cpi g'lp'Wig'd{ 'Cr rt qcej "													
"	Rtg/ uetkr vkg"	Hcekkv "		Qweqo g"		Tkunl' J cl ctf "		Rtqeguu"		Ughl' Cuuo p0'		Gf l' kphwpgpeg"	
Wghwpguu'													
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "
P qv' Wghwml' *6.7+"	4; ' "	4"	79' "	6"	36' "	3"	65' "	5"	2' "	2"	36' "	3"	65' "
Uqo g/ y j cv' Wghwml' *5+"	4; ' "	4"	36' "	3"	4; ' "	4"	4; ' "	4"	2' "	2"	65' "	5"	2' "
Xgt { " Wig/ hwi*3.4+"	65' "	5"	4; ' "	4"	79' "	6"	4; ' "	4"	322 ' "	9"	65' "	5"	79' "
Wig'cpf 'Go r j culu'													
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "
P gxgt" Wigf *2+"	36' "	3"	79' "	6"	4; ' "	4"	65' "	5"	36' "	3"	36' "	3"	65' "
Uqo g" Go r j c/ ulu" *3.4.5+"	79' "	6"	4; ' "	4"	65' "	5"	65' "	5"	4; ' "	4"	65' "	5"	2' "
J gcx { " Go r j c/ ulu*6.7+"	4; ' "	4"	36' "	3"	4; ' "	4"	36' "	3"	79' "	6"	65' "	5"	79' "
Ej cpi g'lp'Wig"													
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "
P qv' Wigf *2+"	36' "	3"	65' "	5"	4; ' "	4"	65' "	5"	2' "	2"	36' "	3"	4; ' "
F g/ etgcug'lp" Wig" *3.4+"	2' "	2"	4; ' "	4"	36' "	3"	36' "	3"	2' "	2"	36' "	3"	36' "
P q" Ej cpi g" lp'Wig" *5+"	79' "	6"	4; ' "	4"	4; ' "	4"	65' "	5"	322 ' "	9"	65' "	5"	4; ' "
kpetgcug" lp'Wig" *6.7+"	4; ' "	4"	2' "	2"	4; ' "	4"	2' "	2"	2' "	2"	4; ' "	4"	4; ' "

, 'Rtegpvci gu'j cxg'dggp'tqwpf gf "q'pgctgu'v'y j qrg'pwo dgt"

The regulatory requirements regarding management systems are overall general and the licensee and the regulator need to have more knowledge about management systems than just knowing the regulation. The licensees, for example, are expected to show and explain how the management system is constructed, how it is developed, how it is assessed (internal audits) and how the activities of the licensees

benefit from the management system. The regulator needs to know how the management system is constructed in order to make an effective assessment and discover discrepancies.

The management system provides for the control and monitoring of all aspects related to operating facilities. This includes those that are hazardous or of high risk. The element of risk/hazard analysis is critical in determining the required time frame for which corrective actions need to be implemented.

The approaches used (process, self-assessment, and education/influence) were effective because the licensees were aware of the opportunity for improving the management of their organizations in a professional and modern way, and that this could bring positive results for their business and for nuclear safety.

For all management system processes it is important to know the outcome in order to judge the effectiveness of the process in achieving planned and desired results. For management systems a clear understanding of the outcomes is essential.

6.2.2. Maintenance

Vj g'tg'y g'tg'g'ki j v'tgur qpf g'p'u'k'p'v'j g'ctgc'qh'o c'k'p'v'g'p'c'p'eg'g'z'r'g't'u'k'p'en'f'g'f' "8040-0Vy q'cr r tqcej gu.'tkumj c| ctf "dcugf "cpf "ugh/cuuguuo gpv'y g'tg' t'c'v'g'f "cu'j g'c'x'k'k'f "go r j c'uk'k'g'f . 'k'p'et'g'c'uk'p'i . "cpf "x'g't { "w'ugh'w'id { "v'j g'o c'l'q't/ k'k'f "q'h't'g'ur q'p'f g'p'u'0C'p'q'w'e'q'o g/d'c'ug'f "cr r tqcej 'y cu't'g'r q't'v'g'f "cu'j g'c'x'k'k'f "go r j c'uk'k'g'f "cpf "x'g't { "w'ugh'w'id { "v'j g'o c'l'q't'k'k'f "q'h't'g'ur q'p'f g'p'u'0C' r't'g/ u'e't'k'r v'x'g' "cr r tqcej 'y cu't'c'v'g'f "cu'x'g't { "w'ugh'w'id { "j c'h'q'h'y'j g't'g'ur q'p'f g'p'u'0" "

U'q'o g'e'q'o o g'p'u'k'p'v'j g'o c'k'p'v'g'p'c'p'eg'g'z'r'g't'u'k'p'en'f'g'f " "

High maintenance backlogs will affect the safe operation of nuclear power plants and have been a long-standing and prominent issue. Action items have been raised to lower the high maintenance backlogs. The less than successful outcome of this case was not due to the combination of approaches but to the lack of attention paid by some licensees"

The regulatory approach with regard to maintenance currently is focused on monitoring the effectiveness of maintenance, with special emphasis on risk significant systems, structures and components. The goal of the regulation is to reduce the number of functional failures and unavailability time.

Experience from other countries was used to check the status of domestic plants. A new source of risk was identified without significant effort to find it.

Vcdrg'8040<O clpwpcpeg'Ctgc<Wghwpguu'Wig'epf 'Go r j culu'' Ej cpi g'lp'Wig'd{ 'Crrtqcej ''														
"	Rtguetr/ vkg''	Hckrkv{''	Qweqo g''	Tkml'' J cl ctf ''	Rtqegu''	Ugrh'' Cuuo pv'	Gf l'' khwgpeg''							
Wghwpguu'														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	
Pqv' Wghwri' *6.7+''	47' "	4"	35' "	3"	2' "	2"	47' "	4"	5: ' "	5"	2' "	2"	47' "	4"
Uqo g/ y j cv' Wghwri' *5+''	47' "	4"	97' "	8"	5: ' "	5"	35' "	3"	72' "	6"	72' "	6"	85' "	7"
Xgt{'' Wig/ hwri*3.4+''	72' "	6"	35' "	3"	85' "	7"	85' "	7"	35' "	3"	72' "	6"	35' "	3"
Wig'epf 'Go r j culu''														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	
Pgxgt'' Wigf'' *2+''	35' "	3"	35' "	3"	35' "	3"	2' "	2"	47' "	4"	35' "	3"	47' "	4"
Uqo g'' Go r j c/ uku'' *3.4.5+''	85' "	7"	97' "	8"	35' "	3"	47' "	4"	5: ' "	5"	5: ' "	5"	72' "	6"
J gcx{'' Go r j c/ uku''*6.7+''	47' "	4"	35' "	3"	97' "	8"	97' "	8"	5: ' "	5"	72' "	6"	47' "	4"
Ej cpi g'lp'Wig''														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	
Pqv' Wigf'' *2+''	35' "	3"	35' "	3"	35' "	3"	2' "	2"	47' "	4"	35' "	3"	47' "	4"
Fg/ etgcug'' kp'Wig'' *3.4+''	35' "	3"	35' "	3"	2' "	2"	2' "	2"	35' "	3"	2' "	2"	35' "	3"
Pq'' Ej cpi g'' kp'Wig'' *5+''	72' "	6"	85' "	7"	72' "	6"	5: ' "	5"	85' "	7"	47' "	4"	5: ' "	5"
kp/ etgcug'' kp'Wig'' *6.7+''	47' "	4"	35' "	3"	5: ' "	5"	85' "	7"	2' "	2"	85' "	7"	47' "	4"

, 'Rtegpvci gu'j cxg'dggp'tqwpf gf 'vq'pgctgu'v'y j qre'pwo dgt''

6.2.3. Operations

Vj g'g'y g'g'g'k j v'tgur qpf gpw'lp'vj g'ctgc'qh'qr gtcv'kpu'Vj tgg'cr /
r tqcej guô tkunlj c| ctf.'r tqegu.'cpf 'ugrh/cuuguuo gpvô y g'g'tgr qtvgf "
cu'j g'cxk' "go r j cuk' gf.'j c'x'pi 'k'petgcugf.'cpf 'xgt {'wughw'ld {'o qtg"
vj cp'j' cih'qh'vj g'tgur qpf gpw'lp'vj g'ctgc'qh'qr gtcv'kpu'ugg'Vcdng'8045+0'
J cih'qh'vj g'tgur qpf gpw'cnuq'tcvgf "c'r t'guetr v'xg'cr r tqcej "cu'xgt {'wug/
hw'0J cih'qh'vj g'tgur qpf gpw'tgr qtvgf "vj cv'cp"qweqo g'dcugf "cr r tqcej "
y cu'pqv'wughw'0'
"

Uqo g'eqo o gpw'htqo "vj g'qr gtcv'kpu'gzr gtw'kpenmf gf "
"

In the operations area, analysis of operating experience feedback (national or world-wide), is an essential tool for both the regulator and the licensee.

Many facilities have been operating for many years and the equipment and processes have been inspected for many years. The continued compliance of operations staff with the operators' own operating rules and processes is a major variable.

Aging of facilities continues to be an issue and, for this, more self-assessment is required.

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"

"

Vcdrg'804(5<Qrgt cvkpu' Ctgc<Wghwpguu' Wg' tpf 'Go rj cuku'' Ej cpi g'lp' Wg'd{ 'Cr rtqcej ''														
"	Rtg/ uetkr vkg''	Hcekrk{''	Qweqo g''	Tkml'' J c ctf ''	Rtqeguu''	Ughf'' Cuuo pv0'	Gf I'' kphwpgpeg''							
Wghwpguu''														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P
P qv'' Wghml'' *6.7+''	47' "	4"	5: ' "	5"	72' "	6"	2' "	2"	5: ' "	5"	47' "	4"	47' "	4"
Uqo g/ y j cv'' Wghml'' *5+''	47' "	4"	85' "	7"	35' "	3"	47' "	4"	35' "	3"	47' "	4"	72' "	6"
Xgt {'' Wg/ hml''3.4+''	72' "	6"	2' "	2"	5: ' "	5"	97' "	8"	72' "	6"	72' "	6"	47' "	4"
Wg' tpf 'Go rj cuku''														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P
P gxtg'' Wgft'' *2+''	2' "	2"	65' "	5"	4; ' "	4"	2' "	2"	35' "	3"	35' "	3"	4; ' "	4"
Uqo g'' Go / rj cuku'' *3.4.5+''	93' "	7"	36' "	3"	4; ' "	4"	4; ' "	4"	47' "	4"	47' "	4"	79' "	6"
J gcx {'' Go / rj cuku'' *6.7+''	4; ' "	4"	65' "	5"	65' "	5"	93' "	7"	85' "	7"	85' "	7"	36' "	3"
Ej cpi g'lp' Wg''														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P
P qv'' Wgft'' *2+''	2' "	2"	39' "	3"	39' "	3"	2' "	2"	39' "	3"	36' "	3"	2' "	2"
F g/ etgcug'' lp' Wg'' *3.4+''	36' "	3"	39' "	3"	39' "	3"	2' "	2"	2' "	2"	2' "	2"	39' "	3"
P q'' Ej cpi g'' lp' Wg'' *5+''	65' "	5"	89' "	6"	55' "	4"	55' "	4"	39' "	3"	36' "	3"	72' "	5"
kp/ etgcug'' lp' Wg'' *6.7+''	65' "	5"	2' "	2"	55' "	4"	89' "	6"	89' "	6"	93' "	7"	55' "	4"

, 'Rtegepvc i gu' j cxg' dggp' tqwpg f' "v' pgctgu' y j qng' pwo dgt''

6.2.4. Safety Culture

Vj gtg'y gtg'32'tgur qpf gpw'lp'vj g'ctgc'qh'uchgv\ 'ewmwtg0'Vj tgg'cr /
r tqcej guô r tqegu/dcugf . 'ugrh/cuuguuo gpv.'cpf 'gf vec vkp lphwgepegô
y gtg'tgr qtvgf 'cu'j gcxkn\ 'go r j cuk gf . 'j cxlpi 'kpetgcugf . 'cpf 'xgt { 'wug/
hwilp'vj g'ctgc'qh'uchgv\ 'ewmwtg'ugg'Vcdng'80406+0C'hwty 'cr r tqcej . "
qweqo g/dcugf . 'y cu'tgr qtvgf 'cu'j cxlpi 'kpetgcugf 'lp'wug'cpf 'dglpi "
xgt { 'wughw0C'r tguetr vkxg'cr r tqcej 'y cu'tgr qtvgf 'cu'pqv'wughw'd { 'yj g"
o clqtkv\ 'qh'tgur qpf gpw'lp'vj ku'ctgc0'
"

Uqo g'eqo o gpw'htqo 'yj g'uchgv\ 'ewmwtg'gZR gtw'kpenwf gf "
"

The subject is still evolving; analysis of safety culture is still better understood than ways to manage it.

As licensees have matured and developed expertise in this area there is more focus on their ownership of issues. Also the tools and techniques used to address safety culture have developed and the focus on process as these have matured has increased.

There has been so much public discourse about the role of safety culture at Chernobyl, Challenger and other, more recent, high-profile accidents that the public would see the agency as less credible if it had not taken steps to address safety culture.

Although the approach gave a clear analysis of the safety culture issues, it did not provide answers. That was up to the licensee.

It is important to back up the initial interaction/discussion on safety culture with further regulatory attention to confirm that the licensees are applying the lessons and that their actions demonstrate a good safety culture.

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Vcdrg'8046<Uchgv{ 'Ewawt g' Ctgc<Wghwpguu'Wug'cpf 'Go rj cuku'' Ej cpi g'lp'Wug'd{ 'Cr rtqcej ''														
"	Rtg/ uetlr vkg''	Hekrk{ "	Qweqo g''	Tkml''	Rtqeguu''	Ugrh''	Gf l''							
"	uetlr vkg''	Hekrk{ "	Qweqo g''	Tkml''	Rtqeguu''	Ugrh''	Gf l''	kphwpgpeg''						
Wghwpguu''														
"	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'
P qv' Wughml' *6.7+''	72' "	7"	42' "	4"	42' "	4"	55' "	5"	2' "	2"	2' "	2"	42' "	4"
Uqo g/ y j cv' Wughml' *5+''	52' "	5"	72' "	7"	52' "	5"	55' "	5"	42' "	4"	32' "	3"	42' "	4"
Xgt { " Wug/ hml'3.4+''	42' "	4"	52' "	5"	72' "	7"	55' "	5"	: 2' "	: "	; 2' "	; "	82' "	8"
Wug'cpf 'Go rj cuku''														
"	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'
P gxgt'' Wugf '' *2+''	52' "	5"	62' "	6"	32' "	3"	52' "	5"	2' "	2"	2' "	2"	32' "	3"
Uqo g'' Go / rj cuku'' *3.4.5+''	92' "	9"	82' "	8"	82' "	8"	72' "	7"	62' "	6"	72' "	7"	62' "	6"
J gcx { " Go / rj cuku'' *6.7+''	2' "	2"	2' "	2"	52' "	5"	42' "	4"	82' "	8"	72' "	7"	72' "	7"
Ej cpi g'lp'Wug''														
"	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'	' "	P'
P qv'' Wugf '' *2+''	52' "	5"	52' "	5"	32' "	3"	52' "	5"	2' "	2"	2' "	2"	32' "	3"
F g/ etgcug'' lp''Wug'' *3.4+''	32' "	3"	32' "	3"	32' "	3"	32' "	3"	32' "	3"	32' "	3"	2' "	2"
P q'' Ej cpi g'' lp''Wug'' *5+''	62' "	6"	72' "	7"	42' "	4"	72' "	7"	62' "	6"	42' "	4"	62' "	6"
kp/ etgcug'' lp''Wug'' *6.7+''	42' "	4"	32' "	3"	82' "	8"	32' "	3"	72' "	7"	92' "	9"	72' "	7"

, 'Rtegepnci gu'j cxg'dggp'tqwpf gf "vq'pgctgu'v'y j qng'pwo dgt''

6.2.5. Plant Life Extension

Vj gtg'y gtg'hxg'tgur qpf gpw'lp'vj g'ctgc'qh'r rcpv'rhg'gz vgpukqp0Hcekk/
v{/dcugf'cpf'tkunj c|ctf'cr r tqcej gu'y gtg'tgr qtvgf'd{'vj g'o clqtkv{'qh"
tgur qpf gpw'cu'j gcxkq'go r j cuk gf'cpf'xgt{'wughw'lp'vj g'ctgc'qh'r rcpv'
rhg'gz vgpukqp'ugg'Vcdng'80407-0Rt guetkr vxg'cpf'ugrh/cuuguo gpv'cr /
r tqcej gu'y gtg'tgr qtvgf'cu'xgt{'wughw'lp'cu'j cxkpi'kpetgcugf'lp'wug"
d{'vj g'o clqtkv{'qh'tgur qpf gpw'lp'vj ku'ctgc'0Gf wecvkqp lphwvpegy'cu"
tgr qtvgf'cu'xgt{'wughw'lp'vj ku'ctgc'd{'vj g'o clqtkv{'qh'tgur qpf gpw'0'
"

Uqo g'eqo o gpw'htqo 'vj g'r rcpv'rhg'gz vgpukqp'gzr gtw'lpemf gf "
"

A high degree of confidence is required that structures and components that are difficult or impossible to access during normal operation and routine maintenance will remain fit for service for the proposed extended operating life (i.e., there is one “shot” at certain inspections and assessments, they need to be comprehensive and of high quality.)

Sometimes there are many requirements that are not prioritized so that the licensee has to carry out many activities at the same time. Prioritization would improve the focus on areas with a high impact on safety.

The PSR process is intended to provide an adequate demonstration that the plant remains safe when compared against modern standards and that aging effects will not render the plant unsafe. This requires the plant to be assessed by suitably qualified and experienced persons.

The agency issues guidance on age-related issues and operating experiences based on domestic and international experiences. The licensee expends considerable resources to renew its license and the regulator invests a significant amount of resources in the review of the application for license renewal. The cost varies"depending on the complexity of the case.

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Vcdrg'80407<Rrcpv'Nhg'Gzvgpukp'Ctgc<Wghwpguu'Wug'cpf 'Go / rj cuku'Ej cpi g'lp'Wug'd{'Cr rtqcej "														
"														
	Rt guetkr uetkr / vkg"	Hcekiv{"	Qweqo g"	Tkum" J c ctf "	Rtqegu"	Ugrh' Cuuo p0'	Gf l' kphwpeg"							
Wghwpguu'														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P
P qv' Wghwmi' *6.7+''	42' "	3"	42' "	3"	62' "	4"	42' "	3"	42' "	3"	2' "	2"	2' "	2"
Uqo g/ y j cv' Wghwmi' *5+''	2' "	2"	42' "	3"	42' "	3"	42' "	3"	62' "	4"	42' "	3"	2' "	2"
Xgt {" Wug/ hwr3.4+''	: 2' "	6"	82' "	5"	62' "	4"	82' "	5"	62' "	4"	: 2' "	6"	322	5"
Wug'cpf 'Go rj cuku'														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P
P gxgt" Wugf " *2+''	2' "	2"	2' "	2"	42' "	3"	2' "	2"	42' "	3"	2' "	2"	42' "	3"
Uqo g" Go rj c/ uku" *3.4.5+''	82' "	5"	62' "	4"	62' "	4"	62' "	4"	62' "	4"	82' "	5"	82' "	5"
J gcx {" Go rj c/ uku"*6.7+''	62' "	4"	82' "	5"	62' "	4"	82' "	5"	62' "	4"	62' "	4"	42' "	3"
Ej cpi g'lp'Wug'														
"	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P	' "	P
P qv' Wugf " *2+''	2' "	2"	2' "	2"	42' "	3"	2' "	2"	42' "	3"	2' "	2"	42' "	3"
F g/ etgcug" lp'Wug" *3.4+''	2' "	2"	2' "	2"	2' "	2"	2' "	2"	2' "	2"	2' "	2"	2' "	2"
P q" Ej cpi g" lp'Wug" *5+''	42' "	3"	82' "	5"	82' "	5"	82' "	5"	82' "	5"	62' "	4"	62' "	4"
kpetgcug" lp'Wug" *6.7+''	: 2' "	6"	62' "	4"	42' "	3"	62' "	4"	42' "	3"	82' "	5"	62' "	4"

, 'Rtegepwi gu'j cxg'dggp'tqwpf gf "v'pgctgu'y j qng'pwo dgt "

6.2.6. Major Plant Modifications

Vj g'g'y g'g'gki j v'tgur qpf gpw'lp"vj g'ctgc"qh'o clqt'r rcpv'o qf hlecwqpu' Cml'qh'vj g'cr r tqcej gu'gzeqr v'c'r tqegu/dcu'g'cr r tqcej 'y g'g'tc'v'g'cu' xgt {"wughw'd {"j' ch'qt"o qtg'qh'vj g'tgur qpf gpw'lp"vj g'ctgc"qh'o clqt" r rcpv'o qf hlecwqpu'ugg"Vcdng'8048-0C"tkmlj c| ctf "cr r tqcej 'y cu' tgr qt'v'g'cu'j g'cxk' "go r j cuk' gf .j' cxlpi "lpetgcugf . "cpf "xgt {"wughw'lp" vj ku'ctgc"d {"j' ch'qt"o qtg'qh'vj g'tgur qpf gpw'OCp"qweqo g/dcu'g'cr / r tqcej 'y cu'tgr qt'v'g'cu'j g'cxk' "go r j cuk' gf "cpf "xgt {"wughw'd {"vj g" o clqt'k' {"qh'tgur qpf gpw'OC"r tguetr vxg"cr r tqcej 'y cu'tgr qt'v'g'cu'j cx/ lpi "lpetgcugf "d {"j' ch'qh'vj g'tgur qpf gpw"cpf "cu'xgt {"wughw'd {"ukz"qh" gki j v'tgur qpf gpw'0"

Uqo g'eqo o gpw'ltqo "vj g'gzr gtw'lp"o clqt'r rcpv'o qf hlecwqpu'lpnw / gf"

By focusing on the “obvious”, in this case new equipment and the safety critical issues with that equipment, the regulator viewed the case in the same way as the licensee and the vendor. This could result in the regulator missing other areas of importance.

Although the outcome appears to have been clear to the regulator, the direction given to the licensees was not worded as a regulatory requirement to achieve certain clearly stated outcomes. This resulted in some licensee actions that didn't meet all the desired outcomes.

The advantage of emphasizing the outcome in this case allowed the required benefit to be achieved at the least cost to the licensee. This also prevented an inappropriate and ineffective technology for the situation at hand from being used.

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"

Vedrg'80408<O clqt'Ræpv'O qf Hæc¼kp'Ctgc<Wghwpguu'Wig'çpf'' Go r j cuku'Ej cpi g'lp'Wig'd{ 'Cr rtqcej''																
''																
	Rt guetkr uetkr/ ¼xg''	Hæc¼kv{''	Qweqo g''	Tkuml'' J c ctf''	Rtqeguu''	Ugrh' Cuuo pvØ'	Gf I' ¼phwpgpeg''									
Wghwpguu''																
	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P		
P qv' Wghwmi' *6.7+''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	47' ''	4''	2' ''	2''	47' ''	4''
Uqo g/ y j cv' Wghwmi' *5+''	47' ''	4''	35' ''	3''	2' ''	2''	47' ''	4''	5: ' ''	5''	5: ' ''	5''	47' ''	4''		
Xgt {'' Wig/ hwf3.4+''	97' ''	8''	::' ''	9''	322 ' ''	:	97' ''	8''	5: ' ''	5''	85' ''	7''	72' ''	6''		
Wig'çpf 'Go r j cuku''																
	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P		
P gxt'' Wugf'' *2+''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	35' ''	3''	35' ''	3''	5: ' ''	5''		
Uqo g'' Go r j c/ uku'' *3.4.5+''	85' ''	7''	85' ''	7''	5: ' ''	5''	72' ''	6''	97' ''	8''	85' ''	7''	72' ''	6''		
J gex {'' Go r j c/ uku''*6.7+''	5: ' ''	5''	5: ' ''	5''	85' ''	7''	72' ''	6''	35' ''	3''	47' ''	4''	35' ''	3''		
Ej cpi g'lp'Wig''																
	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P	' ''	P		
P qv' Wugf'' *2+''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	35' ''	3''	35' ''	3''	5: ' ''	5''		
F g/ etgcug'' lp'Wig'' *3.4+''	35' ''	3''	2' ''	2''	2' ''	2''	35' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''		
P q'' Ej cpi g'' lp'Wig'' *5+''	5: ' ''	5''	::' ''	9''	93' ''	7''	47' ''	4''	72' ''	6''	97' ''	8''	72' ''	6''		
¼petgcug'' lp'Wig'' *6.7+''	72' ''	6''	35' ''	3''	4; ' ''	4''	85' ''	7''	5: ' ''	5''	35' ''	3''	35' ''	3''		

, 'Rtegepxci gu'j cxg'dggp'tqwpf gf '¼'pçctguv'y j qng'pwo dgt''

6.2.7. Power Up Rates

Vj g'g'y g'g'h'x'g't'gur q'p'f g'p'u'l'p'v'j g'c't'g'c'q'h'r q'y g't'w'r 't'c'v'u'0'C'r t'g'u'e't'r /
v'x'g'c'r r t'q'c'e'j 'y c'u't'g'r q't'v'g'f 'c'u'j g'c'x'l'n'f 'g'o r j c'u'l'g'f 'c'p'f 'x'g't '{ 'w'g'h'w'i'l'p'"
y'j k'u'c't'g'c'c'g'g'V'c'd'r'g'8'0'f'0'T'k'u'm'i'j c| c't'f . 'u'g'h'/c'u'g'u'u'o g'p'v.'q'w'e'q'o g/
d'c'u'g'f 'c'p'f 'g'f w'e'c'v'q'p l'p'h'w'g'p'e'g'c'r r t'q'c'e'j g'u'y g'g'c'n'u'q't'g'r q't'v'g'f 'c'u'x'g't '{ "
w'g'h'w'i'd'f 'y'j g'o c'l'q't'k'v'f 'q'h't'g'u'r q'p'f g'p'u'0'C'p'k'p'e't'g'c'u'g'l'p'v'j g'w'ug'q'h'c'r t'q/
e'g'u'w'/d'c'u'g'f 'c'r r t'q'c'e'j 'c'p'f 'q'h'c' 'u'g'h'/c'u'g'u'u'o g'p'v'c'r r t'q'c'e'j 'y c'u't'g'r q't'v'g'f "
d'f 'y'j g'o c'l'q't'k'v'f 'q'h'y'j g't'g'u'r q'p'f g'p'u'l'p'v'j k'u'c't'g'c'0'C'h'e'k'k'v'f /d'c'u'g'f 'c'r /
r t'q'c'e'j 'y c'u't'g'r q't'v'g'f 'c'u'p'q'v'w'g'h'w'i'd'f 'y'j g'o c'l'q't'k'v'f 'q'h't'g'u'r q'p'f g'p'u'0'
"

U'q'o g'e'q'o o g'p'u'l't'q'o 'y'j g'r q'y g't'w'r 't'c'v'g'g'z'r g't'u'l'k'p'e'n'w'f g'f "
"

The use of a prescriptive approach introduced certainty and predictability through a clear regulatory frame. The outcome oriented approach provided a certain degree of flexibility with regard to the specifics of the methodology to follow. This was augmented with the process used by the licensee. Education/influence based approach supported the licensee's independence from the vendor.

Using a prescriptive methodology as the main approach in a well-defined process, with predictable actuations on the side of the licensee or regulator is an option that contributes to the success of the project. Additionally it is important to consider other elements in the process (facility characteristics, risk or hazard insights, process and outcome oriented approaches) to augment the scope and to increase the effectiveness of the regulatory review.

The approach of the regulator was changed because the regulatory body realized that it didn't have enough resources to assess the power up rate. It contracted with a research institute that used approaches that differed from those of the regulatory body.

Everything worked well during the review, but an incident later that year taught us that the applicant's ability to handle the power up rate in a safe manner was not as good as we had estimated.

"

Vcdrg'8040<Rqy gt 'Wr 'Tcvgu'ctgc<Wghwpguu'Wig'cpf 'Go r j cuku'' Ej cpi g'lp'Wig'd{ 'Cr rtqcej ''														
''														
	Rt guetkr uetkr / vkg''	Hcekiv{''	Qweqo g''	Tkuni'' J c ctf ''	Rtqegu''	Ugri'' Cuuo p0'	Gf I'' kphwpeg''							
Wghwpguu''														
	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'
P qv'' Wghwmi'' *6.7+''	2' ''	2''	82' ''	5''	2' ''	2''	42' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''
Uqo g/ y j cv'' Wghwmi'' *5+''	42' ''	3''	2' ''	2''	42' ''	3''	2' ''	2''	: 2' ''	6''	62' ''	4''	62' ''	4''
Xgt {'' Wug/ hwi'3.4+''	: 2' ''	6''	62' ''	4''	: 2' ''	6''	: 2' ''	6''	42' ''	3''	82' ''	5''	82' ''	5''
Wig'cpf 'Go r j cuku''														
	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'
P gxgt'' Wugf '' *2+''	42' ''	3''	62' ''	4''	2' ''	2''	42' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''
Uqo g'' Go r j c/ uku'' *3.4.5+''	42' ''	3''	62' ''	4''	82' ''	5''	: 2' ''	6''	322 ' ''	7''	: 2' ''	6''	: 2' ''	6''
J gcx {'' Go r j c/ uku''*6.7+''	82' ''	5''	42' ''	3''	62' ''	4''	2' ''	2''	2' ''	2''	42' ''	3''	42' ''	3''
Ej cpi g'lp'Wig''														
	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'
P qv'' Wugf '' *2+''	42' ''	3''	62' ''	4''	2' ''	2''	42' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''
F g/ etgcug'' lp'Wug'' *3.4+''	42' ''	3''	2' ''	2''	42' ''	3''	42' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''
P q'' Ej cpi g'' lp'Wug'' *5+''	62' ''	4''	82' ''	5''	62' ''	4''	42' ''	3''	42' ''	3''	62' ''	4''	82' ''	5''
kpetgcug'' lp'Wug'' *6.7+''	42' ''	3''	2' ''	2''	62' ''	4''	62' ''	4''	: 2' ''	6''	82' ''	5''	62' ''	4''

, 'Rtegepci gu'j cxg'dggp'tqwpf gf 'vq'pgctgu'y j qng'pwo dgt''

6.2.8. Construction

Vj g'g'y g'g'v'j tgg'tgur qpf gpv'lp'v'j g'ctgc'qh'eqputwekqp0Vj g{'cm'tcv
gf 'tkmlj c| ctf.'r tqegu/dcugf.'ugrh/cuuguo gpv.'cpf 'gf wec/
kqp lphwpeg'cu'j gcxkn'go r j cuk gf '*ugg'Vcdm'8040 -0Vy q'qh'v'j tgg"
tgr qtvgf 'v'j cv'qweqo g/dcugf 'y cu'j gcxkn'go r j cuk gf 0Rtqegu/dcugf."
ugrh/cuuguo gpv'dcugf.'cpf 'gf wec kqp lphwpeg/dcugf 'cr r tqcej gu"
y g'g'tgr qtvgf 'cu'j cxkpi 'kpetgcugf "d{'wy q'qh'v'j g'v'j tgg'tgur qpf gpv'0Cm'
qh'v'j g'tgur qpf gpv'tcvgf 'tkmlj c| ctf/dcugf.'r tqegu/dcugf.'cpf 'ugrh/
cuuguo gpv'dcugf 'cr r tqcej gu'cu'xgt {'wghw0Vy q'qh'v'j g'v'j tgg'tcvgf "c"
r tguetr v'xg'cr r tqcej 'cu'xgt {'wghw0'
"

Uqo g'eqo o gpv'ltqo 'v'j g'eqputwekqp"gzr gtvu'lpemf gf "
"

In a new build situation the regulator has to maintain an appropriate level of resource to properly regulate the operating fleet and grow the organization to take into account the resource demands of the new build. Also, early engagement has been our policy which means getting new resources into the organization early.

By exploring the licensee's proposed site based construction organization surveillance procedure and inviting the design authority to explain how they intended to provide intelligent customer oversight of the sites activities the licensee came to recognize weakness in their proposed arrangements and implemented changes before construction commenced.

Vcdrg'8000 <Equmt wekqp'<Ctgc<Wghwpguu'Wig'cpf 'Go r j cuku'' Ej cpi g'lp'Wig'd{ 'Crrtqcej ''														
''														
	Rt guetkr uetkr/ vkg''	Hcekiv{''	Qweqo g''	Tkuni'' J c ctf''	Rtqeguu''	Ugrih' Cuuo p0'	Gf I' kphwpeg''							
Wghwpguu''														
	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'
P qv' Wghwmi' *6.7+''	55' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''
Uqo g/ y j cv' Wghwmi' *5+''	2' ''	2''	89' ''	4''	89' ''	4''	2' ''	2''	2' ''	2''	2' ''	2''	89' ''	4''
Xgt {'' Wig/ hwi3.4+''	89' ''	4''	55' ''	3''	55' ''	3''	322	5''	322	5''	322	5''	55' ''	3''
Wig'cpf 'Go r j cuku''														
	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'
P gxgt'' Wugf'' *2+''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''
Uqo g'' Go r j c/ uku'' *3.4.5+''	89' ''	4''	89' ''	4''	55' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''
J gcx {'' Go r j c/ uku''*6.7+''	55' ''	3''	55' ''	3''	89' ''	4''	322	5''	322	5''	322	5''	322	5''
Ej cpi g'lp'Wig''														
	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'	' ''	P'
P qv'' Wugf'' *2+''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''
F g/ etgcug'' lp'Wig'' *3.4+''	55' ''	3''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''	2' ''	2''
P q'' Ej cpi g'' lp'Wig'' *5+''	89' ''	4''	322	5''	89' ''	4''	72' ''	3''	55' ''	3''	55' ''	3''	55' ''	3''
kpetgcug'' lp'Wig'' *6.7+''	2' ''	2''	2' ''	2''	55' ''	3''	72' ''	3''	89' ''	4''	89' ''	4''	89' ''	4''

'' Rtegepwi gu'j cxg'dggp'tqwpf gf 'vq'pgctgu'v'y j qng'pwo dgt''

7. Discussion of specific approaches

Kp'vj ku'ugevkqp"gecej "qh'vj g'ugxgp"cr r tqcej gu'ku'f kuewuugf "ugr ctevgn{ " y kj "tgi ctf "v'vj g'f ghpkkqpu"qh'vj g'cr r tqcej "cpf "y j cv'tgur qpf gpw" tgr qtvgf "cdqww'vj g'wughwpguu"qh'vj g'cr r tqcej 0Tkp'r ctvkwrt. "vj ku'uge/ vkqp'r tqxkf gu'cp"qxgtxlgv "qh'vj g'tcvkpi u'cpf "ur gekkhe"eqo o gpw'tg/ i ctf kpi "vj g'wughwpguu"qh'gcej "cr r tqcej 0Vj g'wug"cpf "go r j cuku."cpf " ej cpi gu'kp'vj g'wug"qh'vj g'cr r tqcej . "ctg'vj gp'r tqxkf gf "qxgtcm0" "

Cnj qwi j "vj gug"cr r tqcej gu'ctg'r t guggvvgf "ugr ctevgn{ "j gtg. "r ctvlekr cpw" kp'vj g'4233 B4"uwf { "pqvgf "vj cv'vj gtg"ctg"kpvtcevkqpu"co qpi "vj g'cr/ r tqcej gu'vj cv'ctg"pqv'ecr wtgf "d{ "mqnkpi "cv'vj go "ugr ctevgn{ 0Hqt"gz/ co r rg. "c"ugrh/cuuguo gpv'cr r tqcej "wuwcm{ "tgrkgu"qp"qweqo g"cpf "r tq/ egu"cr r tqcej gu"ugg"Ugevkqp"5B"ht" c" f kuewuukqp"qh'vj g'f { pco ke'pc/ wtg'qh'vj g'tgi wrcvt { "r tqeguu0" "

7.1. Prescriptive

F ghpkkqp "A prescriptive approach establishes specific requirements for conducting activities including technical solutions."

Vj g'o clqtkv{ "qh'tgur qpf gpw": 7' +tgr qtvgf "vj cv'vj g'f ghpkkqp"ht" c" r tguetr vkg"cr r tqcej "y cu'engct "ugg"Vcdng'9B-0Vj g'o ckp'umi i gukqp" hqt"ko r tqxgo gpv'y cu'v' r tqxkf g"gzco r ngu'ht"vj ku'cr r tqcej "ur gekkhe"vq" gcej "ctgc"qh'uwr gtxkukqp0J qy gxgt. "kp'vj g'f kuewuukqp"qh'vj g'ecug'uwf { " gzco r ngu'cpf "vj g'eqo o gpw"cdqww'vj g'wughwpguu"qh'vj g'cr r tqcej "vj g" vgt o "r tguetr vkg"cr r tqcej "uggo gf "v'v'ghgt "v'vj tgg'f khgt gpv'cur gewu"qh' tgi wrcvt { "uwr gtxkukqp" "

- engct"cpf "f gvckgf "tgs vkt go gpw"uwej "cu'f guki p"dcuku'tgs vkt go/ o gpw."tgs vkt go gpw"dcugf "qp" c" f gvgto kpkvke"cpcn{ uku'qt"y gmi'gu/ vcdnkuj gf "kpvtcpvkqpcn'ucpf ctf u+."
- c'tki kf "ugv'qh'tgs vkt go gpw'vj cv'rcem'hrz kdkkv{ . "ctg"kpghhekgpv"cpf " tgf weg'negpugg'tgur qpukdkkv{ "ht"uchgv{ . ""
- vj g'wug"qh'tgi wrcvt { "cwj qtkv{ "v'v'guqixg"kuuwgu0" "

Cnj qwi j "tgr qpf gpw"uggo gf "eqo hqt vcdng'tghgt gpekpi "cm'qh'vj gug" cur gewu'kp'f kuewuukpi "c"or tguetr vkg"cr r tqcej o. "k'o c { "dg'wughwi"vq" eqpukf gt"uqo g'tgxkukqp"v'v'ghge'vj gug'f khgt gpegu0Vj g'f kuewuukqpu"qh' r tguetr vkg"cr r tqcej gu'f wtkpi "vj g'o gg'vpi u'cv'ci gpekgu'ngf "v'v'c'f kv/ ewuukqp"qh'vj g'wug"qh'o cpf cvqt { "tgi wrcvt"kp'vj g'p'wergct"kp'f wux { 0' Vj cv'f kuewuukqp"ku'r tqxkf gf "kp"oUk'gdct'9B<O cpf cvqt { "tgi wrcvt"ku'0" "

" "

Vcdng'90B<Rt guet l' vkg'Cr r t qcej <Erct k{.'Wghwpguu.'Wig'èpf '' Go r j cuku'Ej cpi g'lp'Wig'' ''		
Erct k{ 'qhf ghlpskp''		
"	Rgt'egpv'	P''
Pqv'Erget '*6.7+''	37' "	:''
Uqo gy j cv' Erget '*5+''	33' "	8''
Erget '*3.4+''	96' "	62''
Wghwpguu''		
"	Rgt'egpv'	P''
Pqv'Wghwui' *6.7+''	46' "	35''
Uqo gy j cv' Wghwui '*5+''	44' "	34''
Xgt{ 'Wghwui' *3.4+''	76' "	4;''
Wig'èpf 'Go r j cuku''		
"	Rgt'egpv'	P''
P gxtg 'Wigf '*2+''	33' "	8''
Uqo g'Go r j c/ uku '*3.4.5+''	82' "	54''
J gcx{ 'Go r j c/ uku '*6.7+''	4: ' "	37''
Ej cpi g'lp'Wig''		
"	Rgt'egpv'	P''
Pqv'Wigf '*2+''	33' "	8''
F get gcug'lp'' Wig '*3.4+''	33' "	8''
Pq'Ej cpi g'lp'' Wig '*5+''	65' "	45''
kp et gcug'lp'Wig'' *6.7+''	56' "	3: ''

, Rgtegpvc i gu'j cxg'dggp'tqwpf gf "q'vj g'pgctgu'v'y j qrg'pwo dgt''
''

Sidebar 7.1 Mandatory regulation in the nuclear industry

F kieuuukqpu"qh'cpf "eqo o gpw"qp"vj g'r tguetkr vlxg"er r tqcej "gZR mtgf " vj g's wguukqpu"qh'vj g'gz vgpv"vq"y j lej "vj g'tgi wrcvt"ko r qugu'o cpf cvqt { " tgs wktgo gpwû y j gp"uwej "tgs wktgo gpw'ctg"er r tqr tkvq."cpf "y j cv' uqo g'qh'vj g'ko r rkecvkqpu"qh'o cpf cvqt { "tgs wktgo gpw'ctg'hqt"tgi wrcvt { " uwr gtxkukqp0Vj g'ko r qtvcpeg"qh'vj g'tgi wrcvt"au'cwj qtkv' "vq wpgs wlxq/ ecm{ "gphqteg"tgs wktgo gpw'cpf "uj w'f qy p'wpuchg"tgcevqtu'y cu'cnuq" utguugf "kp"vj gug'f kieuuukqpu0

Kp"vj g'f kieuuukqpu"qh'r tguetkr vlxg"tgi wrcvt"cv'qpg"ci gpe { . "vj gtg'y cu'c" f kieuuukqpu"qh'y j gjj gt'r tguetkr vlxg"y cu'cewcm{ "cp"kp'f gr gp'f gpv'cr / r tqcej "qt"y j gjj gt'k'y cu'lwuv'c"ngxgn'qh'o cpf cvqt { "tgs wktgo gpw'kp" gcej "qh'vj g'cr r tqcej gu0K'y cu'wui i guugf "vj cv'vj g'ngxgn'eqwf "xct { " htqo "hwm{ "o cpf cvqt { "pq"ej qlqgu." { qw":uj cm'kp"f gvckn"pq" f kuetgvkqp+" vq"o kf /ngxgn"uqo g'ej qlqgu"cdqww'y j gp"cpf "j qy "qt"cp"qr r qtwpkv{ "vq" cumhqt"tgxkgy "qh'f khtgtpv'qr vqp+"vq"pq"r tkqt"tgs wktgo gpv"q" k'cpf " vj gp"gzr rkp"y j { "k'ku'uchg"0Vj g'i gpgtcr'eqpugpuw'u'y cu'vj cv'vj ku'tgi w rcvt"y cu'cv'vj g'o kf /ngxgn'dw'vj cv'uqo g'ctgcu'y gtg'xgt { "j ki j "qp"vj g" o cpf cvqt { "uecr"cpf "uqo g'o wej "ny gt0Vj kpi u'f kieuuugf "cu'kphwge/ kpi "vj g'ngxgn'kpenmf gf ""

- Mpqy p'r ctco gyvtu"
- Ngxgn'qh'tkum'
- F ktge'uchgv{ "rkpm'
- P gy "hcekrk{ "xgtuwu"gzkukpi "hcekrk{ "i tcpf hc'vj gtlpi +"
- Rrcpv'hkg"e { eng"

Kp"cpqj gt'f kieuuukqpu"c'r tqdrgo "y kj "o cpf cvqt { "i wkf grkpgu'y cu'dcugf " qp"gzr gtlgpeg"y kj "cpqj gt'kp'f wut { 0Qp/i qkpi "uchgv{ "r tqdrgo u'y gtg" etgcvf "d { "j cxkpi "o cpf cvqt { "r tguetkr vlxg+"tgs wktgo gpw"vj cv'vj g'qr / gtcvt"hmny gf "y kj qw'cp"wpf gtn{ kpi "hewu"qp"uchgv{ 0Vj g'kp'f wut { " r tghgtgf "vq"dg'vqf "y j cv'vq" f q"cpf "pqv'dg"t'gur qpukdrg'hqt"cuwtkpi " uchgv{ . "qpn{ "t'gur qpukdrg'hqt"hmny kpi "twgu0Rqqt"uchgv{ "r gthqto cpeg" kp"vj ku'kp'f wut { "t'guwngf "kp"rguqpu"rgctpgf "tgi ctf kpi "vj g'pggf "hqt"kp/ f wut { "dgkpi "t'gur qpukdrg'hqt"vj gk"qy p'uchgv{ "i qcm0C"uko kxt"eqo / o gpv'eco g'wr "kp"cpqj gt'f kieuuukqpu"o vj cv'r gtuqpcn't'gur qpukdrg'hqt" uchgv{ "cpf "c"uchgv{ "ewwng"ctg"o qtg"ko r qtvcpv"vq"uchgv{ "vj cp"nyu"qh" r tguetkr vlxg"twgu0

Kp"eqpvcuv"vq"vj ku'f kieuuukqpu. "vj g'ko r qtvcpeg"qh'j cxkpi "uqo g"o cpf cvqt / t { "i wkf grkpgu'y cu'qh'g'p"utguugf 0Qpg'r ctv'ekr cpv'eqo o gpv'f "vj cv'"

ANY requirement could be seen as mandatory and prescriptive, yet regulation is necessary and all regulation sets some requirements.

C'tgncv'f "eqo o gpv'utguugf "vj g'pggf "hqt"o cpf cvqt { "tgs wktgo gpw'kp"

ur gekkle"ecugu0'

"

Formal enforcement can be very effective in providing focus to an inefficient or unwilling licensee. It can also ensure that a timely and appropriate response is made to serious issues where there may be objections from the licensee. When used responsibly it can drastically reduce the necessary effort required for the regulator to achieve resolution of issues and provides positive audit ability of regulatory intervention.

"

7.1.1. Usefulness of approach

Qxgt'j ch'76' +qh'v'j g'tgur p'p'f gpw'tgr qtvgf 'v'j cv'c'r t'guetr v'x'g'cr / r tqcej 'y cu'xgt { 'wughw'ic'p'f 'cpq'v'j gt'44' 'tgr qtvgf 'v'j cv'v'j ku'cr r tqcej " y cu'uqo gy j cv'wughw'0'46' "qh'tgur p'p'f gpw'tgr qtvgf 'v'j cv'v'j g'cr r tqcej " y cu'p'qv'wughw'ic'p'f 'v'j gk'ct'gc'qh'uwr gtxkuk'p'0'V'j tgg'v'j go gu'tgi c'tf k'pi 'v'j g' wughw'p'gu'qh'c'r t'guetr v'x'g'cr r tqcej 'y g'tg't'gh'ge'v'f 'k'p'v'j g'eqo o gpw' qp'v'j ku'cr r tqcej =v'j cv'v'j ku'cr r tqcej 'r tqx'k'f gf "em'g'ct'c'p'f 'f'g'v'c'k'g'f 't'g' s'v'k't'go gpw. 'v'j cv'c'r t'guetr v'x'g'cr r tqcej 'y cu't'k'i'k'f . 'k'p'g'h'h'e'k'g'p'v'."c'p'f " k'p'h'g'z'k'd'g'."c'p'f 'v'j cv'c'r t'guetr v'x'g'cr r tqcej 'y cu'wughw'ic'v'q'd't'k'p'i 'em'q'u'w't'g' y j g'p'ne'g'p'ug'g'u'c'p'f 't'g'i w'r'v'q't { 'u'c'h'h'f'k'uci tgg'0'V'j g'ug'v'j go gu'e'q't't'g' / ur p'p'f gf 'v'q'v'j g'h'k'p'f k'p'i u'h't'q'o 'v'j g'4225'126'u'w'f { 'q'p'v'j g'd'g'p'g'h'k'u'c'p'f " f'k'h'e'w'k'g'u'qh'r t'guetr v'x'g'c'r u't'c'v'g'i k'g'u'0'k'p'v'j cv'u'w'f { 'v'j g'ern't'k'v' { 'q'h'r t'g' uetr v'x'g't'g's'v'k't'go gpw."g'ur g'e'k'm'f 'h'q't'v'g'e'j p'le'c'n'c't'g'c'u.'y cu'q'h'w'p'o g'p' / v'k'p'p'g'f 'cu'c'p'c'f x'c'p'v'c'i g'0'c'o c'l'q't'f'k'uc'f x'c'p'v'c'i g'q'h'r t'guetr v'x'g'c'r / r tqcej gu'y cu'v'j g'k'ic'em'q'h'h'g'z'k'd'k'k'v'0'k'p'c'f f'k'k'q'p.'u'g'x'g't'c'n'q'h'v'j g'k'p'v'g't' / x'k'g'y g'g'u'h't'q'o 'v'j g'4225'126'u'w'f { 'p'q'v'g'f 'v'j g'w'ug'q'h'r t'guetr v'x'g'c'r r tqcej " h'q't'c'e'v'k'q'p'c'p'f 'em'q'u'w't'g'0'V'j g'ug'uc'o g'v'j go gu'go g'ti gf 'k'p'v'j g'4234'135" u'w'f { . 'c' 'u'g'g'e'v'k'q'p'qh'eqo o gpw'ku'r tqx'k'f gf "d'g'm'y 0"

Clear and detailed requirements

Precise requirements in area best achieved with prescriptive approach.

The goal setting approaches used in nuclear regulation are underpinned by quite prescriptive international standards and codes of practice without which regulation would be impossible.

Useful in equipment which is highly standardized with detailed industry standards endorsed by regulation.

Eqo o gpw'c'n'q'k'p'em'f gf 'v'j cv'o q't'g'v'g'e'j p'le'c'n'c't'g'c'u'c't'g'o q't'g'r t'guetr / v'x'g'.o q't'g'v'j w'o c'p'uk'f g'o'c'p'f "q't'i c'p'k' c'v'k'q'p'c'n'h'g'u'u'r t'guetr v'x'g'.c'p'f 'v'j cv' t'g'i w'r'v'k'q'p'j' cu'ej c'p'i gf 'cu'v'j g'k'p'f w'ux { 'j' cu'o c'w't'g'f 0"

Some issues, like management systems, may deserve a different regulatory approach compared with more technical issues. But this requires, again, conviction and capacity to use different regulatory strategies, in order to motivate, influence, and convince.

The original deterministic nature of designing plants led to prescriptive regulation. Now when you change the technology or area you can use another approach. Mechanical devices are still deterministic (and prescriptive) but broader systems will use a different approach.

Rigid, inefficient, and places responsibility for safety on the regulator
Specification of maintenance may not allow sufficient flexibility for novel events, infrequently used equipment or an aging plant.

Too much reliance can take away licensee flexibility.

Too much reliance can put responsibility on regulator.

Great caution should be applied when using in a new area (e.g., for a new technique).

A problem with starting with more mandatory requirements is that you can get boxed into a solution that isn't optimal.

A completely prescriptive regulatory approach for maintenance of operating NPPs would be possible based on recommendations of manufacturers, operating experience and other sources of information. However, the agency decided against this type of approach based on experience that some of these activities were unnecessary, time consuming and, sometimes, very expensive with no benefit to safety. It was decided that it was more effective to establish a performance-based and risk informed regulation. Only in specific cases, in which the experience so recommended, are prescriptive rules established.

Exertion of regulatory authority

A prescriptive approach may be useful in fostering a response from licensees. It is essential that licensees be convinced of the need to promote a strong safety culture in their installation.

May be needed to get results.

The regulation is a tool to use to get the licensee to modernize the plants.

The use of a regulatory power is a last resort. The only advantage is that the regulator can demonstrate it can compel the licensee to stop and not restart until it has taken appropriate corrective action.

Vj g'tgr qt vgf "wughwpguu"qh'vj ku'cr r tqcej 'xctkgf "cetquu"vj g'gki j v'ctgcu" qh'uwr gtxkukqp"*ugg"Cr r gpf kz "7."Vcdrg"3+0T gur qpf gpw'lp'ukz "ctgcu" tgr qt vgf "c"j ki j "rgxgn'qh'wughwpguu"hgq "c"r tguetr vkg"cr r tqcej "r npv" rkg"gz vgpukqp."o clqt'r npv'o qf kkecvkqp." r qy gt "wr"tcvgu."cpf "eqpuvwekqp0J ch'qh'vj g'tgur qpf gpw'lp'vj g'ctgc" qh'uchgvf "ewmwg'tgr qt vgf "vj cv'vj ku'cr r tqcej "y cu'pqv'wughw0"

7.1.2. Use, emphasis, and change in use of prescriptive approach

C'r tguetr vkg"cr r tqcej "y cu'tgr qt vgf "cu'wugf "d {"cm quv"; 2' "qh'tg/ ur qpf gpw'cetquu'cm'ctgcu"qh'uwr gtxkukqp"*ugg"Vcdrg"90+0Vj ku'cr / r tqcej "y cu'tgr qt vgf "cu"j cxkpi "uqo g'go r j cuku"d {"cdqw"82' "qh'tg/ ur qpf gpw'cpf "c"j gcx {"go r j cuku"d {"cdqw"52' "qh'tgur qpf gpw'0Tg/ ur qpf gpw'y gtg"o quv'hknfnf "v"tgr qt v'vj cv'vj gtg'y cu'pq"ej cpi g'lp'vj g" wug"qh'c"r tguetr vkg"cr r tqcej "lp"vj gk "ctgc"*65' +:y kj "56' "tgr qt v'pi " cp"lpetgcug'lp"vug"cpf "33' "tgr qt v'pi "c"f getgcug'lp"vug0Cnj qwi j "c" pwo dgt"qh'lpvgtxky ggu"lp"vj g"4225126"uwf {"lwi i guvgf "vj cv'vj gtg'y cu" c"f getgcug'lp"vj g'wug"qh'vj ku'cr r tqcej ."vj ku'y cu'pqv'tghgevgf "lp"vj g" hpf lpi u'htqo "vj g"4234135"uwf {"0"

Vj g'tgr qt vgf "wug."go r j cuku'cpf "ej cpi g'qh'vj ku'cr r tqcej 'xctkgf "cetquu" vj g'gki j v'ctgcu"qh'uwr gtxkukqp"*ugg"Cr r gpf kz "7."Vcdrg"3+0Rqy gt "wr" tcvgu'y cu'vj g'qpnf "ctgc"y j gtg"vj g"o clqtkvf "qh'tgur qpf gpw'tgr qt vgf "c" j gcx {"go r j cuku"qp"c"r tguetr vkg"cr r tqcej 0T gur qpf gpw'lp"vj q'ctgcu." r npv'hkg"gz vgpukqp"cpf "o clqt'r npv'o qf kkecvkqp."tgr qt vgf "cp"lp/ etgcug'lp"vj g'wug"qh'vj ku'cr r tqcej 0"

7.2. Facility

Fghpkkqp—A facility-based approach determines the safety requirements for each licensee through individual assessment of its design and operation, considering the unique history of each facility.

Cm quv"; 2' "qh'tgur qpf gpw'tgr qt vgf "vj cv'vj g'f ghpkkqp"y cu'uqo gy j cv' erget "v"xgt {"erget"*ugg"Vcdrg"90+0Vj gtg'y gtg'pq"lwi i gukqpu'tgi ctf / lpi "ej cpi gu'v'vj g'y qtf lpi "qh'vj g'f ghpkkqp."j qy gxgt."cu'y kj "qvj gt" cr r tqcej gu."vj gtg'y gtg'ugxgtcn'eqo o gpw'vj cv'gzco r ngu'ur gekke"vq" gcej "ctgc"qh'uwr gtxkukqp"y qwvf "j cxg"dgpp"j gr hwt0"

Vcdrg'904<Hceklk{'Cr r t qcej <Erctk{'Wghwpguu'Wig'c'pf "Go / r j cuku'Ej cpi g'lp'Wig''		
Erctk{'qh'F g'lp'kqp''		
"	Rgt'egpv''	P''
P qv'Erct '*6.7+'	33' "	8''
Uqo gy j cv'	45' "	38''
Erct '*5+'		
Erct '*3.4+'	7; ' "	54''
Wghwpguu''		
"	Rgt'egpv''	P''
P qv'Wghw' '*6.7+'	48' "	36''
Uqo gy j cv'	5; ' "	43''
Wghw'*5+'		
Xgt {'Wghw' '*3.4+'	57' "	3; ''
Wig'c'pf 'Go r j cuku''		
"	Rgt'egpv''	P''
P gxt 'Wig' '*2+'	48' "	36''
Uqo g'Go r j c/uku '*3.4.5+'	6; ' "	48''
J gex {'Go / r j cuku '*6.7+'	47' "	35''
Ej cpi g'lp'Wig''		
"	Rgt'egpv''	P''
P qv'Wig' '*2+'	3; ' "	32''
F get gcug'lp'' Wg '*3.4+'	32' "	7''
P q'Ej cpi g'lp'' Wg '*5+'	84' "	54''
F get gcug'lp'' Wg '*6.7+'	32' "	7''

, Rgtegpvcu gu'j cxg'dggp'tqwpf gf "q'vj g'pgctgu'v'y j qrg'pwo dgt''

7.2.1. Usefulness of approach

Cdqw'qpg'vj kf "qh'vj g'tgur qpf gpw'tgr qtvgf "vj cv'c'hceklk{'cr r t qcej " y cu'xgt {'wghw'lp'vj gk'tcgc'qh'uwr gtxkukqp'cpf "cpqj gt'5; ' "tgr qtvgf " vj cv'vj ku'cr r t qcej "y cu'uqo gy j cv'wghw'048' "qh'tgur qpf gpw'tgr qtvgf " vj cv'vj g'cr r t qcej "y cu'pqv'wghw'lp'vj gk'tcgc'qh'uwr gtxkukqp'00 cp {'qh' vj g'eqo o gpw'qp'c'hceklk{'cr r t qcej "pqvgf "vj cv'qxgtc'ej lpi 'tgi wr/ v'kpu'y gtg'o qtg'gh'ge'v'x'g'vj cp'h'qewulpi "qp'c'ur gekh'e'hceklk{'0Q'vj gtu" uwi i gu'gf "vj cv'vj gtg'ku'c'pggf "hqt'dqj "i gpgtc'nt'gs vkt go gpw'c'pf "tg/ s vkt go gpw'vj cv'ctg'ur gekh'e'v'q'c'r rcp'0C'pwo dgt"qh'eqo o gpw'r tqxk/ gf "lpucpegu'y j gp'r rcp'ur gekh'e'tgs vkt go gpw'y gtg'wghw'0"

Overarching regulations

Requirements in this area are not dependent on facility type.

The agency has moved away from this approach over the past decade or so and moved to generic technical specifications to the extent possible for each site, which seems to be working fine. Within the agency's current regulatory philosophy, it's very difficult to imagine site-specific technical specifications that would address unique aspects of a plant's safety culture.

Both general and site specific approaches needed

Ultimately all regulation has to be facility specific though the regulator does not make facility specific requirements it requires the licensee to develop facility specific requirements. Common themes across facilities, e.g., training, operating rules, operational feedback, etc. have resulted in more cross cutting regulatory strategies leading to better consistency and sharing good practice.

Consistent approaches are generally taken across the fleet rather than being tailored to particular facilities. Whilst some account may be taken of facility variation, this is not a primary influence.

Only in specific situations or problems in a NPP is the supervision based on a facility approach. It seems better to establish general rules or requirements that apply to all licensees.

Reasons for using a facility approach

Necessary to adapt requirements to specific plant in this area.

Context is always important to consider. The context shall always be applied in both technical and organizational areas of regulation.

It is understood that the LR (license review) should be facility specific. The Agency conducts its license review based on the applicant's license review application, which is tailored to its particular facility.

Apart from those obviously dependent on the technology, e.g., PWR, BWR, there are certain elements of the assessment of a power up rate that need to be considered such as the specificities of the plant, mostly arising from site criteria, and aging.

"

Vj g'tgr qtvgf "wghwpguu'qh'vj ku'cr r tqcej "xctkgf "cetquu'vj g'gki j v'ctgcu" qh'uwr gtxkukqp"ugg'Cr r gpf kz "7."Vcdng"4-0J ch'qt'o qtg'qh'vj g'tg/ ur qpf gpw'lp"vj g'ctgcu'qh'o clqt'r rcpv'o qf khec'kqp"cpf'r rcpv'kkg"gz/ vgpukqp'tgr qtvgf "vj ku'cr r tqcej "cu'xgt {"wghwpguu'vj ku'cr r tqcej "y cu'tg/

r qtvgf "cu'pqv'wughwld{ 'y g'o clqtkv{ "qh'tgur qpf gpw'lp"y g'ctgcu'qh"
o cpci go gpv'u{vgo u'cpf 'r qy gt'wr 'tcvgo

7.2.2. Use, emphasis, and change in use of facility approach

C'hcekv{ "cr r tqcej 'y cu'tgr qtvgf "cu'wugf "d{ "cdqw'97' "qh'tgur qpf gpw"
cetquu'cm'ctgcu'qh'uwr gtxkukqp"*ugg"Vcdng'904+0Vj ku'y cu'yj g'my guv"
tgr qtvgf "wug'tcvg'qh'cp{ "qh'yj g'cr r tqcej gu0Vj g'hcekv{ "cr r tqcej 'y cu"
tgr qtvgf "cu'j cxi pi "uqo g'go r j cuku'd{ "cdqw'72' "qh'tgur qpf gpw'cpf "c"
j gcx{ "go r j cuku'd{ "cdqw'47' "qh'tgur qpf gpw0T gur qpf gpw'y gtg'o quv"
rkngn{ "v'tgr qt v'y cv'yj gtg'y cu'pq'ej cpi g'lp'yj g'wug'qh'c'hcekv{ "cr /
r tqcej "lp'yj gk'tctgc"*84' +.y kj "32' "tgr qt v'pi "cp"lpetgcug'lp'wug'cpf "
32' "tgr qt v'pi "c'f getgcug'lp'wug0"
"

Vj g'tgr qtvgf "wug."go r j cuku'cpf "ej cpi g'qh'yj ku'cr r tqcej "xctkgf "cetquu"
yj g'gk j v'ctgcu'qh'uwr gtxkukqp"*ugg"Cr r gpf kz "7."Vcdng'4+0Vj ku'cr /
r tqcej 'y cu'tgr qtvgf "cu'j gcxkv{ "go r j cuku'gf "d{ 'y g'o clqtkv{ "qh'tg/
ur qpf gpw'lp"y g'ctgc'qh'r rcpv'rhg"gz v'pukqp0"

7.3. Outcome

F ghpkkqp: *An outcome approach establishes specific performance goals or outcomes for licensees to attain but does not specify how they shall be attained. Licensees determine how they will conduct their work activities.*
"

Vj g'o clqtkv{ "qh'tgur qpf gpw"*xgt"; 2' +tgr qtvgf "y cv'yj g'f ghpkkqp"
y cu'uqo gy j cv'engct'v'xgt{ "engct"*ugg"Vcdng'905+0Qpg'uwi i gukqp."
y j lej 'y cu'cuq'o cf g'lp'yj g'4225126'uwf {.y cu'yj cv'yj ku'cr r tqcej "
uj qwf "dg'tgpcg'gf "cu'or gthqto cpeg0Cu'y kj "qv'gt'cr r tqcej gu "y gtg"
y gtg'ugxgtcrl'eqo o gpw'yj cv'gzco r ngu'ur gekle"v"gej "ctgc'qh'uwr gtxk/
ukqp'y qwf "j cxg'dggp"j grr hw0"

7.3.1. Usefulness of approach

Cm quv'82' "qh'yj g'tgur qpf gpw'tgr qtvgf "y cv'cp"qweqo g'cr r tqcej "
y cu'xgt{ "wughw'lp'yj gk'tctgc'qh'uwr gtxkukqp"cpf "cpqv'gt'42' "tgr qtvgf "
yj cv'yj ku'cr r tqcej 'y cu'uqo gy j cv'wughw0Vy gpv{ 'r gt"egpv'qh'tgur qpf /
gpw'tgr qtvgf "y cv'yj g'cr r tqcej 'y cu'pqv'wughw'lp'yj gk'tctgc'qh'uwr gtxk/
ukqp0C"pwo dgt "qh'tgur qpf gpw'eqo o gpv'gf "qp'yj g'wughw'p'gu'qh'yj ku"
cr r tqcej "lp'ko r tqx'pi "r rcpv'r gthqto cpeg0Cpqv'gt "h'gs v'gpv'eqo o gpv"
y cu'yj cv'yj ku'cr r tqcej "r megu'yj g'r tko ct{ "tgr qpukdkv{ "qp'yj g'h'egp/
ugg0Qvj gtu'eqo o gpv'gf "y cv'yj gtg'y gtg'qh'v'p'f k'h'ew'ngu'lp'h'p'f'pi "
cr r tq'rtk'v'qweqo g'o gcuw'gu'lp'yj gk'tctgc'qh'uwr gtxkukqp0"
"

Vcdrg'905<Qweqo g'Cr rrtqcej <Ertk{.'Wghwpguu'Wig'èpf''' Go rj cuku'Ej cpi g'lp'Wig''		
Ertk{ 'qhf ghlkq''		
"	Rgt'egpv''	P''
Pqv'Ergt '*6.7+'	;' "	7''
Uqo gy j cv'	48' "	36''
Ergt '*5+'		
Ergt '*3.4+'	87' "	57''
Wghwpguu'		
"	Rgt'egpv''	P''
Pqv'Wghwi'	42' "	33''
*6.7+'		
Uqo gy j cv'	42' "	33''
Wghwi'*5+'		
Xgt{ 'Wghwi'	7;' "	54''
*3.4+'		
Wig'èpf 'Go rj cuku'		
"	Rgt'egpv''	P''
Pgxgt 'Wigf '*2+'	35' "	9''
Uqo g'Go rj c/ uku'*3.4.5+'	62' "	43''
J gcx{ 'Go rj c/ uku'*6.7+'	69' "	47''
Ej cpi g'lp'Wig''		
"	Rgt'egpv''	P''
Pqv'Wigf '*2+'	34' "	8''
Fget gcug'lp''	:' "	6''
Wig'*3.4+'		
Pq'Ej cpi g'lp''	65' "	44''
Wig'*5+'		
Kpet gcug'lp'Wig''	59' "	3;' "
*6.7+'		

, Rgtegpvcu gu'j cxg'dggp'tqwpf gf "q'yj g'pgctgu'v'y j qrg'pwo dgt''

Improving plant performance

Whatever the licensees do, the objective is to maintain the SSCs safe and reliable operation. The outcome is the final indicator of the effectiveness of the maintenance program.

For all management system processes it is important to know the outcome so as to judge the effectiveness of the process in achieving planned and desired results. For management systems a clear understanding of the outcomes is essential.

"

Particularly useful for mature licensees, where specific outcomes are sought once a base level has been reached.

Responsibility for performance placed with licensee

Licensee responsible for safety.

Applicant must demonstrate that the effects of aging will be managed.

The outcome approach gives more pressure on the licensee to be the first responsible for safety of the NPP.

Difficulties of finding good outcome measures

It is difficult to establish, at least in the short term, expected outcomes in shared values and assumptions. Maybe at the beginning of an organizational change some expected outcomes could be established on the artefacts level, on the behaviours.

Not easy to establish goals in license renewal area.

Vj g'tgr qtvgf "wughwpguu"qh'vj g"qweqo g'dcugf "cr r tqcej "xctkgf "d{ "ctgc" qh'uwr gtxkukqp"*ugg"Cr r gpf kz "7."Vcdng"5-0Vj ku"cr r tqcej "y cu'tgr qtvgf " cu'xgt {"wughwrd {"j cih'qt"o qtg"qh'vj g'tgur qpf gpw'lp"vj g'ctgcu"qh'o cp/ ci go gpv'u{ ugo u."o clqvpcpeg."o clqt"r rcpv'o qf kkecvkpu."r qy gt"wr " tcvgu."cpf "uchgv{ "ewmwg0Cp"qweqo g'dcugf "cr r tqcej "y cu'tgr qtvgf "cu" pqv'wughwrd {"j cih'qh'vj g'tgur qpf gpw'lp"vj g'ctgc"qh'qr gtcv'kpu0"

7.3.2. Use, emphasis, and change in use of outcome approach

Cp"qweqo g"cr r tqcej "y cu'tgr qtvgf "cu'wugf "d{ "qxgt": 7' "qh'tgur qpf / gpw'cetquu"cm'ctgcu"qh'uwr gtxkukqp"*ugg"Vcdng"90-0Vj g"qweqo g"cr / r tqcej "y cu'tgr qtvgf "cu'j cxkpi "uqo g"go r j cuku"d{ "cdqw'62' "qh'tg/ ur qpf gpw'cpf "c'j gcx {"go r j cuku"d{ "cdqw'69' "qh'tgur qpf gpw'OTg/ ur qpf gpw'y gtg"o quv'ikngn{ "q'tgr qt'vj cv'vj gtg'y cu'pq"ej cpi g'lp"vj g" wug"qh'cp"qweqo g"cr r tqcej "lp"vj gk'ctgc"*65' +.y kj "59' "tgr qt'kpi " cp'kpetgcug'lp"wug"cpf ": ' "tgr qt'kpi "c" f getgcug'lp"wug0"

Vj g'tgr qtvgf "wug."go r j cuku."cpf "ej cpi g"qh'vj ku"cr r tqcej "xctkgf "d{ " ctgc"qh'uwr gtxkukqp"*ugg"Cr r gpf kz "7."Vcdng"5-0Vj g"o clqtkv{ "qh'tg/ ur qpf gpw'lp"vj tgg'ctgcu."o clqvpcpeg."eqputwv'kpu."cpf "o clqt"r rcpv' o qf kkecvkpu."tgr qtvgf "vj cv'cp"qweqo g'dcugf "cr r tqcej "y cu'j gcxkx{ " go r j cuku"gf 0Vj ku"cr r tqcej "y cu'tgr qtvgf "cu'kpetgcukpi "d{ "vj g"o clqtkv{ " qh'tgur qpf gpw'lp"vj g'ctgc"qh'uchgv{ "ewmwg0"

7.4. Risk/Hazard

A risk/hazard approach is used to evaluate the appropriate level of regulatory attention.

- *A risk approach uses a specific methodology including probability and potential for harm to identify areas of greatest risk. These areas receive priority for regulatory attention.*
- *A hazard approach uses specific criteria for the identification of areas of greatest potential for harm and these areas receive priority for regulatory attention.*

"
Gki j v{/hkg'r gt"egpv'qh'tgur qpf gpw'tgr qtvgf "vj cv'vj g'f ghpkkp"qh'c"
tkumj c| ctf "cr r tqcej "y cu'uqo gy j cv'engct "v'xgt {"engct "ugg"Vcdng"
906+0Uqo g'tgur qpf gpw'eqo o gpv'f "vj cv'cmj qwi j "vj ku'v' r g'qh'cpcn{uku"
ku'f qpg'cv'vj gk "ci gpe{. 'k/ku'wugf 'hqt'uchgv{ "gxcnvcvkqp. 'pqv'hqt' r tkqt/
vk kpi "tgi wrcvt {"uwr gtxkukqp0Cu'y kj "qvj gt "cr r tqcej gu. "vj gtg'y gtg"
ugxgtc'leqo o gpw'vj cv'gzco r ngu'ur gekhe "v'gcej "ctgc"qh'uwr gtxkukqp"
y qwf "j cxg'dggp"j gr hwd"

7.4.1. Usefulness of approach

Ukz v' r gt"egpv'qh'vj g'tgur qpf gpw'tgr qtvgf "vj cv'c'tkumj c| ctf "cr r tqcej "
y cu'xgt {"wughwilkp"vj gk "ctgc"qh'uwr gtxkukqp"cpf "cpqvj gt"43" "tgr qtvgf "
vj cv'vj ku'cr r tqcej "y cu'uqo gy j cv'wughwOP kpgvggp"r gt"egpv'qh'tg/
ur qpf gpw'tgr qtvgf "vj cv'vj g'cr r tqcej "y cu'pqv'wughwilkp"vj gk "ctgc"qh"
uwr gtxkukqp0Eeqo o gpw'qp"vj g'wughwpguu'qh'c'tkumj c| ctf "cr r tqcej "
hgmikpv'vj tgg"o ckp'ecvgi qtkgu="eqo o gpw'cdqww'vj g'wug'qh'vj ku'cr /
r tqcej "v'hqewu'tgi wrcvt {"cwgpvkqp."eqo o gpw'cdqww'vj g'wug'qh'vj ku'
cr r tqcej "v'ko r tqxg'uchgv' r gthqto cpeg."cpf "eqo o gpw'cdqww'f kkk/
ewmgu'y kj "vj g'o gj qf u'wugf "kp"vj ku'cr r tqcej 0Gzco r ngu'qh'eqo /
o gpw'ctg'r tqxkf gf "dgrny 0"

Using a risk/hazard approach to focus regulatory attention

This approach is very useful whenever we need to make a regulatory decision. Both consequence and probability needs to be considered and the full spectrum of this issue also needs to be addressed.

Risk informed approach is key to proportionate regulation.

The risk/hazard approach gives the opportunity to prioritize the safety actions.

Using a risk/hazard approach to improve safety performance

Can originate important data to improve plant performance.

Risk informed approach influences outcome measures.

"

Vcdig'906<Tlumll c ctf 'Crrtqcej <Entls{.'Wighwpguu'Wig'çpf "		
Go r j cuku'Ej cpi g'lp'Wig"		
Entls{ 'qhf gihpskqp"		
"	Rgt'egpv"	P "
P qv'Erget '*6.7+'	35' "	9"
Uqo gy j cv'	37' "	: "
Erget '*5+'		
Erget '*3.4+'	92' "	5: "
Wighwpguu'		
"	Rgt'egpv"	P "
P qv'Wighw'6.7+'	3; ' "	32"
Uqo gy j cv'Wig/hw'5+'	43' "	33"
Xgt{ 'Wighw' *3.4+'	82' "	54"
Wig'çpf 'Go r j cuku'		
"	Rgt'egpv"	P "
P gxtg 'Wigf '*2+'	35' "	9"
Uqo g'Go r j cuku' *3.4.5+'	64' "	44"
J gcx{ 'Go r j c/uku'6.7+'	67' "	46"
Ej cpi g'lp'Wig"		
"	Rgt'egpv"	P "
P qv'Wigf '*2+'	36' "	9"
F get gcug'lp'Wig" *3.4+'	: ' "	6"
P q'Ej cpi g'lp'Wig'*5+'	5; ' "	42"
Kpet gcug'lp'Wig" *6.7+'	5; ' "	42"

, Rgtepvci gu'j cxg'dggp tqwpl gf 'vq'y g'bgctgu'v'y j qre'pwo dgt'

Difficulties with method used for risk/hazard based

It should be used jointly with other approaches. Sometimes the results of Risk Probability analysis are over estimated, without considering the hypotheses assumed, limitations of this analysis and uncertainties.

The risk of a risk informed approach is that, as resources always are scarce, the less risky areas get no attention, for either licensees or regulators.

"

Kp'ukz'ctgcu'qh'uw gtxkukpô o clpvgpcepq."qr gtcv'kpu."r rpv'ihg"gz vgp/ukqp."o clqt'r rpv'o qf hlec'kpu."r qy gt"wr 'tcv'gu'çpf "eqputwe'kpuô y ku"

cr r tqcej 'y cu'tcvf 'cu'xgt { 'wghwld { 'qxgt'82' "qh'tgur qpf gpw'*ugg"
Crr gpf kz'7. "Vcdng'6+0T gur qpf gpw'lp'vj g'ctgcu'qh'o cpci go gpv'u{ u/
vgo u'cpf 'uchgv{ 'ewmwg'y gtg'rguu'rkngn{ 'vj cp'vj qug'lp'qyj gt'ctgcu'vq"
tgr qtv'vj cv'vj ku'cr r tqcej 'y cu'xgt { 'wghwld

7.4.2. Use, emphasis, and change in use of risk/hazard approach

C'tkumj c| ctf 'cr r tqcej 'y cu'tgr qtvf 'cu'wugf 'd { 'qxgt': 7' "qh'tgur qpf /
gpw'cetquu'cm'ctgcu'qh'uwr gtxkukqp '*ugg'Vcdng'906+0Vj g'tkumj c| ctf "
cr r tqcej 'y cu'tgr qtvf 'cu'j cxkpi 'uqo g'go r j cuku'd { 'cdqw'64' "qh'tg/
ur qpf gpw'cpf 'c'j gcx { 'go r j cuku'd { 'cdqw'67' "qh'tgur qpf gpw'OTg/
ur qpf gpw'y gtg'gs wcm{ 'rkngn{ 'vq'tgr qtv'vj cv'vj gtg'y cu'pq'ej cpi g'lp'vj g"
wug'qh'c'tkumj c| ctf 'cr r tqcej 'qt'vj cv'vj gtg'y cu'cp'kpetgcug'lp'vj g'wug"
qh'y ku'cr r tqcej 'lp'vj gk'ctgc0Cdqw': ' 'tgr qtvf 'c'f getgcug'lp'wug0"

Wug.'go r j cuku'cpf 'ej cpi g'xctkgf 'cetquu'vj g'gk j v'ctgcu'qh'uwr gtxkukqp"
*ugg'Crr gpf kz'7. "Vcdng'6+0Kp'o ckwgpcpeg.'qr gtcvqpu.'r rcpv'rhg'gz/
vwpukp.'o clqt'r rcpv'o qf hkecvqpu'cpf 'eqputwvqpp'qxgt'82' "qh'tg/
ur qpf gpw'tgr qtvf 'vj ku'cr r tqcej 'cu'j gcxkn{ 'go r j cuk'gf 0Kp'hqwt'qh"
vj qug'ctgcuo o ckwgpcpeg.'qr gtcvqpu.'o clqt'r rcpv'o qf hkecvqpp'cpf "
eqputwvqppô vj g'o clqtkv{ 'qh'tgur qpf gpw'cnuq'tgr qtvf 'vj cv'vj g'wug'qh"
vj ku'cr r tqcej 'kpetgcugf 'lp'vj gk'gZR gkpeg0T gur qpf gpw'lp'vj g'ctgcu"
qh'o cpci go gpv'u{ ugo u.'uchgv{ 'ewmwg'cpf 'r qy gt'wr 'tcvgy'gtg'rguu"
rkngn{ 'vj cp'vj qug'lp'qyj gt'ctgcu'vq'tgr qtv'vj cv'vj ku'cr r tqcej 'y cu'j gcxkn{ "
go r j cuk'gf 0'

7.5. Process

Fghpklqp—A process approach identifies specific key processes that lead to safe performance and requires licensees to establish and implement these processes effectively.

Vj g'qxgt'; 2' "qh'tgur qpf gpw'tgr qtvf 'vj cv'vj g'f ghpklqp'qh'c'r tqegu"
dcugf 'cr r tqcej 'y cu'uqo gy j cv'engct 'vq'xgt { 'engct '*ugg'Vcdng'907+0Cu"
y kj 'qyj gt'cr r tqcej gu.'vj gtg'y gtg'ugxgtn'eqo o gpw'vj cv'gzco r rgu"
ur gekle'vq'gcej 'ctgc'qh'uwr gtxkukqp'y qwf 'j cxg'dggp'j gr hwd0"

7.5.1. Usefulness of approach

Cm quv'77' "qh'vj g'tgur qpf gpw'tgr qtvf 'vj cv'c'r tqegu'dcugf 'cr r tqcej "
y cu'xgt { 'wghwld'lp'vj gk'ctgc'qh'uwr gtxkukqp'cpf 'cpqyj gt'52' "tgr qtvf "
vj cv'vj ku'cr r tqcej 'y cu'uqo gy j cv'wghwld '*ugg'Vcdng'907+0Ugxgpv'ggp'r gt"
egpv'qh'tgur qpf gpw'tgr qtvf 'vj cv'vj g'cr r tqcej 'y cu'pqv'wghwld'lp'vj gk"
ctgc'qh'uwr gtxkukqp0Vj g'o quv'qh'vgp'o cf g'eqo o gpv'tghgttgf 'vq'vj g"
xcmwg'qh'vj ku'cr r tqcej 'lp'cuwtkpi 'i qpf 'uchgv{ 'o cpci go gpv'0C'eqo /

o gpv'bo cf g'd{ "y q'tgur qpf gpw'y cu'y cv'y ku'cr r tqcej 'tgs wktgu'c"j ki j "

Vcdig'907'Rt qegui'Cr r tqcej <Enrtk{.'Wghwpgui.'Wig'çpf 'Go / r j cuku.'Ej cpi g'lp'Wig''		
Enrtk{ 'qhF ghpskqp"		
"	Rgt'egpv'	P "
P qv'Engct '*6.7+'	9' "	6"
Uqo gy j cv' Engct '*5+'	4: ' "	37"
Engct '*3.4+'	87' "	57"
Wghwpgui'		
"	Rgt'egpv'	P "
P qv'Wghwml' *6.7+'	39' "	; "
Uqo gy j cv' Wghwml'*5+'	52' "	38"
Xgt { 'Wghwml' *6.7+'	76' "	4; "
Wig'çpf 'Go r j cuku'		
"	Rgt'egpv'	P "
P gxt 'Wigf '' *3.4+'	33' "	8"
Uqo g'Go r j c/ uku'*3.4.5+'	66' "	46"
J gcx{ 'Go r j c/ uku'*6.7+'	66' "	46"
Ej cpi g'lp'Wig''		
"	Rgt'egpv'	P "
P qv'Wigf '*2+'	32' "	7"
F get gcug'lp'' Wig'*3.4+'	6' "	4"
P q'Ej cpi g'lp'' Wig'*5+'	72' "	48"
Ïpet gcug'lp'Wig'' *6.7+'	59' "	3; "

, Rgtegpici gu'j cxg'dggp'tqwpf gf "q'y'j g'pgctgu'y j qrg'pwo dgt"

Critical approach for safety management

A key principle of quality management is identifying the processes needed for safe operation and understanding their interactions. This is therefore a key part of the assessment of management systems.

Proved to be an effective way of defining key elements to be considered. It also helps to systematically address these elements and provide means to avoid erratic behaviours.

The process for making self-assessment decisions in design modifications is an important issue that regulators should review in order to see how the licensee takes into account safety problems that are discovered during plant operations.

Requires a high level of expertise

It is difficult and requires a high level of expertise. Sometimes it is uncomfortable because of the uncertainty along the process—does not give black and white answers.

Gives good results when the licensee is engaged.

"

Cm'qh'vj g'tgur qpf gpw'lp'vj g'ctgc'qh'o cpci go gpv'u{ ugo u'tgr qtvgf " yj ku'cr r tqcej "cu'xgt { 'wughw'ugg'Cr r gpf kz'7.'Vcdrg'7+0Vj'cf f kkkp." yj g'o clqtkv{ "qh'tgur qpf gpw'lp'vj tgg'ctgcuô qr gtcvkqpu."uchgv{ "ewmwg." cpf "eqputwv'kpô tgr qtvgf "yj cv'vj g'r tqegu/dcugf "cr r tqcej "y cu'xgt { " wughw'lp'vj gk'ctgc0"

7.5.2. Use, emphasis, and change in use of process approach

C'r tqegu'dcugf "cr r tqcej "y cu'tgr qtvgf "cu'wugf "d{ "cm quv'; 2' "qh'tg/ ur qpf gpw'cetquu'cm'ctgcu'qh'uwr gtxkkkq "ugg"Vcdrg'90+0Vj g'r tqegu" dcugf "cr r tqcej "y cu'tgr qtvgf "cu'j cxkpi "uqo g'go r j cuku'd{ "cdqw'66' " qh'tgur qpf gpw'cpf "c'j gcx{ "go r j cuku'd{ "cdqw'66' "qh'tgur qpf gpw'0' Vj g'o clqtkv{ "qh'tgur qpf gpw'tgr qtvgf "yj cv'vj gtg'y cu'pq'ej cpi g'lp'vj g" wug'qh'c'r tqegu'dcugf "cr r tqcej "72' +0Cdqw'59' "qh'tgur qpf gpw" tgr qtvgf "cp'lpetgcug'lp'vj g'wug'qh'vj ku'cr r tqcej "lp'vj gk'ctgc0Cdqw" 6' "tgr qtvgf "c'f getgcug'lp'wug0"

"

O qtg'vj cp'j crh'qh'vj g'tgur qpf gpw'lp'vj tgg'ctgcuô qr gtcvkqpu."uchgv{ " ewmwg."cpf "eqputwv'kpô tgr qtvgf "yj cv'vj g'r tqegu/dcugf "cr r tqcej " y cu'j gcxk{ "go r j cuku'gf "cpf "lpetgcukpi "lp'wug"ugg'Cr r gpf kz'7.'Vcdrg" 7+0Vj g'o clqtkv{ "lp'o cpci go gpv'u{ ugo u'tgr qtvgf "yj cv'c'r tqegu'cr/ r tqcej "y cu'j gcxk{ "go r j cuku'gf 0T gur qpf gpw'lp'vj g'ctgc'qh'r qy gt'wr " tcv'u'tgr qtvgf "cp'lpetgcug'lp'vj g'wug'qh'vj ku'cr r tqcej 0'

7.6. Self-Assessment

Eng'kkkq—*Licensees develop and implement self-assessment programs including the identification of both good practices and problem areas needing improvement, internal reviews and follow up. The regulator evaluates the licensee self-assessment program, reviews the results of the licensee assessments, and selectively inspects the licensees' follow up on self-assessment results.*

"

Vj g'o clqtk{\ 'qh'tgur qpf gpw'*qxtg'; 2' +tgr qtvgf 'vj cv'vj g'f ghpkkqp'qh' c'ugrh/cuuguo gpv'cr r tqcej 'y cu'uqo gy j cv'engct'v'xgt {'engct '*ugg'Vc/ dng'908+0Cu'y kj 'qyj gt'cr r tqcej gu.'vj gtg'y gtg'ugxgtcn'eqo o gpw'vj cv' gzco r ngu'ur gekke'v'ctgcu'qh'uwr gtxkukqp'y qwf 'j cxg'dggp'j gr hwd''

Vcdig'908<Ugh/Cuuguo gpv'Cr r tqcej <Ertkw{\ 'Wghwpguu'Wig'c'pf '' Go r j cuku'Ej cpi g'lp'Wig''		
Ertkw{\ 'qh'F ghpkkqp''		
"	Rgt'egpv'	P "
P qv'Engct '*60+'	9' "	6"
Uqo gy j cv'	42' "	33"
Engct '*5+'		
Engct '*3.4+'	94' "	5; "
Wghwpguu''		
"	Rgt'egpv'	P "
P qv'Wghw'6.7+'	8' "	5"
Uqo gy j cv'Wig/ hwi'5+'	52' "	38"
Xgt { 'Wghw' *3.4+'	87' "	57"
Wig'c'pf 'Go r j cuku'		
"	Rgt'egpv'	P "
P gxtg'Wigf '*2+'	9' "	6"
Uqo g'Go r j cuku' *3.4.5+'	68' "	47"
J gcx{\ 'Go r j c/ uku'6.7+'	68' "	47"
Ej cpi g'lp'Wig''		
"	Rgt'egpv'	P "
P qv'Wigf '*2+'	: ' "	6"
F get gcug'lp'Wig'' *3.4+'	6' "	4"
P q'Ej cpi g'lp'' Wig'*5+'	58' "	3; "
Ip et gcug'lp'Wig'' *6.7+'	75' "	4: "

, Rgtegpvcu gu'j cxg'dggp'tqwpf gf 'v'vj g'p'gctgu'vj j qng'pwo dgt''

7.6.1. Usefulness of approach

Ukz v{\ 'h'xg'r gt'egpv'qh'vj g'tgur qpf gpw'tgr qtvgf 'vj cv'c'ugrh/cuuguo gpv' dcugf 'cr r tqcej 'y cu'xgt {\ 'wghw'lp'vj gk'ctgc'qh'uwr gtxkukqp'cpf "cpqj / gt'52' 'tgr qtvgf 'vj cv'vj ku'cr r tqcej 'y cu'uqo gy j cv'wghw'08' "qh'tg/ ur qpf gpw'tgr qtvgf 'vj cv'vj g'cr r tqcej 'y cu'p'qv'wghw'lp'vj gk'ctgc'qh' uwr gtxkukqp'0E'qo o qp'v{\ r gu'qh'eqo o gpw'qp'vj g'wghw'pguu'qh'vj ku' cr r tqcej 'y gtg'vj cv'k'y cu'c'ng{\ 'v'uwr r qt'kpi "eqp'k'p'q'w'u'ko r tqxg/ o gpv.'k'r'nc'egu'tgur qpukdkk{\ 'qp'vj g'nc'egpugg.'cpf 'vj cv'k'uj qwf "dg" wugf 'lp'eqplw'p'v'qp'y kj 'qyj gt'cr r tqcej gu'cpf 'ej g'engf "d {\ 'vj g'tgi wrc/ vqt'0'

"

Promoting continuous improvement

Self-assessment is a practice which should be used by licensees to promote continual improvement. The output can give confidence that licensee's systems are being monitored.

It is always very useful and important that the licensee has the willingness, the good attitude and the capability to initiate by itself an honest self-assessment process on safety culture. This shows, by itself, a good attitude toward safety improvement even when facing very delicate and sensitive issues.

Placing responsibility on the licensee

This is self-evident. At the end of the day safe operation of the facility is the responsibility of the licensee and they have to assure themselves of the areas needing improvement. This is an area where the regulator is looking for increased leverage.

The internal challenge function is key for efficient and independent regulation.

The self-assessment approach obliges the licensee to make the safety analyses and assess them before discussing with the regulatory body.

Should be used with other approaches and monitored by the regulator

The regulator should check the plant self-assessment and use it in conjunction with other approaches.

The regulator must agree with the licensee's self-assessments.

Self-assessment should be in any process aiming at "quality" in technical and organizational matters. In all answers above the use of self-assessment as part of a quality loop has to a large part been experienced and reviewed. But as a regulatory approach on its own, no.

"

Tgr qtvgf "wughwpguu"qh'c'ugrh/cuuguuo gpv'cr r tqcej 'y cu'j ki j "cetquu"
ctgcu'qh'uwr gtxkukpp "ugg'Cr r gpf kz '7. "Vcdrg'8-00 qtg'vj cp'j cm'qh'cm'
tgur qpf gpv'u'tgr qtvgf 'vj ku'cr r tqcej "cu'xgt { "wughwlp"cm'ctgcu"gzegr v'
o cpci go gpv'u{uvgo u0"

7.6.2. Use, emphasis, and change in use of self-assessment approach

C"ugrh/cuuguuo gpv'dcugf "cr r tqcej 'y cu'tgr qtvgf "cu'wugf "d{ "cdqw"; 4' " qh'tgur qpf gpw'cetquu'cm'tgcu'qh'uwr gtxkukqp"*ugg"Vcdrg'908+0Vj g" ugrh/cuuguuo gpv'dcugf "cr r tqcej 'y cu'tgr qtvgf "cu'j cxkpi "uqo g'go r j c/ uku"d{ "cdqw'68' "qh'tgur qpf gpw'cpf "c"j gcx{ "go r j cuku'd{ "cdqw'68' " qh'tgur qpf gpw'0Vj g'o clqtkv{ "qh'tgur qpf gpw'tgr qtvgf "vj cv'vj gtg'y cu'cp" kpetgcug'kp"vj g'wug'qh'c'ugrh/cuuguuo gpv'cr r tqcej "75' -0Vj ku'y cu'vj g" qpn{ "cr r tqcej 'y j gtg'vj g'o clqtkv{ "qh'tgur qpf gpw'tgr qtvgf "cp'kpetgcug" kp'wug'0Cdqw'58' "qh'tgur qpf gpw'tgr qtvgf "pq'ej cpi g'kp'vj g'wug'qh'vj ku' cr r tqcej "kp'vj gkt'ctgc'0Cdqw'6' "tgr qtvgf "c'f getgcug'kp'wug'0"

Kp'hqv'ctgcu."o clpvgpcpeg."qr gtcv'kpu."uchgv{ "ewrwg."cpf "eqpuxwv'kqp" o qtg'vj cp'j cih'qh'vj g'tgur qpf gpw'tgr qtvgf "vj cv'vj ku'cr r tqcej "y cu" j ki j n{ "go r j cuk'gf "cpf "j cf "kpetgcugf "ugg'Cr r gpf kz'7."Vcdrg'8+00 qtg" y cp'j cih'qh'cm'tgur qpf gpw'kpf kcv'gf "vj cv'vj g'wug'qh'vj ku'cr r tqcej "j cf " kpetgcugf "kp'cm'tgcu'gzegr v'o cpci go gpv'u{ ugo u'cpf "o clqt'r r'p'v' o qf k'k'ecv'kpu'0"

7.7. Education/Influence

Fghpkkqp—*The regulator provides information and training opportunities for the industry—including workshops, feedback, research results, and other information—in order to improve industry performance.*

Vj g'o clqtkv{ "qh'tgur qpf gpw'*cm quv': 7' +tgr qtvgf "vj cv'vj g'f g'ghpkkqp" qh'cp'gf wecv'kqp kphw'gpeg"dcugf "cr r tqcej 'y cu'uqo gy j cv'engct'v'xgt{ " engct "ugg"Vcdrg'90+0J qy g'xgt."vj gtg'y gtg'o qtg'eqo o gpw'cdqw'f k/ h'eww'ku'y kj "vj g'f g'ghpkkqp"cpf "w'pf gtuc'p'kpi "qh'vj ku'cr r tqcej "f w'kpi " vj g'o g'g'kpi u'cv'vj g'ci g'pek'ku'vj cp'y kj "cp{ "qvj gt'cr r tqcej 0Qh'r ct'kw/ rct'k'p'vgt'guy'gtg'f k'uewuk'qpu'tgi ctf kpi "vj g'cr r tq'k'v'g't'q'ng'qh'vj g'tgi w' r'v'qt'y kj "tgi ctf "v'vj tgg'tgi w'cv'qt'dgi cxk'qwtu'vj cv'eqwf "dg'eqpukf/ gtgf "f'k'ht'gpv'cur gew'qh'vj ku'cr r tqcej "gf wecv'kqp l'ct'k'kpi "qh'k'eg'puggu." r tqo q'kpi "egt'v'k'p'ce'v'x'k'k'g'ul'r tqi tco u'v'q'k'eg'puggu'cpf "r tq'x'k'f kpi "kp/ h'qto cv'kqp "v'k'eg'puggu'0Vj ku'f k'uewuk'q'ku'uwo o ct'k' gf "kp'U'k'gdct'90<" Ego o w'p'k'ecv'k'p'ô k'ph'qto cv'kqp."gf wecv'kqp."k'ph'w'g'peg."cpf "r tqo q'v'k'p'0"

Cu'y kj "qvj gt'cr r tqcej gu."vj gtg'y gtg'ug'x'gt'c'ne'qo o gpw'vj cv'gz'co r'ng'u" ur g'ek'k'e'v'g'cej "ctgc'qh'uwr gtxkukqp'y q'w'f "j cxg'dggp'j g'r h'w'0"

7.7.1. Usefulness of approach

Cm quv'68' "qh'vj g'tgur qpf gpw'tgr qtvgf "vj cv'cp'gf wecv'kqp kphw'gpeg" cr r tqcej "y cu'xgt{ "w'ugh'w'k'p'vj gkt'ctgc'qh'uwr gtxkukqp"cpf "cp'qvj gt'55' " tgr qtvgf "vj cv'vj ku'cr r tqcej "y cu'uqo gy j cv'w'ugh'w'043' "qh'tgur qpf gpw'

tgr qtvgf 'y cv'y g'cr r tqcej 'y cu'pqv'wghwlp'y gk'tcgc'qh'ur gt xkukp"
 *ugg'Vcdrg'90+00 quveqo o gpw'tghgtgf "v'gkj gt 'y g'xcnwg'qh'y ku"
 cr r tqcej "cu'c'ng{ "vqnlhqt'tgi wrcvtu'qt'v'c'r tghgtgpeg'v'iko kkp'i 'y ku"
 cr r tqcej "v'kphqto cvkp'uj ctłpi 0Qy gt'eqo o gpw'kpenwf gf 'y cv'y ku"
 cr r tqcej "tgs wktgu'c'i tgcvf gcnlqh'gZR gt vkg'qp'y g'r ctv'qh'tgi wrcvtu"
 cpf 'y cv'y g'uweegu'qh'y ku'cr r tqcej "f gr gpf u'wr qp'kegpugg'ce/
 egr vpeg0'
 "

Vcdrg'90<Gf wecvkp lkpwpeg'Cr r tqcej <Entk{.'Wghwpguu'Wig' cpf 'Go r j cuku'Ej cpi g'lp'Wig'		
Entk{ 'qhf ghpksqp"		
"	Rgt'egpv"	P "
P qv'Enget '*6.7+'	37' "	: "
Uqo gy j cv' Enget '*5+'	39' "	; "
Enget '*3.4+'	8: ' "	58"
Wghwpguu'		
"	Rgt'egpv"	P "
P qv'Wghwl '*6.7+'	43' "	33"
Uqo gy j cv'Wig/ hwl '*5+'	55' "	39"
Xgt{ 'Wghwl' *3.4+'	68' "	46"
Wig'cpf 'Go r j cuku'		
"	Rgt'egpv"	P "
P gxgt 'Wigf '*2+'	45' "	34"
Uqo g'Go r j cuku' *3.4.5+'	65' "	45"
J gcx{ 'Go r j c/ uku '*6.7+'	56' "	3: "
Ej cpi g'lp'Wig'		
"	Rgt'egpv"	P "
P qv'Wigf '*2+'	39' "	; "
F get gcug'lp'Wig' *3.4+'	8' "	5"
P q'Ej cpi g'lp" Wig '*5+'	64' "	44"
Kpet gcug'lp'Wig" *6.7+'	57' "	3: "

, Rtegepci gu'j cxg'dggp'tqwpf gf "v'y g'pgctgu'v'y j qrg'pwo dgt"
 "
 "
 "
 "

"

**Uf gdct '90<Eqo o wplecvkqpô kphqto cvkqp.'gf wecvkqp.'kphwpeg.'
cpf 'rtqo qvkap'"**

"

F kweuukqpu'awi i guvgf 'vj cv'r qrekgu'cpf "gZR gevcvqpu'tgi ctf kpi 'vj g"
v{r gu'qh'eqo o wplecvkqp"cpf "kpwgtcevcvqpu'dgy ggp'hegpuggu'cpf "tgi w
rcvqtu'f khhgtgf "cetquu'ci gpekgu0Hqwt "v{r gu'eqo o wplecvkqp kpwgtcevcvqpu"
y gtg'f kweuugf '"

"

- Rtqxkukap'qh'kphqto cvkqp"
- Gf wecvkqp"
- Kphwpeg'"
- Rtqo qvkap"

"

F khhgt gpv'cur geu'qh'eqo o wplecvkqp'qh'kphqto cvkqp'y gtg'o gpvkapgf ô
eqo o wplecvkqp'qh'ko r qtvcv'gxgpw'g0 0'kpwgtcevcvqpu'gZR gtlgpeg."
gxgpw.'pgy 'tgugctej 'hkp' kpi u+"cpf 'eqo o wplecvkqp'y kj 'hegpuggu"
*o ggkpi u.'ugo kpcu-0'k'cf f kkap'v'eqo o wplecvkqp'dgy ggp'tgi wrc/
vqtu'cpf 'hegpuggu.'vj g'ko r qtvcpeg'qh'eqo o wplecvkqp'y kj 'eqv'cevcvqtu"
cpf "qy gt'tgi wrcvqtu'g0 0'gpxkqpo gpv'cni'qt'j gcmj "cpf 'uchgv'+'y cu"
o gpvkapgf 0Cp'gzco r ng'y cu'r tqxkf gf "qh'eqv'hevcvki 'tgs vkt go gpw'dg/
y ggp'cp'ci gpe{ 'hewugf "qp'y qtmr neg'uchgv' 'vj cv'y cpvgf 'ny 'ngxgnu"
qh'ej go kecn'vqtci g'cpf 'vj g'pggf "v'j cxg'j ki j 'ngxgnu'qh'y cv'ej go kecn'
cxckrdng'v'gpw'g'uchgv' "cv'y g'hecvk'0

"

Qpg'r tceveg'qhhtgf "cu'j cxkpi 'ko r tqxgf "eqo o wplecvkqp'y cu'c'r quv/
kpur gevkap'o ggkpi "dgy ggp'vj g'hegpugg'cpf 'vj g'tgi wrcvqt'vj cv'hq/
ewugf . 'kp'r ctv.'qp'vj g'ngxgn'qh'v'wuv'dgy ggp'vj g'hegpugg'cpf 'vj g'tgi w
rcvqt0Vj ku'j cu'ej cpi gf 'vj g'y c{ 'vj g{ 'f q'dwukpguu.'o cnkpi 'uwt g'k'ku"
engct'cv'y g'vej pkecn'ngxgn'cpf 'vj cv'dgj cxkqwt'r tqdrgo u'ctg'cf f tguugf 0'
k'p'r ctvewrt.'dwm' kpi "dgj cxkqwt'd{ "gk'j gt'vj g'hegpugg'qt'vj g'tgi wrcvq/
t{ 'uchh'ku'ewtckrgf 0'

"

Gf wecvkqp'y cu'o gpvkapgf "k'p'y q'y c{ uô qpg.'vj g'f gxgnr o gpv'qh"
eqo o qp'w'pf gtucv'cpf kpi "dgy ggp'vj g'hegpugg'cpf 'vj g'tgi wrcvqt'cdqw"
vej pkecn'cpf "qti cpk cvkqpcni'ctgcu0Vj ku'y cu'utguugf "k'p'qpg'eqo o gpv"
qp'vj g'ko r qtvcpeg'qh'gf wecvkqpô vj cv.'The licensee and the regulator
can communicate better if they have a common understanding of cur-
rent practices and technologies. This is improved if both are involved
in international research and other forms of technology transfer. C"
ugeqpf "vj go g'k'p'vj g'f kweuukqpu'qh'gf wecvkqp'hewugf "qp'y j gyj gt'k'y cu"
vj g'tqng'qh'y g'tgi wrcvqt'v'r tqxkf g'gf wecvkqp'v'vj g'hegpugg0Qr kpkqpu"
f khhgtgf "cetquu'ci gpekgu0"

"

Vj gtg'y gtg'f khhgtgpegu'dqy 'y kj k'p'cpf "cetquu'ci gpekgu'y kj 'tgi ctf "v"
y j gyj gt'tgi wrcvqt'uj qwf 'kphwpeg'hegpuggu'r tqce'v'xgn' "qt'ce'v'xgn' "
r tqo qv'ur gekhe'vej pqm'j kgu'qt'r tceveg0"

"

Key tool for regulators

This is a very useful approach in the safety culture (SC) area. In my experience this approach has allowed us to gain practical knowledge and experience in SC models and assessment techniques, along with the possibility of achieving a common understanding with the licensees.

Always useful to work at developing a shared understanding and to develop the knowledge of both organizations.

It is very useful in achieving a proactive regulation. Pro-activity shall be used in order to prevent that foreseeable challenges in safety generates a risk. Influencing is always better than formal enforcement.

Providing information

This approach is mostly used to provide information and explanation to the public through consultation of regulatory documents and public hearings. Sometimes the licensees will ask questions for clarification of the exact meaning of certain requirements.

The regulator can use this method to ensure that licensees are informed of problems that are identified by other licensees or through international experience.

I don't believe it is the regulator's purpose to provide information or training opportunities but may help facilitate these.

Requires a great deal of experience

The approach requires great experience and specialized knowledge of the regulator. The regulator could know the difference in the maintenance practices across licensees, the international standards and the experiences of other plants.

Depends upon licensee acceptance

The regulator suggestions for different approaches and some information are normally well accepted by the licensee.

The approach has been useful but is inadequate where senior site leaders are dismissive and recalcitrant and regulatory "teeth" are needed.

"

*T gr qt vgf "rgx gnu"qh'wughwmpguu'xctkgf "cetquu'ctgcu"qh'uwr gtxkukqp"b"ugg"
Crr gpf kz "7."Vcdrg"9+0J ch'qt"o qtg"qh'vj g'tgur qpf gpw'lp"vj g'ctgcu"qh'*

o cpci go gpv'u{uigo u."uchgv{ "ewmwg."r rcpv'rhg"gz vgpukqp."r qy gt "wr " tcvu."cpf "o clqt"r rcpv'o qf kkecvkqp'tgr qt vgf "vj ku'cr r tqcej "cu'xgt { "wug/hw0k"vj g'ctgc"qh'o cpci go gpv'u{uigo u."cdqw'j ch'qh'vj g'tgur qpf gpw' *6"qh9+tgr qt vgf "vj cv'vj ku'cr r tqcej "y cu'xgt { "wughw=vj g'tguv'qh'vj qug" tgr qt vki "kp"vj ku'ctgc"5"qh9+tgr qt vgf "vj cv'k'y cu'pqv'wughw0

7.7.2. Use, emphasis, and change in use of education/influence approach

Cp"gf wecvkqp lphwvpeg"cr r tqcej "y cu'tgr qt vgf "cu'wugf "d{ "qxgt"97' "qh' tgur qpf gpw'cetqu'cm'ctgcu'qh'uwr gtxkukqp"*ugg"Vcdrg"90-0Vj g'gf wec/ vkqp lphwvpeg"cr r tqcej "y cu'tgr qt vgf "cu'j cxkpi "uqo g'go r j cuku'd { " cdqw'65' "qh'tgur qpf gpw'cpf "c'j gcx { "go r j cuku'd { "cdqw'56' "qh'tg/ ur qpf gpw'0Vj g'o quv'tgur qpf gpw'tgr qt vgf "vj cv'vj gtg'y cu'pq'ej cpi g'kp" vj g'wug'qh'vj g'wug'qh'vj g'gf wecvkqp lphwvpeg"cr r tqcej "*64' -0Cdqw' 57' "qh'tgur qpf gpw'tgr qt vgf "cp"ketgcug"kp"vj g'wug'qh'vj ku'cr r tqcej "kp" vj gk'ctgc0Cdqw'8' "tgr qt vgf "c"i getgcug"kp"wug0"

J ch'qt"o qtg'qh'vj g'tgur qpf gpw'kp"vj g'ctgcu'qh'o cpci go gpv'u{uigo u." uchgv{ "ewmwg."cpf "eqput wecvkqp'tgr qt vgf "vj cv'vj ku'cr r tqcej "y cu'j gcxk/ n{ "go r j cuk' gf "*ugg"Cr r gpf kz "7."Vcdrg"9-0k"vj g'ctgc"qh'o cpci go gpv' u{uigo u."cdqw'j ch'qh'vj g'tgur qpf gpw'*6"qh9+tgr qt vgf "vj cv'vj ku'cr/ r tqcej "y cu'j gcxk{ "go r j cuk' gf =vj g'tguv'qh'vj qug'tgr qt vki "kp"vj ku'ctgc" *5"qh9+tgr qt vgf "vj cv'k'y cu'pqv'wugf 0k"petgcugf "wug'qh'vj ku'cr r tqcej " y cu'tgr qt vgf "d { "j ch'qt"o qtg'qh'vj g'tgur qpf gpw'kp"uchgv{ "ewmwg"cpf " eqput wecvkqp0"

7.8. Responses to “Additional comments” and “Should other approaches to regulatory supervision be added?”

Tgur qpf gpw'r tqxkf gf "i gpgtcrleqo o gpw'qp"vj g'uwwf { "cpf "qp"vj g'wug" qh'cr r tqcej gu'cu'y gm'cu'eqo o gpw'qp"y j gj gt "cf f kkkqpcn'cr r tqcej gu" uj qwf "dg'cf f gf 0Uqo g'i gpgtcrleqo o gpw'cdqw'cr r tqcej gu'y gtg'wugf " vj tqwi j qw'vj g'tgr qt 0k"cf f kkkq"vj gtg'y gtg'eqo o gpw'tgi ctf kpi "qy / gt"grgo gpw'vj cv'uj qwf "dg"lpenmf gf "kp"vj g'f kuewukqpô uwej "cu'r tqce/ vxg"cpf "tgcevxg"cr r tqcej gu0C"pwo dgt'qh'tgur qpf gpw'pqv'gf "vj cv'vj g" rku'y cu'sksg"eqo r rvg=qvj gtu"j cf "ur gekhe"uwi i gukqpu'ht"cf f kkkqpcn' cr r tqcej gu0Uqo g'qh'vj g'uwi i gukqpu'ht"cf f kkkqpcn'cr r tqcej gu'kp/ enmf gf 0"

I qcn'ugvki <I would appreciate some development of the so called goal setting regulation, from my point of view it can be seen as a blend of outcome and performance oriented approach, and perhaps more suitable for the case. Goal setting (fixed by regulation) requires from the utilities to set standards and procedures to fulfil the expected

outcome, that is, to demonstrate how these are achieved. The implementation of a goal setting regulation is inextricable of a self-assessment process.

Equidgpgtk *"I think in some cases cost benefit regulation could be useful, but mainly in order to prioritize necessities.*

Eqo o wplecvkp *"Public consultation/hearing"*

"

""

"

"

8. Summary and concluding remarks

8.1. Summary

Vj ku'tgr qtvr t gupw'vj g' hpf kpi u'ltqo "c"4233 B4"uwf { "ur qpuqtgf "d { " yj g'Uy gf kuj "Tcf kckqp"Uchgv{ "Cwj qtkv{ "UOO +0Vj g'r wtr qug"qh'vj g' uwf { "y cu"vq"dgwgt "wvf gtucpf "yj g'wug. "dgpghku"cpf "f hhwkku"qh'f kh/ hgtgpvtgi wrcvt { "cr r tqcej gu'ht"tgi wrcvt { "uwr gtxkukqp"qh'eqo o gtekn/ pwerget'r qy gt "uchgv{ 0Vj g'uwf { "wugf "yj g'tguwu'ltqo "cpf "hmqy gf "wr " qp"cr r tqgcv'ur qpuqtgf "d { "yj g'Uy gf kuj "P werget "Rqy gt "Kpur gevqtcv" *UMK"pqy "r ctv'qh"UOO + "vj cv'y cu'eqo r rvgf "kp"4225 I26"UMKT gr qt v' 4227-59+0Vj g'uwf { "y cu"kpvgpvkpcmf "gzr rqtcvqt { "kp" f guki p"cpf "yj g' tguwu'uj qarf "dg"eqpukf gtgf "cu"kp r w'ht "hwtj gt "y qtmtevj gt "yj cp" f g/ hpkxg"qweqo gu'Ur gekhe "i qcu'y gt g"vq"uwtxg { "gzr gtlgpeg"qh'tgi wrc/ vqt { "uchh"cdqw'vj g'ghgevkxgpguu"cpf "eqpugs wpegu"qh'f hhtgpv'cr / r tqcej gu'vq"tgi wrcvt { "uwr gtxkukqp"cpf "cdqw'vj g'wughwpguu. "wug. "cpf " ej cpi gu"kp"cr r tqcej gu'wugf "ht"tgi wrcvt { "uwr gtxkukqp"kp" gki j v'ctgeu" qh'tgi wrcvt { "qxgtuki j v' o cpci go gpv'u{ ugo u. "o ckpvgpcpeg. "qr gtc/ vkpu. "uchgv{ "ewwtg. "r rpv'htg"gzvgpukqp. "o clqt "r rpv'o qf khlecvkpu. " r qy gt "wr "tcvgu. "cpf "eqputwevkp0' "

Uxgp"cr r tqcej gu'vq"tgi wrcvkp"y gtg"gxcmvcvf "d { "yj g'r ctv'ekr cpw'kp" yj g'4233 B4"uwf { 0' "

- Rtguetkr vxg""
- Hcekv{/dcugf ""
- Qweqo g/dcugf ""
- Tkun/kphqto gf "qt"j c| ctf ""
- Rtqegu"
- Ugrh/cuuguuo gpv""
- Kpnhwpeglgf wecvkp""

C"y tkwgp"s wguvkppckt g'y cu'wugf "vq"uwtxg { "gzr gw'ltqo "ci gpeku'tgi / wrcvpi "pwerget'r qy gt "kp"hxg"eqwv'kgu<Uy gf gp. "Ur ckp. "yj g'Wpkgf " Ucvgu. "Epcfc. "cpf "yj g'Wpkgf "Mkpi f qo 0Hhkv{/hwt"s wguvkppckt gu" y gtg'tgwtpgf "dgwy ggp" Hgdtwct { "cpf "Lwn{ "qh"42340Hmqy /wr "o ggv/ kpi u'y gtg"j grf "cv'gcej "ci gpe { "vq" f kuewu'vj g'kpkkcn't guwu'qh'vj g'uw/ xg { "kp"Qevdgt"cpf "P qxgo dgt. "42340" "

Vj g'uwf { "y cu'pqv'kpvgpf gf "vq" hpf "qpg"ödguö"cr r tqcej "qt"ugv'qh'cr / r tqcej gu'ht"tgi wrcvkp"pqt "vq"r tqf weg'r tqqh'qh'vj g'ghkece { "qh'cp { "qpg" cr r tqcej "qt"ugv'qh'cr r tqcej gu'0K'y cu'kpvgpf gf "vq" gpeqwtci g'f kmqi wg" cdqw'tgi wrcvt { "cr r tqcej gu'cpf "vq"u{ ugo cv'ecmf "eqngev'kphqto cvkqp" cdqw'j qy "f hhtgpvtgi wrcvt { "cr r tqcej gu'ctg'wugf "kp"qtf gt "vq"dwkf "c" dgwgt "wvf gtucpf kpi "qh'vj g'ko r ceu'qh'wulpi "xctkqwu"cr r tqcej gu. "ko / r tqxg"vj g'vqqu"cxckrdng"vq"tgi wrcvtu"cpf "vq"ko r tqxg"eqo o wplecvkqp"

cdqw'vj gug'vqnu'y kj kp'cpf'cetquu'ci gpeku0Vj g'tgr qtv'uwo o ctk' gu'
tgr qpugu'cpf'kf gp'khu'vj go gu'cetquu'vj g'tgr qtv'gf "gZR g'kpegu'qh"
gZR g'v'u'vj cv'o c'f'r tqxkf g'kpuki j v'u'v'q'tgi wrcvt' { 'ci gpeku'y kj 'tgi ctf 'vq'
uwr gtxkqt' { 'r tcevegu0"
"
"

Mg' 'hpf kpi u''

*Regulatory supervision is an iterative and dynamic process that uses combinations of approaches as tools to address the complexity of regulatory supervision*0Vj g'gZR g'v'u'wtxg' gf 'd' { 'vj g's wgu'kppck'g'
cpf' 'kpen'f gf 'kp'f k'uewuk'qpu'cv'o g'g'kpi u'v't'guug'f 'vj cv't'gi wrcvt' { 'uwr g't/
xkuk'p'ku'c'f' { pco k'r tqegu'cpf' 'vj cv'vj g'cr r tqcej gu'dgkpi 'gzco k'p'gf 'kp'
vj ku'wtxg' { 'y g't'ko r qtv'cpv'cpf' 'guug'p'v'cn'v'qnu'o wug'f'k'gt'cv'x'gn'f' 'cpf' 'kp'
eqo d'k'p'cv'k'p'v'q'cf'f't'guu'vj g'eqo r ngz'kv' { 'qh't'gi wrcvt' { 'uwr g't'x'kuk'p'0'
Vj gug'cr r tqcej gu'y g't'g'r t'gug'p'v'gf' 'cu'eqo r ngo g'p'v'ct' { 'o p'q'v'eqo r g'v'
kpi o y c' { 'u'qh'o c'pci kpi 'tgi wrcvt' { 'r tcevegu0"
"

*All of the approaches were used and considered useful*0Cm'qh'vj g'
cr r tqcej gu'y g't'g'wug'f' 'cpf' 'eqpuk'f' g't'gf' 'wugh'w'id' { 'vj g'o clqt'k'v' { 'qh't'g/
ur qpf' g'p'u'cpf' . 'qxgt'cm' t'gur qpf' g'p'u' t'gr qtv'gf' 'vj cv'lp'vj g'k' "gZR g'kpegu'
vj g't'g'j' cf' "dggp'cp'k'pet'g'cug'kp'vj g'wug'qh'vj gug'cr r tqcej gu'kp' t'gi wrcvt' { "
r tceveguo uwi i gu'kpi 'vj cv'vj g'wug'qh'vj gug'cr r tqcej gu'j' cu'dgego g'
o q't'g'g'u'cd'ruk'j' gf' 'qxgt'v'ko g'0Cm'j' qwi j 'vj g't'g'y cu'x'ct'k'v'k'p'kp'vj g'ng'x'gn'
qh'wug'cpf' t'gr qtv'gf' 'wugh'w'p'guu'qh'ur gek'ke'cr r tqcej gu'cet'quu'ct'g'cu'qh'
t'gi wrcvt'k'p' . 'vj g't'g'y cu'u'qo g'wug'cpf' t'gr qtv'gf' 'wugh'w'p'guu'ht'g'cej' "cr /
r tqcej 'y kj kp'g'cej' 'qh'vj g'g'ki j v'ct'g'cu'qh'uwr g't'x'kuk'p'0'
"

*The effectiveness and efficiency of any approach was tied to how appropriate it was to the specific characteristics of the case*0Vj g'cr /
r tqcej gu'wug'f' 'cpf' 'qxgt'cm'q'weqo g'qh'vj g't'gi wrcvt' { 'uwr g't'x'kuk'p'f' g'
r g'p'f' gf' 'qp'vj g'ej' ct'ce'v't'k'v'k'eu'qh'vj g'ecug'o k'pen'f' kpi 'vj g'gZR g'kpegu'qh'
vj g'ne'gp'ugg'cpf' 'vj g't'gi wrcvt' . 'vj g'uch'gv' { 'uki p'k'ke'c'peg'qh'vj g'ku'wg' . 'vj g'
ng'x'gn'qh't'w'u'lp'vj g'ne'gp'ugg'lt'gi wrcvt' t'g'rc'v'k'p'uj' k' . 'cpf' 'vj g'eqo r g'v'p'eg'
qh'vj g'ne'gp'ugg'cpf' 'vj g't'gi wrcvt'0E'qo o g'p'u'd' { 't'gur qpf' g'p'u' uwi i g'v'gf' "
vj cv'cm'cr r tqcej gu't'gs w'kt'g'gZR g't'v'k'g'cpf' t'gu'q'w't'eg'cu'cpf' 'vj cv'vj g'ng'x'gn'
f'gr g'p'f' u'qp'vj g'ur gek'ke'ecug'0Q'p'g'ko r ne'cv'k'p'qh'vj g'f' k'uewuk'qpu'qp'
t'gu'q'w't'eg'cu' y cu'vj cv'ej' q'q'k'pi 'vj g'y t'q'pi' "cr r tqcej 'ht'vj g'ekt'ewo u'c'p'egu'
qh'vj g'ecug'k'pet'g'cug'f' t'gu'q'w't'eg't'gs w'kt'go g'p'u'0'
"

*Many of the findings from the 2003/04 study were supported by the findings in the 2011/12 study*0O qu'v'h'p'f' kpi u'ht'qo 'vj g'g'ct'rt'gt' u'w'f' { 'o
k'pen'f' kpi 'vj g'd'g'p'gh'ku'cpf' f' k'h'k'ew'nk'gu'cu'q'ek'v'gf' 'y kj "ur gek'ke'cr /
r tqcej gu'vj g'wug'qh'cr r tqcej gu'kp' t'gi wrcvt' { 'uwr g't'x'kuk'p' . 'cpf' 'u'qo g'qh'
vj g'eq'p'ugs w'p'egu'cpf' 'ku'w'gu't'gi ctf' kpi 'vj g'wug'qh'f' k'h'gt'g'p'v'cr r tqcej /
gu'o y g't'g'uwr r qtv'gf' "d' { 'vj g'4233 B4' u'w'f' { '0'
""

Vj g'dgpgkhu'cpf 'f khlwng'gu'qh'vj g'cr r tqcej gu'tgr qtvgf 'd { 't'gur qpf /
gpw'lp'vj g'4233 B4'uwf { 'y gtg'uko krc'v'vj qug'tgr qtvgf 'd { 't'gur qpf /
gpw'lp'vj g'4225 B6'uwf { . 'vj gug'kpenmf gf "

- Rtguetkr vkg'cr r tqcej gu'j cxg'vj g'cf xcpwci g'qh'dgkpi "ergct"cpf "vj g"
f kucf xcpwci g'qh'dgkpi "kphrgzkdng0Vj g { 'ctg'uo gko gu'wugf "v'gzgtv"
tgi wrcvt { "cwj qtkv'0"
- Hcekv'cr r tqcej gu'cmqy 'tgi wrcvtu'v'cf f tguu'wpls wg'kuwgu'cpf "
ej ctcevtkuk'eu'qh'r rcpw'dw.'kp'o qu'ecugu.'tgi wrcvtu'r tghgt "v'wug"
qxgtcej kpi 'tgs wkt go gpw'cetquu'rkpuggu0"
- Qweqo g'cr r tqcej gu'gpeqwtci g'rkpuggu'v'ko r tqxg'r rcpv'r gt/
hqto cpeg'cpf 'r rceg'vj g'tgur qpukdkv' "hqt'uchgv' 'y kj 'vj g'rkpugg0"
Qweqo g'o gcuwtgu.'j qy gxgt.'ctg'qhg'p'f khlwng'v'kf gpv'kh'0"
- Tkunlj c| ctf "cr r tqcej gu'hqewu'tgi wrcvt { "cvgpv'kp'cpf 'y gtg'uggp"
cu'ko r tqxkpi "uchgv' 'r gthqto cpeg00 gj qf u'hqt 'tkunl'cpf 'j c| ctf "
cpcn'uku'j cxg'iko kv'kpu'vj cv'ctg'uo gko gu'qxgtmqngf "cpf "ecp"
tguw'lp'uo g'ctgcu'tgegk'kpi "rkwr'qt'pq'cvgpv'kp'0"
- Rtqegu'cr r tqcej gu'ctg'etk'ecnl'ht'kf gpv'kh'kpi "hg { "grgo gpw'ht"
uchgv' "o cpci go gpw'0C'f khlwng' 'y kj 'r tqegu'cr r tqcej gu'ku'vj g"
eqo r rgzkv' "qh'f ghk'kpi "cpf "gxcn'v'kpi 'r tqegu'gu0"
- Ugrh/cuuguu gpv'cr r tqcej gu'y gtg'uggp'cu'r tqo qv'kpi "eqpv'pwqwu"
ko r tqxgo gpv'd { "rkpuggu'dw'uj qwf "pqv'dg'c'ucpf /cm'pg'cr /
r tqcej . 'uj qwf "dg'o qpkqtgf "d { 'vj g'tgi wrcvt. "cpf "o c { "pqv'j cxg"
etgf kdkv' 'y kj 'vj g'r wdk'0"
- Gf wcv'kp'lp'hw'p'eg'ku'wug'w'lp'k'v'qf welpi "pgy 'r tqi tco u'cpf "
eqo o wplec'kpi 'y kj 'vj g'rkpugg'cpf 'vj g'r wdk'0F khlwng'gu'lp/
enmf g'y cv'k'ecp'tgs wkt g'c'i tgc'v'f gcn'qh'tgi wrcvt "g'zr g'k'p'eg'cpf "k"
f gr gpf u'wr qp'rkpugg'ceegr v'peg0"

Tgur qpf gpw'lp'dqj "uwf kgu'pqvgf "vj cv'cr r tqcej gu'y gtg'wugf "kp'eqo /
dk'p'v'kp'v'q'cej kxg'tgi wrcvt { 'i qcn'cpf 'vj cv'c'r tguetkr vkg'cr r tqcej "
y cu'wugf "hqt'cev'kp'cpf 't'guq'w'kp'0Uwi i gu'k'pu'qh'eqph'ev'cpf "vgp'k'p"
tgi ctf kpi 'vj g'wug'qh'uo g'cr r tqcej gu'htqo "vj g'4225 B6'uwf { 'y gtg"
pqv'g'xkf gpv'lp'vj g'4233 B4'uwf { 0Gki j v'ur gek'le's wgu'k'pu'tgi ctf kpi "
vj g'eqp'ugs w'p'egu'qh'tgi wrcvt { "cr r tqcej gu'f g'k'x'gf "htqo "vj g'4225 B6"
uwf { 'y gtg'k'penmf gf "kp'vj g'4233 B4'uwf { ô m'ewu'qh'r tko ct { 't'gur qpuk/
dkv' "hqt'uchgv' . 'erctk'v' "qh'tgs wkt go gpw.'t'guq'w'kp'qh'uchgv' "kuwgu."
g'zr g'v'ug'tgs wkt gf . 't'guq'w'egu'wugf . 'hrgz'kdkv' . 'r wdk' "etgf kdkv' . "cpf "
uchgv' "ewm'w'g'0k'p'i gp'g'cn'eqo o gpw'uw' i gu'gf "vj cv'vj gug'eqp'ugs w'p'e/
gu'y gtg'o qtg't'gr'v'gf "v'vj g'ej ctcevtkuk'eu'qh'vj g'ecugô gur gek'm' "vj g"
g'zr g'k'p'eg'qh'vj g'rkpugg'cpf 'vj g'tgi wrcvt'cpf 'vj g't'gr'v'kp'uj kr "dg/
y ggp'vj g'rkpugg'cpf 'vj g'tgi wrcvtô vj cp'v'vj g'cr r tqcej "qt'eqo dk/
p'v'kp'qh'cr r tqcej gu'wugf 0"

Circumstances affect the outcomes of regulatory supervision. C
pwo dgt'qh'ekewo ucpegu'y gtg'p'q'vgf "kp'eqo o gpw'd { 't'gur qpf gpw'v'q"
vj g's wgu'k'p'p'ck'g'cpf "kp'vj g'f ku'w'k'pu'cv'ci g'p'ek'gu'0Vj gug'k'penmf gf "

gZR gtlgpeg."ej ctcevtkueu"qh'vj g'lpf wux { . 'vj g'wug"qh'eqpvtcevtu."eq/
 qr gtcvqp"cpf "ci tgggo gpv'dgy ggp'vj g'tgi wrcvt"cpf "vj g'rlgpegg."ej ct/
 cevtkueu"qh'vj g'ecug"cpf "vj g'r gthqto cpeg'rgxgn'qh'rlgpeggu"cpf "tgi w
 rcvtu0Vj g'ektewo ucpegu'vj cv'y gtg'o quv'qhngp'o gpv'qpgf "cu'j cxlpi "c"
 uki pklcqv'ko r cev'y gtg"gzr gtlgpeg"kp"cf f kklp"vq"eqqr gtcvqp"cpf "
 ci tgggo gpv'dgy ggp'vj g'rlgpegg"cpf "vj g'tgi wrcvt0"
 "

Vj g'ko r qt'cpeg"qh'gzr gtlgpeg"cpf "rguuqpu'ngctpgf "y cu"go r j cuk gf "
 vj tqwi j qw'vj g'eqo o gpv'd { 'tgr qpf gpwō dqvj "kp'tghgtgpeg"vq'vj g"
 ej qlg'qh'cr r tqcej "wugf "vq"cf f tguu"r ct'kewct'kuuwg"cpf "vj g'ghgexg"
 ko r ngo gpv'qpgf "qh'cr r tqcej gu'lp'tgi wrcvt { 'r tceveg0Gzr gtlgpeg'y cu"
 vj g'ej ctcevtkueu"o quv'qhngp'o gpv'qpgf "cu"ektewo ucpeg'vj cv'y qwf "
 j cxg'chgevgf "vj g'qweqo g'qh'vj g'ecug0Vj g'ko r qt'cpeg"qh'gzr gtlgpeg"
 qh'rlgpeggu."eqpvtcevtu."cpf "tgi wrcvtu'y cu'pqvgf 0"
 "

Vj g'rgxgn'qh'eqqr gtcvqp"cpf "ci tgggo gpv'dgy ggp'vj g'rlgpegg"cpf "vj g"
 tgi wrcvt'y cu"o gpv'qpgf "cu'kphngpeki "vj g'cr r tqcej "ugrgevgf "vq"cf /
 f tguu"r tgi wrcvt { "eqpegtp"cpf "cu'j cxlpi "c"utqpi "ko r cev'qp'vj g'tg/
 uqwtegu'wugf 0"
 "

Vj tgg'kuuwgu'y kj "c'uki pklcqv'ko r cev'qp'vj g'ghgexgpguu"qh'tgi wrcvt/
 t { 'r tceveg//tgi ctf'nguu'qh'vj g'cr r tqcej "wugf //go gti gf "f wtkpi "vj g'f ku/
 ewuukpu'cv'tgi wrcvt { "ci gpeku"

- vj g'ko r qt'cpeg"qh'vj g'cr r tqej tcv'rgxgn'qh'tgi wrcvt { "cwj qtkv { 'cpf "
 vj g'ko r quklp"qh'o cpf cvqt { 'tgs vkt go gpw"
- vj g'ko r qt'cpeg"qh'r tqxkf kpi "engct'tgi wrcvt { "gzr gev'kpu'tgi ctf /
 nguu'qh'vj g'cr r tqcej "wugf "
- vj g'v { r g'qh'eqo o wplecvqp"qt'kpwgtcecvqp"gpi ci gf "kp'd { "vj g'tgi wrc/
 vt { "ci gpe { //kphqto cvqp."gf wecvqp."kphngpeg."qt'r tqo qvqp"

Vj gug'kuuwgu"o gtk'cf f kklpcn'tgkgy "cpf "f kuwukqp0"

8.2. Concluding Remarks

Vj g'r wtr qug'qh'vj ku'uwf { "y cu'vq"i clp"o qtg'u { ugo cvk'wpf gtucpf /
 kpi "qh'gzr gtlgpeg'y kj "f khtgtpvtgi wrcvt { "cr r tqcej gu'cpf "r tcevegū
 vj gkt'ugrgevgf."vj gkt'wug."cpf "vj gkt'qweqo guō uq'vj cv'tgi wrcvtu'ecp"
 dgwgt'wug'vj go "cu'vqqu'vq"gpwgt'uchgv { 0Vj g'uwf kgu'y gtg'kpwpgf gf "vq"
 gpeqwtci g'f kcmi wg'cdqww'tgi wrcvt { "cr r tqcej gu'cpf "vq"u { ugo cvkcm { "
 eqmgevlkphqto cvqp"cdqww'j qy "f khtgtpvtgi wrcvt { "cr r tqcej gu'ctg"
 wugf 0Vj g'cpv'kcv'v'g'xcnw'qh'vj gug'uwf kgu'y cu'vj cv'vj g { "y qwf "cmqy "
 tgi wrcvtu'vq'dg"o qtg'kpwgtcecvqp"cpf "kphqto gf "kp'vj gkt'ej qlg'qh'cr /
 r tqcej gu."ko r tqxg"eqo o wplecvqp"cetquu'tgi wrcvt { "ci gpeku"cpf "
 dgwy ggp'tgi wrcvtu'cpf "rlgpeggu"cdqww'cr r tqcej gu'vq'tgi wrcvt { "uw
 r gtxkukqp."cpf "vq'r tqxkf g'ecug/dcugf "kphqto cvqp"qp'vj g'wughmpguu."
 wug'cpf "ej cpi g'kp'uqo g'tgi wrcvt { "cr r tqcej gu0"

"

Vy q'ko r rkecvkqpu'qh'yj ku'uwwf {ô dcugf "qp'yj g'qxgtcm'wughwpguu'qh"
yj gug'cr r tqcej gu'cetquu'cm'tgcu'qh'uwr gtxkukqp"cpf "yj g'go r j cuku'qp"
yj g'pggf "v'wug'yj gug'cr r tqcej gu'kgtevkxgn{ "cpf "kp"eqo dlpvcvqp"v'cf /
ftguu'f khgtgp'v'ektewo ucpegu"cpf "gngo g'p'v'qh'tgi wrcvqt { "uwr gtxk
ukqpô ctg"3+"yj cv'tgi wrcvqt { "ci gpekgu'uj qwf "dg'hgzkdng'kp'r qitekgu"
tgi ctf kpi "yj g'cr r tqcej gu'cpf "4+"yj cv'cm'cr r tqcej guô kpenwf kpi "yj gkt"
dgpghku"cpf "f khlewngkuô uj qwf "dg'ico kktct"v'tgi wrcvqt { "uwhi'kp'cm'
ctgcu0'
"

"

Vj g'ko r qtvcpvg'qh'tgi wrcvki "uchgv{ "o cngu'k'uwr tkukpi "yj cv'o qtg'j cu"
pqv'dggp'f qpg'v'g'xcmv'g'cpf "eqf kh{ "j qy "tgi wrcvqtu'y qtn0Vj g'dguv"
tgi wrcvqt { "r tceveg'ku'pqv'oeqo o qp'ugpugö0T gi wrcvqp'tgs vkt gu'cf /
ftguukpi "eqo r ngz "kuwgu'yj cv'kpxqkxg'f { pco ke'u{ uvgu u'qh'v'ej pqm{ {."
qti cpl'cvkqpu."cpf "r gqr ng0Vj g'tguwuu'qh'yj ku'uwwf { "uwi i guv'yj cv'yj gtg"
ku"e'i tgcvf gcn'qh'g'zr g'k'peg'y kj "wukpi "yj gug'cr r tqcej gu'cpf "qyj gt"
vqqu'kp'cf ftguukpi "yj g'ej cmgpi gu'qh'tgi wrcvqt { "r tceveg0Vj g'eqo /
o g'p'v'cpf "f k'ewuukqpu'tghgevgf "c'y gcnj "qh'hguuqpu'ngctpgf "cpf "
yj qwi j vhwitghgevkqp'd { "r ctv'ekr cvkpi "g'zr g'w'qp"j qy "yj g'r tceveg'qh"
yj g'tgi wrcvqt { "ci gpe { "kphwpgpegu'uchgv{ "kp'pwengct'r qy gt"qr g'cvkqpu0C"
eqp'v'p'wgf "f kmj w'cdq'w'yj g'r tceveg'qh'tgi wrcvqp"v'cuuwtg'uchgv{ "ku"
ko r qtvcpv0"
"

"

"

"



Appendix 1

S wguvkppck g<E wt t gpv'r t cevegu'lp 'vj g't gi we vkqp'qh'pweigt 'r qy gt " r nepvu'lp'o cpci go gpv'lf ugo u'

Vj ku's wguvkppck g'cum'cdqaw'vj g'cr r tqcej gu'wugf 'lp'tgi wevqt { 'qxgtuki j v'qh'o cpci go gpv'lf ugo u' hqt'qr gtcvkpu' [qw'j cxg'dggp'ugrgev'f 'd { " { qwt'ci gpe { "dcugf "qp" { qwt'g'zr gt vkug'lp'vj ku'ctgc' [qwt' cpuy gtu'uj qwf 'tghgev' { qwt'r gtuqpcn'g'zr gtlgpegu'cpf 'qr lpkqpu'cpf 'y knipqv'pgeguuctkn' { tgr tgu'gpv' g'kj gt " { qwt'ci gpe { "qt" { qwt'eqngci wgu' }

Vj g's wguvkppck g'cum' hqt'cp'cuuguo gpv'qh'vj g'cr r tqcej "qt'eqo d'lp'vkqp'qh'cr r tqcej gu'wugf 'lp'vj g' h'p'ev'vkpcn'ctgc' C' h'ku'qh'cr r tqcej gu'y kj 'f gh'pk'k'qpu'cpf 'gzco r ngu'ku'c'wcej gf "cu'vj g'ruv' ci g'qh' vj ku'f qewo gpv' R'rgcug'tgxlgy 'vj g'f gh'pk'k'qpu'cpf 'gzco r ngu'dghqt'g'dgi k'p'k'pi 'vj g's wguvkppck g'cpf " tghgt'v'q'vj g'ruv'cu'pggf gf "cu" { qw'eqo r ngv'vj g's wguvkppck g'k'v'ku' r qt'v'p'vj cv' { qw'wug'vj g'ruv'cpf 'f gh'pk'k'qpu'qh' cr r tqcej gu'f tqxkf gf ' }

Vj g'w'xtxg' { 'ku'qti c'pk' gf 'lp'vj tgg'r ctu. "

- Rctv'K'cum'vj cv' { qw'i kxg'vy q'dt'kgh'gzco r ngu—qp'g'gzco r ng'qh'c'uweeguuhw'it'gi wevqt { l'p'vgt'x'gp'vkqp'cpf 'q'pg'qh'c' h'gu'u'weeguuhw'it'gi wevqt { 'l'p'vgt'x'gp'vkqp'cpf 'v'q'cpuy gt's wguvkpu tgi ctf k'pi 'g'cej 'qh'vj gug'gzco r ngu' }
- Rctv'K'K'gs wgu'u' b' qt'g'i g'p'gt'c'nl'k'p'ht'go c'vkqp'cdqaw'vj g'w'w'cn'cr r tqcej gu' { qwt'ci gpe { "wugu'v'q' c'f'f' t'gu'u' b' cpci go gpv'lf ugo u' }
- Rctv'K'K'gs wgu'u' { qwt'qr l'p'k'q'p'tgi ctf k'pi 'vj g'qxgt'cm'f gh'pk'k'q'p'cpf 'w'ugh'w'p'gu'u'qh'vj g' cr r tqcej gu'wugf 'lp'vj ku'uwf { 'y kj 'tgi ctf 'v'q'vj g'tgi wevqt " h'o cpci go gpv'lf ugo u' }

O quv's wguvkpu'cum' hqt'g'kj gt'c'y tkw'p'tgur qpug' "hqt'gzco r ng. "c'f' guet'kr vkqp'qh'c'ecug+'qt'c'tgs wgu'w'ht'c'ugv' t'gur qpug'ecv'gi qt { 'hqt'vj g's wguvkp' "hqt'gzco r ng' "1" "hqt'ny = "3" "hqt'b' gf kwo = "7" "hqt'j' ki j +y kj 'vj g' qr r qt'w'pk' { 'v'q'r tqxkf g'eqo o gpv'cdqaw'vj g's wguvkp'qt'vj g'cpuy gtu'Gzco r ngu'cpf 'eqo o gpv'y knid'g'wugf 'lp' vj g'cp'cn' { uki'cpf 'b'c' { 'dg'r cter'j' t'cugf 'lp'vj g'tgr qt'v' Vj g'tgr qt'v'y knipqv'eq'p'v'cl'p'cp' { 'k'f'gp'v'k'igt'u'qt'c'w'k'd'w'k'p'u'v'q' k'p'f'k'k'f'w'cu. 'ci g'p'ek'g'qt'eq'w'p'v'k'g'u'q'vj gt'vj cp'c'emp'qy ng'f' i' k'pi 'vj g'r ct'v'ek' c'vkqp'qh'vj g'ci gpe { '0' h'p'f' k'pi u'ht'qo " vj ku'uwf { 'y knid'g'r t'gug'p'v'f 'cu'vj g'qr l'p'k'q'p'u'qh'g'zr gtu'cpf 'p'q'v'cu'vj g'r qu'k'k'p'qh'cp' { 'r ct'v'ew'rt'ci gpe { '0' }

[qwt 'dceni t qw'pf "

P co g<|erlenj' gt g'v'q'gpvgt'v'gz v_ "

E wt t gpv'Rqu'k'q'p<|erlenj' gt g'v'q'gpvgt'v'gz v_ "

Qvj gt 'r qu'k'k'p'u'j gf 'lp'vj g'r cu'32' { gct u<|erlenj' gt g'v'q'gpvgt'v'gz v_ "

P wo dgt 'qh' { gct u'y qt n'k'pi 'lp'vj " pweigt 'r qy gt 'ct gc "g'k'j gt 'lp'tgi we vkqp'qt 'lpf wum { +<|erlenj' gt g'v'q'gpvgt'v'gz v_ "

P wo dgt 'qh' { gct u'y qt n'k'pi 'cu'e'tgi wevqt "lp'ep' { 'ct gc'qh'f'gi we vkqp+<|erlenj' gt g'v'q'gpvgt'v'gz v_ "

P wo dgt 'qh' { gct u'y qt n'k'pi 'cu'e'pweigt 'r qy gt 'tgi wevqt<|erlenj' gt g'v'q'gpvgt'v'gz v_ "



Part I: Example of a successful case

Please provide a brief description of an example of a regulatory action regarding management systems that had a positive outcome. The example is primarily for your reference in responding to the questions below, however, details are appreciated.

[click here to enter text]

Is this example based on (check all that apply)

- Personal experience**
- Knowledge of the case based on reports, training, discussions with colleagues, etc.**

1. Please note the approaches that were used and the emphasis for each approach from low (1) to high (5). Multiple approaches may have the same level of emphasis—for example several approaches may have a “high” emphasis for a particular example. **If an approach was not used mark it as a (0)**

	Not used 0	Low emphasis 1	2	Some emphasis 3	4	High emphasis 5
Prescriptive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk/Hazard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education/ Influence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. In your opinion, in what ways was the approach or combinations of approaches used in this example effective? Please explain

[click here to enter text]

3. In this example, what were the advantages of the approach or combination of approaches used?

[click here to enter text]



4. In this example, were there any deficiencies or drawbacks to using this approach?

[click here to enter text]

5. Would the approach be more or less effective under different circumstances (for example, based on the experience level of the regulator or licensee, the performance level of the licensee, in response to a major event, etc.). Please explain

[click here to enter text]

6. In this example, did the approach place the primary responsibility for safety on the licensee or on the regulator? (Mark 1 if the regulator took almost all of the responsibility for safety in this example, 2 if the regulator took more responsibility than the licensee, 3 if the responsibility for safety was about equal, 4 if the licensee took more responsibility for safety than the regulator, and 5 if the licensee had almost all of the responsibility for safety)

Regulator is responsible		Equal responsibility		Licensee is responsible
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any):

[click here to enter text]

7. In this example, how clear were the requirements and expectations to the licensee?

Not very clear		Somewhat clear		Very clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. In this example, were important safety issues identified and addressed?

None addressed		Some addressed		All addressed
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please comment on why in this case important safety issues were or were not identified

[click here to enter text]



9. In this example, in order to meet regulatory requirements, what level of expertise in management systems (other than knowing the regulation) was required by the licensee?

Very	little		Some		A great deal
	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments(if any)

[\[click here to enter text\]](#)

10. In this example, what level of expertise in management systems (other than knowing the regulation) was required by the regulator?

Very little		Some		A great deal
1	2	3	4	5
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)

11. In this example, what level of resources was required of the licensee?

Very little		Some		A great deal
1	2	3	4	5
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)

12. In this example, what level of resources was required of the regulator?

Very little		Some		A great deal
1	2	3	4	5
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)



Part Ib: Example of less successful case

Please provide a brief description of an example of a regulatory action regarding management systems that had a less successful outcome. The example is primarily for your reference in responding to the questions below, however, details are appreciated.

[\[click here to enter text\]](#)

Is this example based on (check all that apply)

- Personal experience**
- Knowledge of the action based on reports, training, discussions with colleagues, etc.**

13. Please note the approaches that were used and the emphasis for each approach from high (5) to low (1). Multiple (or all) approaches may have a “high” emphasis. **If an approach was not used mark it as a (0)**

	Not used 0	Low emphasis 1	2	Some emphasis 3	4	High emphasis 5
Prescriptive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk/Hazard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education/ Influence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. In your opinion, in what ways was the approach or combinations of approaches used in this example less than effective? Please explain

[\[click here to enter text\]](#)

15. In this example, were there any advantages of the approach or combination of approaches used?

[\[click here to enter text\]](#)



16. In this example, what were the deficiencies or drawbacks to using this approach?

[\[click here to enter text\]](#)

17. Would the approach be more or less effective under different circumstances (for example, based on the experience level of the regulator or licensee, the performance level of the licensee, or other difference). Please explain

[\[click here to enter text\]](#)

18. In this example, did the approach place the primary responsibility for safety on the licensee or on the regulator? (Mark 1 if the regulator took almost all of the responsibility for safety in this example, 2 if the regulator took more responsibility than the licensee, 3 if the responsibility for safety was about equal, 4 if the licensee took more responsibility for safety than the regulator, and 5 if the licensee had almost all of the responsibility for safety)

Regulator is responsible		Equal responsibility		Licensee is responsible	
1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)

19. In this example, how clear were the requirements and expectations to the licensee?

Not very clear	Somewhat clear		Very clear	
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. In this example, were important safety issues identified and addressed?

None addressed	Some addressed		All addressed	
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please comment on why in this case important safety issues were or were not identified

[\[click here to enter text\]](#)



21. In this example, in order to meet regulatory requirements, what level of expertise in management systems (other than knowing the regulation) was required by the licensee?

Very little			Some		A great deal
1	2		3	4	5
<input type="checkbox"/>			<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)

22. In this example, what level of expertise in management systems (other than knowing the regulation) was required by the regulator?

Very little			Some		A great deal
1	2		3	4	5
<input type="checkbox"/>			<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)

23. In this example, what level of resources was required of the licensee?

Very little			Some		A great deal
1	2		3	4	5
<input type="checkbox"/>			<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)

24. In this example, what level of resources was required of the regulator?

Very little			Some		A great deal
1	2		3	4	5
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (if any)

[\[click here to enter text\]](#)



Part II General questions on the usual regulatory approach or combination of approaches in management systems for operating power plants

25. What is the **usual** approach or combination of approaches that is used in the area of management systems?

	Not used 0	Low emphasis 1	2	Some emphasis 3	4	High emphasis 5
Prescriptive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk/Hazard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education/ Influence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. Please note any changes in your experience in the approaches used by your agency for management systems from decreased (1 or 2) stayed the same (3) or increased (4 or 5). If there have been multiple changes in your experience, report on the **most recent** change. **If an approach was not used in the usual approach or combination of approaches mark it as a (0)**

	Never used 0	Decreased 1	2	Stayed the same 3	4	Increased 5
Prescriptive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk/Hazard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education/ Influence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



27. What was the basis for the change(s) (if any) in approach or combination of approaches with regard to management systems?

[\[click here to enter text\]](#)

28. How much flexibility does this usual approach or combination of approaches give the licensee to address management systems?

None	Very little		Some		A great deal
0	1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments(if any)

[\[click here to enter text\]](#)

29. Does this approach affect public credibility regarding the safety of the licensee facility?

Decreases credibility		No change		Increases Credibility
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Why or why not?

[\[click here to enter text\]](#)

30. Does this approach affect public credibility of the regulator?

Decreases credibility		No change		Increases Credibility
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Why or why not?

[\[click here to enter text\]](#)



31. What, if any, do you think is the effect of the approach or combination of approaches used for management systems on the **safety culture** of the licensee?

Reduces the safety culture

No change in
safety culture

Improves safety culture

1

2

3

4

5

Comments(if any):

[\[click here to enter text\]](#)

32. What, if any, do you think is the effect of the usual approach or combination of approaches for management systems on the **safety culture** of the regulator?

Reduces the safety culture

No change in
safety culture

Increases safety culture

1

2

3

4

5

Comments(if any):

[\[click here to enter text\]](#)



Part III: Accuracy and usefulness of approaches in describing regulatory oversight of management systems for operating power plants. Please provide any comments or suggestions you may have regarding the definitions of each of the approaches to regulatory oversight below

33. Prescriptive

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of management systems

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

34. Facility

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of management systems

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

35. Outcome

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of management systems

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

36. Risk/Hazard

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of management systems

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

37. Process

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of management systems

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

38. Self-Assessment

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of major plant modifications

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

39. Influence or education based

Definition

Very clear		Somewhat clear		Not at all clear
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Usefulness of this approach for regulation of major plant modifications

Very useful	Often useful	Sometimes useful	Seldom useful	Never useful
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and/or suggestions for improvement:

[\[click here to enter text\]](#)

40. Are there other approaches to regulatory oversight that should be added to this list?

[\[click here to enter text\]](#)

41. Do you have any other comments or questions?

[\[click here to enter text\]](#)

Thank you for your contribution!

When you have completed the questionnaire, please save it and send it to the coordinator for this project at your agency.



REGULATORY APPROACHES AND DEFINITIONS

Note: these approaches are not defined as mutually exclusive.

Approach Description

Prescriptive

A prescriptive approach establishes specific requirements for conducting activities including technical solutions. *Example: In the area of competency, requirements for specific educational degrees or experience for a position would be prescriptive.*

Facility

A facility-based approach determines the safety requirements for each licensee through individual assessment of its design and operation, considering the unique history of each facility. *Example: Requirements for different positions based on the characteristics of the facility would be a facility based approach.*

Outcome

An outcome approach establishes specific performance goals or outcomes for licensees to attain but does not specify how they shall be attained. Licensees determine how they will conduct their work activities. *Example: In the area of competency, performance on a simulator would be outcome based.*

Risk Informed or Hazard

A determination of the risk or hazard associated with an area is used to evaluate the appropriate level of regulatory attention.

- A risk-informed approach uses a specific methodology including probability and potential for harm to identify areas of greatest risk. These areas receive priority for regulatory attention.
- A hazard approach uses specific criteria for the identification of areas of greatest potential for harm and these areas receive priority for regulatory attention.

Process

A process approach identifies specific key processes that lead to safe performance and requires licensees to establish and implement these processes effectively. *Example: in the area of competency, a requirement that licensees use a systematic approach to training to determine requirements would be process based.*

Self-assessment

Licensees develop and implement self-assessment programs including the identification of both good practices and problem areas needing improvement, internal reviews and follow up. The regulator evaluates the licensee self-assessment program, reviews the results of the licensee assessments, and selectively inspects the licensees' follow up on self-assessment results. *Example: in the area of competency, a requirement that licensees do an evaluation of how effective and complete their training program is would be an example of self-assessment.*

Influence or Education Based

Influence and Education: The regulator provides information and training opportunities for the industry—including workshops, feedback, research results, and other information—in order to improve industry performance. *Example: in the area of competency, the regulator sponsoring a seminar on training for licensees or presenting at a regulatory information conference regarding training activities would be education or influence based.*

Appendix 2: Comparison of Definitions from 2003/4 Study and 2012/13 Study

Approach/ Strategy	2003/4 Definition	2011/12 Definition
Prescriptive	Establishes very detailed requirements for technical solutions and conducting specific activities. Safety is assured because the regulator has established that its requirements provide for the safe conduct of these activities.	Establishes specific requirements for conducting activities including technical solutions
Case/ Facility	Determines the safety requirements for each licensee through individual assessment of its operation, considering the unique history of each facility. The regulator does not establish general, universal requirements that apply equally to all licensees of a particular type of facility.	Determines the safety requirements for each licensee through individual assessment of its design and operation, considering the unique history of each facility.
Outcome	Establishes specific goals or outcomes for licensees to attain but does not specify how licensees attain these goals. Licensees are free to determine how they will conduct their work activities to result in the achievement of the required safety goals.	Establishes specific performance goals or outcomes for licensees to attain but does not specify how they shall be attained. Licensees determine how they will conduct their work activities.
Risk/ Hazard Informed	Identifies areas and systems of significant potential risk--looking at risk as the combination of the consequences of a potential accident (e.g., would it be catastrophic) and the probability of an accident happening. A specific methodology and specific criteria are established for the identification of areas of greatest risk and these areas therefore receive priority for regulatory attention.	Determines the risk/hazard associated with an area to evaluate the appropriate level of regulatory attention. A risk-informed approach uses a specific methodology including probability and potential for harm to identify areas of greatest risk. These areas receive priority for regulatory attention. A hazard approach uses specific criteria for the identification of areas of greatest potential for harm and these areas receive priority for regulatory attention.
Process/ System	Identifies specific key processes/systems that lead to safe performance; requires licensees to establish and implement these processes/systems effectively. (Examples: a way of identifying, recruiting, training and retaining competent staff and ways to develop, assess and implement changes in facilities, policies, and procedures; a quality system and the overall system of operations.)	Identifies specific key processes that lead to safe performance and requires licensees to establish and implement these processes effectively.
Self Assessment	Identifies both good practices and problem areas needing improvement. The regulator evaluates the licensee self-assessment program, reviews the results of the licensee assessments, and selectively inspects the licensees' follow up on self-assessment results.	Identifies of both good practices and problem areas needing improvement, internal reviews & follow up. The regulator evaluates the licensee self-assessment program, reviews the results of the licensee assessments, & selectively inspects the licensees' follow up on self-assessment results.
Influence/ Education		Provides information and training opportunities for the industry—including workshops, feedback, research results, and other information—in order to improve industry performance.

Appendix 3: Instructions and Introductory Materials for Participants

Guide to the Swedish Radiation Safety Authority (SSM) Study on Regulatory Approaches

This survey is sponsored by the Swedish Radiation Safety Authority (SSM). It uses the results from and follows up on a project sponsored by the Swedish Nuclear Power Inspectorate (SKI) that was completed in 2004 (in 2008 SKI became part of SSM, a larger organization for safety). Since the previous study was completed there have been major changes in the nuclear industry worldwide. Long term operations (LTO), beyond the initial licenses, are planned in many countries. As a result of these plans more attention will need to be given to management of plant aging. Some countries are modernizing or refurbishing plants to allow longer operating times. New reactors are being built in several countries and licensing processes are underway. Taken together, these conditions lead to significant new challenges for the regulatory bodies. To better understand how regulators can address these challenges; this study uses a questionnaire to obtain information about regulatory approaches for eight functional areas of oversight¹.

- Regulatory oversight of management systems at operating nuclear power plants
- Regulatory oversight of operations at operating nuclear power plants
- Regulatory oversight of maintenance activities at operating nuclear power plants
- Regulatory oversight of safety culture at operating nuclear power plants
- Regulatory inspection and assessment/oversight of major plant modifications
- Regulatory inspection and assessment/oversight of power up-rates²
- Regulatory inspection and assessment /oversight in connection with decisions on Long Term Operation (LTO)/Plant Life Extension/License Renewal

1: Some functional areas, such as power up rates and oversight of new nuclear power plants, may not be relevant for some agencies. In this case the agency is not expected to respond to the questionnaire for that functional area.

2: For purposes of this study, a power up rate is defined as the process of increasing the maximum licensed power level at which a commercial nuclear power plant may operate. The power up rate is generally categorized based on the magnitude of the power increase and the methods used to achieve the increase.

- Regulatory oversight of construction and commissioning of new nuclear power plants as a basis to take the plant into operation (excluding the regulatory activities for issuing a construction licensing/permit)

Agencies have been requested to provide two experts to respond in each functional area. Experts may be asked to respond in more than one area, depending on their expertise. The project will require about one hour of preparation (reviewing this guide and for a general meeting of all respondents) and about two hours to complete each questionnaire.

The results of the questionnaire will be made publicly available in an SSM report. The information you provide will be presented as summaries of expert opinions regarding approaches used in the regulation of nuclear power plant safety. Agencies participating will be acknowledged in the report but the findings will not be attributed to specific agencies or individuals. A workshop on regulatory approaches, co-sponsored by SSM and NEA, is planned for spring of 2012. Results of this study will be presented at that time.

Background of study

In 2002 and 2003, experts from nuclear power regulators in Canada, Finland, Spain, Sweden, the United Kingdom and the United States were interviewed about their experiences with regulatory approaches. A report on the findings from the interviews was prepared and representatives from each country participating in the study met in a workshop to discuss the findings. The results of the study and this workshop are provided in SKI Report 2005:37³.

In the original study six regulatory approaches, developed by consulting with nuclear regulators, were identified and defined⁴. The definitions of the approaches have changed somewhat from the previous study and an additional approach, “influence and education”, has been added based on input from the respondents of the previous study and discussion at the workshop. These approaches are discussed further in the next section and a list of the approaches and definitions used for this study appears at the end of this guide.

The earlier study focused on regulatory approaches in three functional areas of oversight: Plant design and modifications, quality systems,

3: An electronic copy of this report was provided to your agency, the report can also be obtained online at <http://www.stralsakerhetsmyndigheten.se/Global/Publikationer/Rapporter/Sakerhet-vid-karnkraftverken/2005/SKI-rapport-2005-37.pdf>

4: The previous study used the term “strategies” rather than “approaches” based on feedback from that study, this study uses the term “approaches” rather than “strategies”.

and training and qualifications. All respondents reported that combinations of regulatory approaches were used in oversight of these functional areas; however, the combinations differed depending on the functional area. For example, in the area of design and modification over half the examples included the use of a combination of prescriptive, risk based, and process based approaches. Other approaches were mentioned in less than a third of the examples in this area. In the functional areas of quality systems and training and qualifications over two thirds of the examples reported a process based approach combined with other strategies.

Specific impacts of regulatory approaches that were reported by experts were used in developing the questions for the current study. The impacts reported included:

- Whether the licensee or the regulator takes primary responsibility for safety
- How clear requirements and expectations are to licensees
- The significance of safety issues identified
- Expertise needed by regulators and licensees
- Resources used by regulators and licensees
- Flexibility available to licensees
- Public credibility

About the Questionnaire

In each questionnaire we will be asking about your experiences with the regulatory approach or combination of approaches used by your agency for the oversight of one functional area. Based on input from the previous study (discussed in the background section, above), we are using seven regulatory approaches that are commonly used by regulators of nuclear power facilities. The seven approaches are:

- Prescriptive
- Facility-based
- Outcome-based
- Risk and/or Hazard informed
- Process-based
- Self-Assessment
- Influence/education-based

A list of these approaches with definitions and examples is attached as the last page of the questionnaire and is also included at the end of this guide. Respondents should review the definitions and examples before beginning the questionnaire, and refer to the list as needed as they complete the questionnaire. It may be useful to print out the list

for reference. At the end of the questionnaire respondents have the opportunity to comment on the clarity and usefulness of the approaches, however, respondents are requested to use the list and definitions of approaches provided in responding to the questionnaire.

The focus of the study is regulatory oversight of operating nuclear power plants. This includes the oversight of the entire organization that is operating the plant—including the management and planning organizations. References to the “regulation” of nuclear power plants refer to all aspects of regulatory oversight—including communication, inspection and enforcement of regulation, as well as written regulation and policy.

Most questions ask for either a written response (for example, a description of a case or comments) or a request for a set response category for the question (for example “1” for low; “3” for medium; “5” for high). Examples and comments will be used in the analysis and paraphrased examples may be included in the report. The report will not identify individuals or attribute specific case examples or responses to individuals, agencies or countries. However, other experts in the functional area may recognize references to specific examples even without identifiers.

Although respondents are encouraged to discuss the content of this questionnaire with colleagues, your answers should reflect your personal experiences and opinions and will not necessarily represent either your agency or your colleagues. Findings from this study will be presented as the opinions of experts and not as the position of any particular individual or agency.

The survey requests some background information and then is organized in three parts, a description of the three parts is provided below.

PART I: Each questionnaire asks the respondent to identify two case examples of regulatory oversight in their functional area—one case example that resulted in a positive regulatory outcome and one case example that was less successful. The descriptions of the cases only need to be detailed enough for the respondent’s own reference—although greater detail would be appreciated. The primary intent is for the expert to respond to the questions regarding a specific case rather than about the “general” approach to the functional area. The survey then asks questions about each case example. [The box below provides an example of a “case example” from the previous study.] The questions regarding the case examples reflect our interest in the approach or combination of approaches used and the respondent’s assessment of the outcomes in the case example in terms of

- Effectiveness
- Advantages
- Deficiencies or drawbacks
- Whether different circumstances (such as the age of the plant, the experience level of the plant operator, financial pressures) would have changed the effectiveness of the approach or approaches used in the examples
- Whether the licensee or regulator takes primary responsibility for safety
- How clear requirements and expectations are to licensees
- Significance of safety issues identified
- Expertise needed by regulators and licensees
- Resources used by regulators and licensees

**Example of Case Example from SKI Report 2005:37 6.8:
Identification of potential generic problem from situation
at one plant**

Example 21: In this example a plant was individually and independently adding electrical demand on busses, which appeared adequate when analyzed separately. It would only be a problem if under abnormal conditions there was a need for emergency systems and full power, then the system couldn't handle the full electrical load. The plant had not recognized the problem. The agency used a combination of prescriptive, process and outcome based strategies.Based on the plant's experience, the regulator instituted an industry-wide inspection program of electrical systems.....

PART II Contains questions about the usual approach or combination of approaches used in one functional area. These questions include:

- What is the typical approach or combination of approaches used by your agency in the area
- Whether there have been changes in the prescribed and/or applied oversight strategy for the area
- If there have been changes, what were the reasons for these changes?
- The effect of the approaches/strategy on the safety culture of the regulator and of the licensee
- The effect of the approaches/strategy on the flexibility given to licensees
- The effect of the approaches/strategy on public credibility

PART III Questions regarding definitions and usefulness of regulatory approaches: This section asks for your opinion regarding

- Whether the definitions of the seven regulatory approaches are clear, accurate and useful in describing the regulatory approaches of your agency for the functional area
- Whether there are additional approaches you think should be included
- Your thoughts about the general effectiveness of different regulatory approaches to address the functional area
- Any additional comments or questions regarding the study

Appendix 4: Comparison of Usual, More Successful, and Less Successful Cases across Approaches

Approach		Never used (0)		Some emphasis (1,2,3)		Heavy emphasis (4,5)		Mean	Std. Dev.
		Per cent	N	Per cent	N	Per cent	N		
Prescriptive	Usual	11.3	6	60.4	32	28.3	15	2.5	1.6
	>Success	26.4	14	39.6	21	34.0	18	2.3	1.9
	<Success	20.4	10	51.0	25	28.6	14	2.3	1.7
Facility	Usual	26.4	14	49.1	26	24.5	13	2.1	1.8
	>Success	35.8	19	41.5	22	22.6	12	1.8	1.7
	<Success	43.8	21	31.3	15	25.0	12	1.9	2.0
Outcome	Usual	13.2	7	39.6	21	47.2	25	3.0	1.7
	>Success	22.6	12	24.5	13	52.8	28	2.2	1.9
	<Success	29.2	14	39.6	19	31.3	15	2.4	1.9
Risk/ Hazard	Usual	13.2	7	41.5	22	45.3	24	3.1	1.7
	>Success	20.4	11	35.2	19	44.4	24	2.7	1.8
	<Success	31.9	15	40.4	19	27.7	13	2.2	1.9
Process	Usual	11.1	6	44.4	24	44.4	24	3.0	1.6
	>Success	20.4	11	35.2	19	44.4	24	2.6	1.8
	<Success	22.4	11	42.9	21	34.7	17	2.2	1.8
Self Assessment	Usual	7.4	4	46.3	25	46.3	25	3.2	1.4
	>Success	20.8	11	45.3	24	34.0	18	2.5	1.8
	<Success	32.0	16	38.1	19	30.0	15	2.2	2.0
Education/ Influence	Usual	22.6	12	43.4	23	34	18	2.4	1.9
	>Success	28.3	15	32.1	17	39.6	21	2.5	2.0
	<Success	39.6	19	33.3	16	27.1	13	1.8	2.0

Appendix 5: Approach by Area Tables

Table 1: Prescriptive Approach by Area: Usefulness, Use and Emphasis, Change in Use																
	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modifications		Power Up Rates		Construction	
Usefulness																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Useful (4,5)	29%	2	25%	2	25%	2	50%	5	20%	1	0%	0	0%	0	33%	1
Somewhat Useful (3)	29%	2	25%	2	25%	2	30%	3	0%	0	25%	2	20%	1	0%	0
Very Useful(1,2)	43%	3	50%	4	50%	4	20%	2	80%	4	75%	6	80%	4	67%	2
Use and Emphasis																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never Used (0)	14%	1	13%	1	0%	0	30%	3	0%	0	0%	0	20%	1	0%	0
Some Emphasis (1,2,3)	57%	4	63%	5	71%	5	70%	7	60%	3	63%	5	20%	1	67%	2
Heavy Emphasis (4,5)	29%	2	25%	2	29%	2	0%	0	40%	2	38%	3	60%	3	33%	1
Change in Use																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Used (0)	14%	1	13%	1	0%	0	30%	3	0%	0	0%	0	20%	1	0%	0
Decrease in Use (1,2)	0%	0	13%	1	14%	1	10%	1	0%	0	13%	1	20%	1	33%	1
No Change in Use (3)	57%	4	50%	4	43%	3	40%	4	20%	1	38%	3	40%	2	67%	2
Increase in Use (4,5)	29%	2	25%	2	43%	3	20%	2	80%	4	50%	4	20%	1	0%	0

* Percentages have been rounded to nearest whole number

Table 2: Facility Approach by Area: Usefulness, Use and Emphasis, Change in Use																
	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modification		Power Up Rates		Construction	
Usefulness																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Useful (4,5)	57%	4	13%	1	38%	3	20%	2	20%	1	0%	0	60%	3	0%	0
Somewhat Useful (3)	14%	1	75%	6	63%	5	50%	5	20%	1	13%	1	0%	0	67%	2
Very Useful(1,2)	29%	2	13%	1	0%	0	30%	3	60%	3	88%	7	40%	2	33%	1
Use and Emphasis																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never Used (0)	57%	4	13%	1	43%	3	40%	4	0%	0	0%	0	40%	2	0%	0
Some Emphasis (1,2,3)	29%	2	75%	6	14%	1	60%	6	40%	2	63%	5	40%	2	67%	2
Heavy Emphasis (4,5)	14%	1	13%	1	43%	3	0%	0	60%	3	38%	3	20%	1	33%	1
Change in Use																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Used (0)	43%	3	13%	1	17%	1	30%	3	0%	0	0%	0	40%	2	0%	0
Decrease in Use (1,2)	29%	2	13%	1	17%	1	10%	1	0%	0	0%	0	0%	0	0%	0
No Change in Use (3)	29%	2	63%	5	67%	4	50%	5	60%	3	88%	7	60%	3	100%	3
Increase in Use (4,5)	0%	0	13%	1	0%	0	10%	1	40%	2	13%	1	0%	0	0%	0

* Percentages have been rounded to nearest whole number

Table 3: Outcome Approach by Area: Usefulness, Use and Emphasis, Change in Use

	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modification		Power Up Rates		Construction	
Usefulness																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Useful (4,5)	14%	1	25%	2	50%	4	20%	2	40%	2	0%	0	0%	0	0%	0
Somewhat Useful (3)	29%	2	13%	1	13%	1	30%	3	20%	1	0%	0	20%	1	67%	2
Very Useful(1,2)	57%	4	63%	5	38%	3	50%	5	40%	2	100%	8	80%	4	33%	1
Use and Emphasis																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never Used (0)	29%	2	13%	1	29%	2	10%	1	20%	1	0%	0	0%	0	0%	0
Some Emphasis (1,2,3)	43%	3	13%	1	29%	2	60%	6	40%	2	38%	3	60%	3	33%	1
Heavy Emphasis (4,5)	29%	2	75%	6	43%	3	30%	3	40%	2	63%	5	40%	2	67%	2
Change in Use																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Used (0)	29%	2	13%	1	17%	1	10%	1	20%	1	0%	0	0%	0	0%	0
Decrease in Use (1,2)	14%	1	0%	0	17%	1	10%	1	0%	0	0%	0	20%	1	0%	0
No Change in Use (3)	29%	2	50%	4	33%	2	20%	2	60%	3	71%	5	40%	2	67%	2
Increase in Use (4,5)	29%	2	38%	3	33%	2	60%	6	20%	1	29%	2	40%	2	33%	1

* Percentages have been rounded to nearest whole number

Table 4: Risk/Hazard Approach by Area: Usefulness, Use and Emphasis, Change in Use																
	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modifications		Power Up Rates		Construction	
Usefulness																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Useful (4,5)	43%	3	25%	2	0%	0	33%	3	20%	1	0%	0	20%	1	0%	0
Somewhat Useful (3)	29%	2	13%	1	25%	2	33%	3	20%	1	25%	2	0%	0	0%	0
Very Useful(1,2)	29%	2	63%	5	75%	6	33%	3	60%	3	75%	6	80%	4	100%	3
Use and Emphasis																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never Used (0)	43%	3	0%	0	0%	0	30%	3	0%	0	0%	0	20%	1	0%	0
Some Emphasis (1,2,3)	43%	3	25%	2	29%	2	50%	5	40%	2	50%	4	80%	4	0%	0
Heavy Emphasis (4,5)	14%	1	75%	6	71%	5	20%	2	60%	3	59%	4	0%	0	100%	3
Change in Use																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Used (0)	43%	3	0%	0	0%	0	30%	3	0%	0	0%	0	20%	1	0%	0
Decrease in Use (1,2)	14%	1	0%	0	0%	0	10%	1	0%	0	13%	1	20%	1	0%	0
No Change in Use (3)	43%	3	38%	3	33%	2	50%	5	60%	3	25%	2	20%	1	50%	1
Increase in Use (4,5)	0%	0	63%	5	67%	4	10%	1	40%	2	63%	5	40%	2	50%	1

* Percentages have been rounded to nearest whole number

Table 5: Process Approach by Area: Usefulness, Use and Emphasis, Change in Use																
	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modification		Power Up Rates		Construction	
Usefulness																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Useful (4,5)	0%	0	38%	3	38%	3	0%	0	20%	1	25%	2	0%	0	0%	0
Somewhat Useful (3)	0%	0	50%	4	13%	1	20%	2	40%	2	38%	3	80%	4	0%	0
Very Useful(1,2)	100%	7	13%	1	50%	4	80%	8	40%	2	38%	3	20%	1	100%	3
Use and Emphasis																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never Used (0)	14%	1	25%	2	13%	1	0%	0	20%	1	13%	1	0%	0	0%	0
Some Emphasis (1,2,3)	29%	2	38%	3	25%	2	40%	4	40%	2	75%	6	100%	5	0%	0
Heavy Emphasis (4,5)	57%	4	38%	3	63%	5	60%	6	40%	2	13%	1	0%	0	100%	3
Change in Use																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Used (0)	0%	0	25%	2	17%	1	0%	0	20%	1	13%	1	0%	0	0%	0
Decrease in Use (1,2)	0%	0	13%	1	0%	0	10%	1	0%	0	0%	0	0%	0	0%	0
No Change in Use (3)	100%	7	63%	5	17%	1	40%	4	60%	3	50%	4	20%	1	33%	1
Increase in Use (4,5)	0%	0	0%	0	67%	4	50%	5	20%	1	38%	3	80%	4	67%	2

* Percentages have been rounded to nearest whole number

Table 6: Self-Assessment Approach by Area: Usefulness, Use and Emphasis, Change in Use

	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modification		Power Up Rates		Construction	
Usefulness																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Useful (4,5)	14%	1	0%	0	25%	2	0%	0	0%	0	0%	0	0%	0	0%	0
Somewhat Useful (3)	43%	3	50%	4	25%	2	10%	1	20%	1	38%	3	40%	2	0%	0
Very Useful(1,2)	43%	3	50%	4	50%	4	90%	9	80%	4	63%	5	60%	3	100%	3
Use and Emphasis																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Never Used (0)	14%	1	13%	1	13%	1	0%	0	0%	0	13%	1	0%	0	0%	0
Some Emphasis (1,2,3)	43%	3	38%	3	25%	2	50%	5	60%	3	63%	5	80%	4	0%	0
Heavy Emphasis (4,5)	43%	3	50%	4	63%	5	50%	5	40%	2	25%	2	20%	1	100%	3
Change in Use																
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Not Used (0)	14%	1	13%	1	14%	1	0%	0	0%	0	13%	1	0%	0	0%	0
Decrease in Use (1,2)	14%	1	0%	0	0%	0	10%	1	0%	0	0%	0	0%	0	0%	0
No Change in Use (3)	43%	3	25%	2	14%	1	20%	2	40%	2	75%	6	40%	2	33%	1
Increase in Use (4,5)	29%	2	63%	5	71%	5	70%	7	60%	3	13%	1	60%	3	67%	2

* Percentages have been rounded to nearest whole number

Table 7: Education/Influence Approach by Area: Usefulness, Use and Emphasis, Change in Use																	
	Management Systems		Maintenance		Operations		Safety Culture		Plant Life Extension		Major Plant Modification		Power Up Rates		Construction		
Usefulness																	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Not Useful (4,5)	43%	3	25%	2	25%	2	20%	2	0%	0	25%	2	0%	0	0%	0	
Somewhat Useful (3)	0%	0	63%	5	50%	4	20%	2	0%	0	25%	2	40%	2	67%	2	
Very Useful(1,2)	57%	4	13%	1	25%	2	60%	6	100%	3	50%	4	60%	3	33%	1	
Use and Emphasis																	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Never Used (0)	43%	3	25%	2	29%	2	10%	1	20%	1	38%	3	0%	0	0%	0	
Some Emphasis (1,2,3)	0%	0	50%	4	57%	4	40%	4	60%	3	50%	4	80%	4	0%	0	
Heavy Emphasis (4,5)	57%	4	25%	2	14%	1	50%	5	20%	1	13%	1	20%	1	100%	3	
Change in Use																	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Not Used (0)	29%	2	25%	2	0%	0	10%	1	20%	1	38%	3	0%	0	0%	0	
Decrease in Use (1,2)	14%	1	13%	1	17%	1	0%	0	0%	0	0%	0	0%	0	0%	0	
No Change in Use (3)	29%	2	38%	3	50%	3	40%	4	40%	2	50%	4	60%	3	33%	1	
Increase in Use (4,5)	29%	2	25%	2	33%	2	50%	5	40%	2	13%	1	40%	2	67%	2	

* Percentages have been rounded to nearest whole number



2013:29

The Swedish Radiation Safety Authority has a comprehensive responsibility to ensure that society is safe from the effects of radiation. The Authority works to achieve radiation safety in a number of areas: nuclear power, medical care as well as commercial products and services. The Authority also works to achieve protection from natural radiation and to increase the level of radiation safety internationally.

The Swedish Radiation Safety Authority works proactively and preventively to protect people and the environment from the harmful effects of radiation, now and in the future. The Authority issues regulations and supervises compliance, while also supporting research, providing training and information, and issuing advice. Often, activities involving radiation require licences issued by the Authority. The Swedish Radiation Safety Authority maintains emergency preparedness around the clock with the aim of limiting the aftermath of radiation accidents and the unintentional spreading of radioactive substances. The Authority participates in international co-operation in order to promote radiation safety and finances projects aiming to raise the level of radiation safety in certain Eastern European countries.

The Authority reports to the Ministry of the Environment and has around 270 employees with competencies in the fields of engineering, natural and behavioural sciences, law, economics and communications. We have received quality, environmental and working environment certification.

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