A New Safety Regime after Grenfell

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SUMMARY

A suggestion is put forward for a specific regulatory approach aimed at improving the safety of residential tower blocks in the wake of the Grenfell Tower disaster. The suggestion is based on the self-evident need for the UK to exploit its expertise in the regulatory handling of the aftermath of past disasters. What is not so self-evident is the form that a new regime should take, and this paper suggests that it be modelled on the goal-setting regulatory regime under the HSE that was put in place after the Cullen Inquiry into Piper Alpha. The suggestion follows the Hackitt recommendations, and the paper sets out some detailed reasons for it.

About the author:

Dr Stan Schofield is a Chartered Engineer and Chartered Physicist. He has four decades of experience in the assessment of major hazard safety in the nuclear, offshore oil & gas, and onshore petrochemical industries. From a beginning in nuclear safety in the civil nuclear industry, he moved into offshore oil & gas, where he spent 16 years in HSE's Offshore Safety Division in the wake of the Piper Alpha disaster. As a safety regulator in the post-Piper goal-setting regime, he was involved in developing technical guidance on safety, assessing safety cases, inspecting offshore platforms, and negotiating safety improvements with the offshore industry. He subsequently applied lessons learned from this experience to the onshore COMAH regime with HSE. Since leaving the HSE he has been advising nuclear (both civil and defence), oil & gas, and petrochemical industry Duty Holders on steps needed to satisfy HSE regulatory requirements for safety.

1. ONWARDS FROM THE HACKITT RECOMMENDATIONS

The Hackitt recommendations make clear that a new regulatory regime for the safety of residential tower blocks is warranted in the wake of the Grenfell Tower disaster. The recommendations include one for a new Joint Competent Authority (JCA) involving the HSE. As an engineering safety specialist and former safety regulator with the HSE, I believe a new regime should be similar to the safety regime under HSE's Offshore Safety Division (OSD) that was put in place in the early 1990s after the 1988 Piper Alpha disaster.

Although the Piper and Grenfell disasters were very different situations, the two disasters have much in common, and lessons in safety that the UK has learned after Piper could, and in my view should, be used to help improve residential tower block safety in the wake of Grenfell. The UK is a world leader in safety regulation under the HSE, particularly in the control of major hazards across a range of sectors. The post-Piper offshore safety regime under HSE's OSD became a model for regulation in other countries. The UK learned many lessons in applying that regime to improve offshore safety, and those lessons have had a significant impact in other sectors such as nuclear and onshore petrochemical safety, and have cemented further the world-class position of UK safety regulation under the HSE. I believe that the UK should exploit this expertise that we have, and use it to improve safety in residential tower blocks after Grenfell.

2. A BIAS TOWARDS SAFETY

Under the HSE, an acceptable approach to safety by a Duty Holder centres around the latter asking the following basic question, which I shall call Question Q1:

Question Q1: "Have we done, or are we doing, all that can reasonably be done, in the circumstances in which we operate, to ensure that people are safe from harm from the hazards to which they are exposed by our activities"?

If the answer to this question is Yes, and the HSE accepts this, then the Duty Holder will have (subject to continued vigilance to maintain the accepted measures) satisfied its duty of care for the health and safety of its workers and the public. In contrast, if the HSE does not accept it, then the Duty Holder will be required to consider and put in place further measures to protect people from harm, and this will continue until the HSE is satisfied that Question Q1 can be answered in the affirmative. When this stage is reached, the Duty Holder will be considered to be 'doing the right thing'. In this respect, 'doing the right thing' is in this system the key to regulatory compliance. It is a goal-setting system, where the primary goal is to have the answer Yes to question Q1, such that the HSE accepts this answer.

Regulation of safety by the HSE under the Health & Safety at Work etc 1974 Act (abbreviated to HSWA) is founded on this approach of considering the basic Question Q1. It provides a clear bias towards safety that is absent, or more ambiguous, in most other regulatory systems for safety. That bias is called the Cautionary Approach towards safety. The system is focused on encouraging Duty Holders to 'do the right thing' for safety.

Under HSWA, the UK employs the principle of 'reasonable practicability'. Here, a Duty Holder is required to consider what can go wrong that would endanger people, and safety measures to guard against this potential harm must be identified and taken 'So Far As Is Reasonably Practicable', abbreviated to SFAIRP.

A safety measure can mean anything that improves safety, from an engineered safeguard to improving the Duty Holder's management arrangements and 'safety culture'. Such measures would preferably be prioritised in the hierarchy Avoid, Prevent, Control, Mitigate, in keeping with the notion that 'prevention is better than a cure'. If an organisation has a 'good safety culture', then there would generally be more tendency to avoiding and preventing accidents than controlling them and mitigating their consequences. In this sense, measures to improve management arrangements and the safety culture could and should have positive spin offs on the engineering safeguards and their effectiveness, and might therefore be in the Avoid to Prevent part of the hierarchy, in keeping with the notion that a good approach to safety begins at the top of an organisation. More detail on this, on what makes a 'good safety culture', is given in the Appendix, 'A Good Safety Culture'.

When a potential safety measure has been identified that is technically feasible, that is 'on the face of it' practical, the measure should be put in place unless the cost to the Duty Holder (in money, time or trouble) is shown to be 'grossly disproportionate' to the benefit in safety that would be achieved by the measure. If the cost is not grossly disproportionate to the safety benefit, the measure is regarded as 'reasonably practicable'. All reasonably practicable measures for safety should be put in place, and once the Duty Holder has done this the HSE would regard that Duty Holder as having done all that it reasonably can do, in the circumstances, to protect people from harm. In short, the answer to the basic Question Q1 would be in the affirmative.

In practice, this 'SFAIRP requirement' on the Duty Holder is onerous and rigorous. It puts a burden of proof on the Duty Holder, whereby the Duty Holder must put a safety measure in place unless they can provide strong reasons, acceptable to the HSE, not to do so based on the cost of the measure being demonstrably grossly disproportionate to the safety benefit. If the Duty Holder argues that the measure is not reasonably practicable, but the HSE does not accept that argument,

then the measure should be put in place. The legal authority of the HSE, to accept or reject such arguments on whether potential safety measures are reasonably practicable, and to take enforcement action to ensure that the 'bias towards safety' takes measures SFAIRP, provides a powerful driving force that can and does improve safety.

In this 'SFAIRP process', the HSE would normally expect accepted good practice to be followed as a minimum. That is, measures would be expected that reflect good and accepted norms of safety. However, the SFAIRP process can and does go further than this, depending on the situation being considered, and safety measures that go beyond existing norms of good practice might be secured. In this respect, a potential measure that is technically feasible and clearly beneficial to safety, but which has never before been used, might additionally be secured. When this happens, it can be a precedent for improving safety beyond the specific situation being considered, and can thereby be a way of improving safety across the entire industry. By this means, safety can progress from current good practice to improved good practice, often referred to as 'current best practice'. This is a process by which industry-wide 'significant improvements in safety' can be made.

The above process of safety measures being taken SFAIRP is also often regarded as equivalent to risks to people from the relevant hazards being reduced to 'As Low As Is Reasonably Practicable', abbreviated to ALARP. In a sense, ALARP is an abstract (because it refers to risk) equivalent to the more material (because it refers to actual safety measures) SFAIRP. Safety discussions often talk about 'ALARP arguments', 'demonstration of risks ALARP', 'a situation being acceptable because it is ALARP', and so on, but what such discussions are really about (or should be about) is whether the basic Question Q1 has been answered satisfactorily. That said, the term SFAIRP is used in this article, since I wish to emphasise safety measures, and potentially taking safety measures further (as discussed above), rather than more abstract discussions of risk.

The SFAIRP process, with its bias towards safety as described above, has a long and developed history in the UK, based originally on precedent from legal proceedings on health and safety cases taken through the Courts. However, most health and safety issues concerning the matter of whether measures have been taken SFAIRP are not handled through the Courts. In the SFAIRP process, it has been pointed out above that the HSE can make a judgement on whether a Duty Holder has taken measures SFAIRP, and can take enforcement action as they judge necessary. When the HSE makes such a judgement, that judgement is based on the individual judgements made by their appointed Inspectors who are looking at the Duty Holder's arguments and approach to safety. In particular, where consideration of safety measures involves technical detail, appointed Technical Specialist Inspectors would form a judgement, usually in multi-discipline teams that provide the various technical backgrounds required for such judgements, to arrive at a consensus position. These HSE Inspectors have powers under their Crown Warrants, which require and empower them to exercise 'Inspectorial Discretion' to make their individual judgements.

The process of forming an overall HSE judgement depends on the decisions of the individual appointed Inspectors on the acceptability of the Duty Holder's arguments and approach to safety. If those Inspectors do not accept what the Duty Holder is proposing, then the HSE overall would not accept it, provided the due process of the HSE is followed. In such cases, the Duty Holder then has to do more, as described.

The due process of the HSE includes the use of technical guidance from the appointed Inspectors, which takes account of internal discussions between each other and with policy and legal specialists. This technical guidance is aimed at achieving consistency between the approaches of the individual Inspectors, whilst at the same time allowing them to exercise their discretionary judgements as experienced specialists. The due process also involves peer review within the HSE, to provide the checks and balances aimed at Inspectors exercising 'proportionality' when making their judgements. Such peer review may supplement the multi-discipline team working, and provides additional rigour in the assessment process.

Such judgements from HSE Inspectors are made the absence of any authoritative ruling (based on precedent and applied to the situation under consideration) from the Courts. It is in this sense that most issues surrounding SFAIRP are not handled by the Courts, but by the HSE.

3. THE SAFETY REGIME AFTER PIPER ALPHA

The offshore safety regime under OSD has been successful in securing significant improvements in safety as recommended by Lord Cullen in his Report into Piper Alpha. This success was founded on the principles discussed above, with a bias towards safety (HSE's Cautionary Approach under HSWA) and the judgements made by HSE Inspectors, particularly Technical Specialists. The success was also cemented by lessons that were being learned, both by the HSE and the offshore industry, as the new regime's regulatory work progressed, which further established the world-class position of HSE's regulatory system and confirmed it as a model for regulatory systems being developed elsewhere.

When OSD was created in the early 1990s, it appointed highly-qualified and experienced technical and regulatory specialists (HSE Inspectors), mostly Chartered Engineers. These new OSD's Inspectors had formal powers to enforce new goal-setting regulations that were put in place following the Cullen recommendations and which were within the over-arching requirements of HSWA. Many of these Inspectors came from outside of HSE, particularly from the nuclear, offshore and petrochemical industries, with the remainder being Inspectors from other Divisions of HSE having experience of enforcing goal-setting regulations in a variety of industrial sectors regulated under HSWA. The new OSD's Inspectors were also supported by policy and legal specialists, to aid the Inspectors in their job of interpreting and enforcing the new safety regulations.

The Technical Specialist Inspectors in OSD were from a range of technical backgrounds, including Chartered Engineers with expertise in Oil & Gas Processing, Piping, Diving, Control & Instrumentation, Mechanical Engineering, Electrical Engineering, Structural Engineering, Emergency Response, Marine Systems, Fire & Explosion Safety, Risk Assessment, and Human & Organisational Factors.

With the regulatory bias towards safety, the role of HSE Inspectors as described in Section 2, and the new goal-setting regulations which replaced the old prescriptive regulations, the range of experience and expertise of its Inspectors enabled OSD to negotiate, with the offshore industry, improvements in safety across a range of areas. For example, fire and gas detection, fire mitigation, protection against gas explosions, structural integrity, and emergency response arrangements, together with improvements in management arrangements relating to achieving a better safety culture.

The safety improvements were not only for existing offshore installations involving remedial measures and retrofits, but also for new and safer designs. The improvements were aimed at better avoiding, preventing, controlling and mitigating potential accidents, with the new designs focused particularly on the avoidance and prevention part of that hierarchy. For example, the newer designs typically have much better protection against events of the kind that happened on Piper Alpha, such as better protection of platform modules against potential gas explosions, reduced chances of accidents escalating as happened on Piper, and better safeguards for avoiding and preventing accidents in the first place.

4. LESSONS LEARNED IN THE POST-PIPER REGIME

The experience of regulating offshore safety by OSD gave some important lessons learned which have benefited goal-setting regulatory activity in other areas such as nuclear and COMAH safety. This progress is reflected in HSE's matured technical and regulatory guidance for interpreting goal-setting regulations in these sectors.

The lessons learned have also shaped so-called 'new approaches to safety' that are currently and widely used internationally, particularly on how to handle complexity in systems, on use of quantitative versus qualitative risk assessments, and on the roles of leadership and safety cultures centred on the basic goal of addressing Question Q1. This progress is in the spirit of the HSE's long-established approach of identifying underling causes of accidents and associated systemic failings, which contrasts with more simplistic approaches of looking at immediate causes and apportioning blame (see the Appendix, 'A Good Safety Culture').

Key points are, in my view, as follows:

(a). Role of Specialist Inspector judgements.

The depth and range of experience and expertise of OSD's Inspectors, particularly its Technical Specialists, was vital to the HSE securing significant improvements in safety from the offshore industry. The regulatory status of the Technical Specialists, whereby multi-discipline teams of those Specialists could negotiate safety improvements with their counterparts in the industry, with the legal powers to enforce change where necessary, was central to this success. It is clear that without this role of Technical Specialists there would very likely have been a much reduced impact on safety.

(b). Cautionary Approach to safety.

In many cases the Technical Specialists were able to negotiate, with industry, many safety improvements with the aid of the bias towards safety which the HSE's Cautionary Approach entails. Those Specialists could identify many potential safety measures that they considered technically feasible and 'on the face of it' practical, and where there was no evidence that the cost would be grossly disproportionate to the benefit in safety. The Cautionary Approach could prompt implementation of such measures, with consequent improvements in safety. The power of this approach to address the basic Question Q1 was made increasingly apparent, and led to sharper focus on it when the HSE produced significant revisions to its regulatory guidance after 2000, across all industry sectors, on how safety measures may be assessed as being taken SFAIRP.

(c). Technical studies by Duty Holders.

The process of regulating safety, particularly by the Technical Specialists, involved making judgements on various technical analyses that Duty Holders either had carried out in-house or had engaged consultants to perform. Many such analyses were very useful in contributing to assessment of safety arguments for the ultimate purpose of addressing the basic Question Q1. However, this was also often not the case, with the Technical Specialists assessing many technical analyses as failing to provide help in addressing the basic Question Q1. There was often an emphasis on quantified analysis of risk that did not meet the requirement of addressing Question Q1.

Overall, there was a large element of 'paralysis through analysis', and in order to remedy this situation Duty Holders were encouraged to consider approaches that were demonstrably more valid and practical for the purpose of addressing Question Q1. This contributed to changes in the relevant regulations, shifting focus away from abstract analysis of risk onto more practical considerations of safety measures. It also contributed to the overall HSE revision of SFAIRP guidance after 2000, and more widely to improvements in how Duty Holders regard and handle

technical analyses, shaping changes in the ownership of such analyses. Ultimately, it shaped changes in the roles of leadership and safety cultures centred on the basic goal of addressing Question Q1.

5. FROM POST-PIPER SAFETY TO POST-GRENFELL SAFETY

Just as the offshore safety regime under OSD was successful in securing significant improvements in offshore safety, so a post-Grenfell new regulatory regime, perhaps within a new Division of the HSE, could secure significant improvements in the safety of residential tower blocks. The success of such a new regime could be expected to be at least as significant as that of the post-Piper safety regime, taking advantage of the lessons learned by the UK through the work of OSD as described above.

In such a new regime, Specialist Inspectors could be appointed having a similar role to that of OSD's Technical Specialists, and would have specialist disciplines in areas relevant to the safety of residential tower blocks. Such disciplines might include Structural Engineering, Architecture, Fire and Gas Explosion Safety, Human and Organisational Factors, Emergency Response, and Risk Assessment. The role of such Technical Specialists would involve some different disciplines from those of OSD's Inspectors, but their regulatory role would be identical.

If such a new regime were put in place, its success in improving the safety of residential tower blocks would depend on the appointed Technical Specialists having a status identical or otherwise equivalent to that of OSD's Technical Specialists as described above in some detail. In this respect, the Technical Specialists would need to be highly-qualified professionals experienced in matters relevant to the safety of tower blocks, and they would need to have the regulatory authority to ensure that significant improvements in safety actually take place.

6. CONCLUSION

Given that a new regulatory regime for the safety of residential tower blocks is warranted in the wake of the Grenfell Tower disaster, it is self-evident that the UK should exploit the expertise it has in the regulatory handling of the aftermath of past disasters.

This paper has put forward a specific regulatory approach motivated by the UK experience of regulating offshore safety under the HSE after the Piper Alpha disaster. The suggestion of this approach follows the Hackitt recommendations involving a new Joint Competent Authority of which the HSE would be part, and the paper has set out some detailed reasons for it.

I believe that the feasibility of such a new regime is a good example of what can be done based on the UK experience of working, particularly as a world-leader, within a goal-setting regime like that put in place after Piper Alpha. A regime in which 'doing the right thing' for the improvement of safety is the essential goal.

APPENDIX

A GOOD SAFETY CULTURE

A1. THE IMPORTANCE OF A GOOD SAFETY CULTURE

A Safety Culture centres around the basic Question Q1:

Question Q1: "Have we done, or are we doing, all that can reasonably be done, in the circumstances in which we operate, to ensure that people are safe from harm from the hazards to which they are exposed by our activities"?

It is the fact that an organisation asks this question, and then explores ways to answer it, as systematically as it can, that defines a Safety Culture. This applies to any situation where safety is important, whether it be a small industrial enterprise, a major hazard chemical site, or a residential tower block. The same principle applies whether we deal with 'everyday' hazards for which ensuring safety can rely on simple 'common sense', or more complex hazards for which a safety case may be required by law. The answer to the question will of course reflect the complexity of the situation and scale of the hazards, but the same idea applies.

A 'good' Safety Culture is one in which the above question becomes a natural way of working, in which there is a willingness and desire to be involved in both asking the question and answering it, at all levels of an organisation. Such a culture is characterised by leadership from the top of the organisation, where senior managers invite all levels to engage in the process, and are actively engaged themselves. It is a culture where there is a proactive rather than purely reactive approach to issues surrounding the control of hazards, such that this approach is built into the systems of the organisation.

In a good Safety Culture, the organisation looks at what can go wrong, and what measures can avoid, prevent, control or mitigate potential problems, before they have a chance to occur. It represents the everyday notion that 'prevention is better than a cure'.

A2. THE IMPORTANCE OF REGULATION FOR ENSURING A GOOD SAFETY CULTURE

Given human nature, and given the financial interests and constraints that commercial organisations have, achieving a good Safety Culture is in many environments just an ideal that has no connection with the real world. All too often, commercial organisations put the interests of shareholders and others with vested financial interests well above the interests of safety. It is impossible to imagine such organisations being able or willing to 'self-regulate' themselves in the interests of those who are exposed to the hazards for which an organisation is responsible.

Given this reality, it is essential that society has effective safety regulation of an organisation with respect to the hazards that the organisation poses. Although all organisations would probably claim safety as their top priority, it is obvious that society cannot rely on organisations to have a good Safety Culture and 'do the right thing' of their own accord. Law is the societal regulation of human and organisational behaviour, and organisations and their staff need to be policed by an effective safety regulator, according to laws designed specifically for that purpose. This is of course why the UK has a long and developing history, dating back to the industrial revolution, of safety regulation designed to protect workers and the public from harm. Of course, not all safety regulations are effective or properly enforced, and in such cases change is essential, to get new arrangements that are effective and properly enforced.

An organisation that is subject to such safety regulation is called a Duty Holder, by virtue of the fact that they hold a duty of care to those who are exposed to the hazards for which the organisation is responsible.

In this respect of the rule of law, a good Safety Culture has the best chance of being realised in practice if it is encouraged by the presence and actions of an effective safety regulator. Such a regulator can guide and encourage, and when necessary enforce, 'the right thing' from Duty Holders. In my experience, such guidance and encouragement often produces the desired effect, with the Duty Holder satisfying the safety regulator's requirements. However, and referring again to human nature and financial interests, the route of guidance and encouragement might fail to produce the desired effect from the Duty Holder. This may happen for a number of reasons, which might include a lack of relevant competence within the Duty Holder, or undue placing of financial interests over those of safety, or a management system and organisational culture that are otherwise unsuitable for ensuring a good Safety Culture. Whatever the reason, an effective regulator would have the legal powers to enforce the law through formal enforcement processes to ensure that the Duty Holder complies with regulatory requirements. In other words, to ensure that the Duty Holder 'does the right thing'.

A3. EXPERIENCES OF A REGULATOR IN PROMOTING A GOOD SAFETY CULTURE

Duty holders are often surprised by the simplicity of what really constitutes, to the safety regulator a good Safety Culture. They often expect the regulator to require complex and sophisticated arrangements for the management of safety, when all that is being asked is for an approach to be taken, and to be seen to be taken, that both asks the basic Question Q1 and, for the purposes of answering it, sets out practical and systematic arrangements that can be understood by all levels of management and workforce, and the public.

For example, in the case of safety cases that may be required where major hazards are present, although the details of a safety case can be complex and require high technical competence, the core principles, involving taking measures for safety SFAIRP, should be relatively simple and understandable at all levels within the organisation. Once the core need for simplicity is appreciated, the Duty Holder may then feel more understanding and ownership of what is required by the regulator. In turn, this can have a positive impact on the Duty Holder's approach to any technical studies that may be required, often enabling better judgement of what studies are really needed or not needed. The potential implications of this improved understanding for expenditure on arrangements for the management of safety, such as outsourcing of studies to consultants, may be significant. All-in-all, the Duty Holder can then usually see that what is required is 'sensible', or 'common sense', even with great complexity in the engineering and supporting studies.

In this sense, when meeting with organisations to discuss what the safety regulator requires of them, the regulator would aim to describe these requirements in a way that is understandable to a diverse audience, from workers, the public and their safety representatives, engineers working on technical problems, the company HSE Manager, up to the the very top levels of the organisation. Such an approach fits with the idea that a good Safety Culture should engage all levels of the organisation.

A4. TYPICAL ISSUES

In meeting with Duty Holders to look at their approach to safety, at their Safety Culture, it is often apparent that top managers see the process as formal information flowing in one direction, downwards from them to the workforce and public, with top management informing the workforce and public of the latter's responsibilities for safety. There is often little in the system to promote information exchange upwards, from the workforce and public to the top management. There is often little to show that the top management listen and act on matters of concern to the workforce

and public. There is often little to show that top management grasp their responsibilities to be proactive, to listen and respond constructively rather than defensively to issues raised at the sharp end.

This lack of 'Workforce and Public Engagement' in the system for managing safety is often revealed by site Inspections, where regulatory Inspectors can find that issues are being raised at the sharp end, by workers and the public, but that there is little in the way of response from managers, with problems not being addressed. It is not uncommon for the workforce and public to feel that valid issues are simply disappearing into a 'black hole', with no feedback on what is being done, if anything, to sort out problems.

This matter of workforce and public engagement strikes at the core of what makes a good Safety Culture. It is essential that the system for managing safety ensures that issues raised, no matter at what level in the organisation or by the public, are handled in a satisfactory way, including feedback to those at the sharp end. A good Safety Culture must include this feedback loop, this requirement for proactive responses to valid issues raised by workers and the public.

Top management responding constructively to issues raised, before problems have a chance to escalate to accidents, reflects avoidance and prevention of problems, as opposed to reactive responses once accidents have happened. For everyday hazards, it corresponds to 'systematic common sense', and for complex major hazards it is vital for identifying 'accident precursors', those warning signs that things are not right and that corrective action is needed.

In these respects, getting the top management to set the 'right culture' is vital if those responsible for safety in the organisation are not simply going through the motions of doing the minimum to comply with rules and procedures. The aim is to have the organisation act in the spirit of a good Safety Culture, rather than simply comply with the minimal letter of 'tick box rules and procedures'. Simply observing the minimal letter of rules and procedures does not guarantee that the spirit of a good Safety Culture is being met.

A5. A GOOD SAFETY CULTURE AFTER GRENFELL

In any safety regime, a good Safety Culture requires both commitment from Duty Holders and encouragement and enforcement by the safety regulator. It requires commitment to the spirit of the law as well as its letter. Compliance with regulations should have more to do with 'doing the right thing' than with simply ticking boxes and minimally complying with rules and procedures. It is essential that a new safety regime after Grenfell should be focused on these principles of a good Safety Culture. The regulatory approach suggested in this paper is aimed at helping achieve this.