

安全丛书 INSAG-15

强化安全文化的关键实践

国际核安全咨询组报告

KEY PRACTICAL ISSUES IN STRENGTHENING SAFETY CULTURE

A REPORT BY THE INTERNATIONAL
NUCLEAR SAFETY ADVISORY GROUP

大亚湾核电运营管理有限责任公司
安全文化与人因改进项目组 译



原子能出版社

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译者的话

自国际原子能机构 2002 年推出 INSAG-15 以来,中文版在国内尚属首次翻译出版。本译稿经过大亚湾核电运营管理有限责任公司(DNMC)安全文化与人因改进项目组的初步翻译、小组审查修改,以及全体成员累计 800 人·时的集体会审而形成。虽然项目组成员经过了 INSAG-4 和 REPORT-11 两本书会审过程的学习和锻炼,对 INSAG-15 译文质量的追求依然没有丝毫的松懈和动摇,也没有受到项目组成员变动和扩充的影响。无情质疑、激烈辩论的会审风格已经演变成项目组成员之间几乎不假思索的约定和假设,也使译文本身成为无可辩驳的集体智慧的结晶。连续一年半来,我们固然做出了艰苦的努力,但在付出的过程中得到更多的收获和回报。追踪安全文化十二年的发展脉络,从 INSAG-4 对于安全文化理念的概括,到 REPORT-11 对于安全文化三阶段的阐述,再到 INSAG-15 对于安全文化关键实践问题的提炼,我们不禁为国际安全文化专家们与时俱进的深刻见解和洞察力所折服,也为安全文化的理念和实践跨越时空的继承和发展而欣慰。我们深深感到,安全文化的内涵博大精深,即使集中了项目组集体的智慧和力量,力有不逮之处仍然在所难免,因此本书最终还是继续采用中英文对照的方式出版,避免译文可能产生的歧义或误解。借本书出版的机会,我们期望为我国核电安全文化的持续建设贡献自己的一份力量,欢迎广大核电同行继续提出批评指正意见。

本译文的审核工作得到了广东核电领导的关注和指导,尤其是濮继龙先生对译稿全文进行了逐字审阅,提出了诸多宝贵意见,在此谨表感谢。

大亚湾核电运营管理有限责任公司

安全文化与人因改进项目组

2006 年 8 月

前 言

总干事 穆罕默德·巴拉迪

过去十年来,安全文化的概念已成为许多工业行业讨论安全时一个至关重要的因素。这反映了一种认识,虽然通过实体安全防护和正规的管理系统来控制风险是最基本的,但通过公司的诚恳承诺,保证实现高水平的安全,来赢得全体员工视安全为优先的承诺,也同样重要。

1991年出版的INSAG-4,首度尝试定义安全文化的内涵,并将这一概念转化成实用的语言。以此为基础,通过考虑支持卓越安全文化的组织问题编制了INSAG-13。本报告对这一讨论又作了进一步拓展。这是一个特别实用的报告,它把概念转换成日常的语言,这样,运营者和监管机构不仅有一个理解该主题的框架,而且还能够根据清晰定义的和普遍适用的准则来度量个人和组织的表现。本报告不仅讨论了建立卓越安全基础的关键问题,而且还对组织中从高层到普通员工所有人员的行为提供了一系列简单提示或问题。

我很高兴将该报告发行到更广泛的读者中。我特别希望它能够激发广泛的讨论,而且能被所有寻求安全文化改进的“利益相关方”作为基础材料使用,以考虑他们公司和个人的职责,并积极合作,促进业绩从良好向卓越的转化。

FOREWORD

by Mohamed ElBaradei

Director General

Over the last decade, the concept of safety culture has been a vital element in discussions about safety in many industries. This reflects a recognition that, while having engineered safeguards and formal management systems to control risks is essential, it is equally important to win the commitment of the workforce to treat safety as a priority through a genuine corporate commitment to achieve high levels of safety.

INSAG-4, published in 1991, made one of the first attempts to define what is meant by safety culture and to turn the concept into practical language. INSAG-13 built on this by considering the organizational issues which underpin an excellent safety culture. The present publication extends this discussion further. It is an eminently practical report, written to translate the concept into everyday language, so that operators and regulators not only have a framework for understanding the subject but can measure performance—both personally and organizationally—against clearly stated and universally applicable criteria. The present report not only discusses the key issues underlying the establishment of safety excellence, but goes on to provide a series of simple prompts or questions which are aimed at all concerned, from the boardroom to the shop floor.

I am pleased to release this report to a wider audience. In particular, I hope that it will provoke wide discussion, and will be used as a basis for all 'stakeholders' involved in seeking improvements in safety culture to consider their corporate and personal responsibilities and to work actively together to promote changes leading from good performance to excellence.

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1. INTRODUCTION

This report describes the essential practical issues to be considered by organizations aiming to strengthen safety culture. It is intended for senior executives, managers and first line supervisors in operating organizations. Although safety culture cannot be directly regulated, it is important that members of regulatory bodies understand how their actions affect the development of attempts to strengthen safety culture and are sympathetic to the need to improve the less formal human related aspects of safety. The report is therefore of relevance to regulators, although not intended primarily for them.

The International Nuclear Safety Advisory Group (INSAG) introduced the concept of safety culture in its INSAG-4 report in 1991 [1]. Since then, many papers have been written on safety culture, as it relates to organizations and individuals, its improvement and its underpinning prerequisites [2]. Variations in national cultures mean that what constitutes a good approach to enhancing safety culture in one country may not be the best approach in another. However, INSAG seeks to provide pragmatic and practical advice of wide applicability in the principles and issues presented in this report.

Nuclear and radiological safety are the prime concerns of this report, but the topics discussed are so general that successful application of the principles should lead to improvements in other important areas, such as industrial safety, environmental performance and, in some respects, wider business performance. This is because many of the attitudes and practices necessary to achieve good performance in nuclear safety, including visible commitment by management, openness, care and thoroughness in completing tasks, good communication and clarity in recognizing major issues and dealing with them as a priority, have wide applicability.

1. 引言

本报告描述了组织在强化安全文化时应考虑的关键实践问题。它面向运营组织的高级管理人员、经理和一线主管。尽管安全文化不能被直接监管,但是,监管机构成员理解他们自身的行动是如何影响强化安全文化的意愿的发展,并且体谅在安全上不太正规的人员相关的改进需求,这一点也很重要。所以,尽管本报告并不主要面对监管机构,但与他们也有关系。

国际核安全咨询组(INSAG)于1991年在INSAG-4^[1]报告中引入安全文化的概念。此后,由于安全文化与组织和个人相关,撰写了很多关于安全文化、安全文化改进及其基础前提的论文^[2]。国家文化之间的差异意味着在某一个国家强化安全文化的好方法在另一个国家也许不是最佳的。但是,INSAG试图就本报告中所陈述的原则和问题,提供注重实效、切实可行的广泛适用的建议。

核安全与辐射安全是本报告的首要关注内容,不过由于所讨论的题目具有普遍性,这些原则的成功应用,应该也能带来其他重要领域的改进,如工业安全、环境行为,以及某种程度上更广泛的商业行为。这是因为很多获得良好核安全业绩所需的态度和实践具有广泛的适用性,包括管理层的有形承诺、开放、完成任务的审慎和彻底,良好沟通,以及重大问题的识别和优先处理时的清晰程度。

2. DEFINITION AND PRINCIPLES OF SAFETY CULTURE

In INSAG-4 [1] safety culture was defined as :

“that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance.”

Figure 1 , reproduced from INSAG-4 , shows the desired responses at the organizational levels of policy, management and the individual. The policy level establishes the necessary framework for the organization. Management shapes the working environment and fosters attitudes conducive to achieving good safety performance. At the individual level, a questioning attitude, a rigorous and prudent approach, and good communication are emphasized.

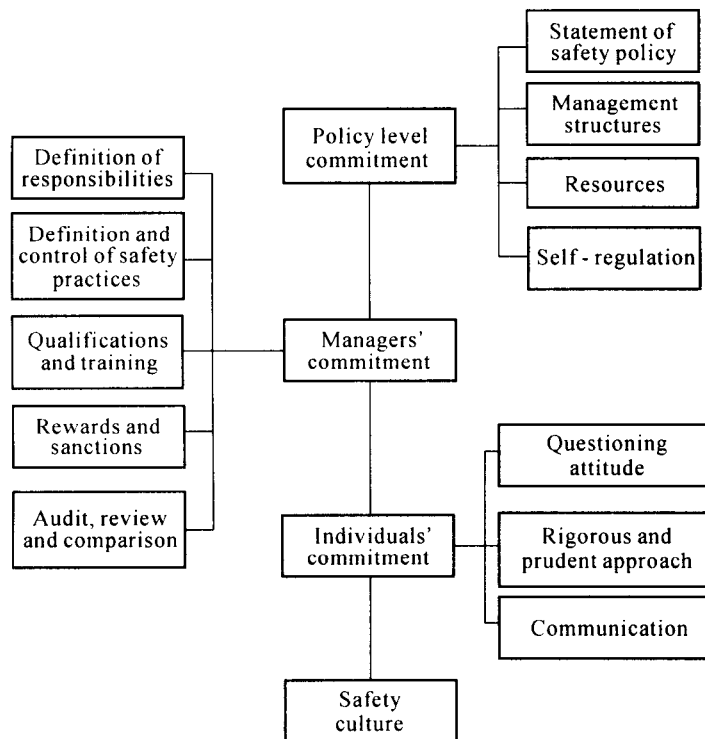


FIG. 1. Illustration of the presentation of safety culture. (Reproduced from INSAG-4 [1].)

2. 安全文化的定义和原则

在 INSAG-4^[1]中,安全文化定义为:

安全文化是存在于组织和个人中的种种特性和态度的总和,它建立一种超出一切之上的观念,即核电厂安全问题由于它的重要性要保证得到应有的重视。

图 1 引自 INSAG-4,显示组织中政策、管理及个人层面所期望的响应。政策层面建立组织所必要的框架。管理层面营造工作环境和培育态度,以有利于取得良好安全业绩。个人层面强调质疑的态度、严谨的方法和良好的沟通。

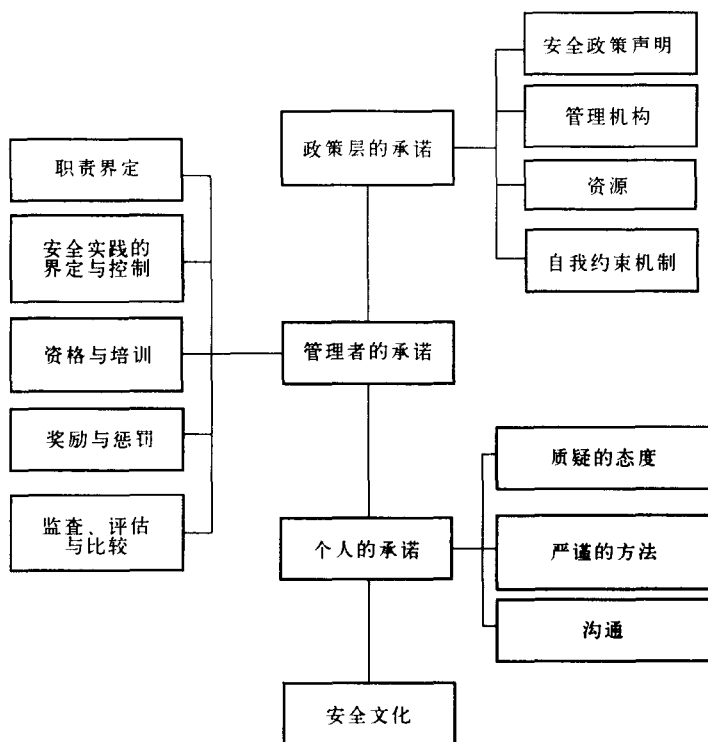


图 1 安全文化示意图(引自 INSAG-4^[1])

IAEA Safety Reports Series No. 11 [3] makes it clear that safety culture is itself a subset of the culture of the whole organization, whereby the latter comprises the mix of shared values, attitudes and patterns of behaviour that give the organization its particular character. Put simply, it is 'the way we do things around here'.

Organizations typically go through a number of phases in developing and strengthening safety culture. IAEA Safety Report Series No. 11 identifies three stages:

- (1) Safety is compliance driven and is based mainly on rules and regulations. At this stage, safety is seen as a technical issue, whereby compliance with externally imposed rules and regulations is considered adequate for safety.
- (2) Good safety performance becomes an organizational goal and is dealt with primarily in terms of safety targets or goals.
- (3) Safety is seen as a continuing process of improvement to which everyone can contribute.

The foregoing discussion is a simple and idealized representation of what is, in practice, a complex process. In reality, the three phases are not distinct and any organization may have some parts that are ahead of others in the process of strengthening safety culture.

In the first stage, improvements are often gained primarily by improving the engineered safeguards of the plant in line with, for example, the principles contained in INSAG-12 [4] (the revised version of INSAG-3), and introducing basic systems and procedures to control hazards. These improvements are often driven by the need to meet regulatory requirements and are usually achieved by means of management edict, using professional safety staff to deliver improvements. Staff tend to believe that safety is the responsibility of management and is largely imposed upon them by others.

IAEA 安全报告系列第 11 号^[3] 阐明,安全文化本身是整个组织文化的组成部分,后者是共享的价值观、态度和行为模式的混合体,赋予了组织独有的特性。简单地说,它是“我们这儿的做事方式”。

在发展和强化安全文化的过程中,组织通常会经历几个阶段。IAEA 安全报告系列第 11 号确定了三个阶段:

(1) 安全受符合性驱动,并主要基于规则和法规。在这一阶段,安全被看成一个技术问题,只要符合外部强制的规则和法规就认为对安全是足够的。

(2) 良好的安全业绩成为组织目标,并主要根据安全指标或目标来管理。

(3) 安全被看成是一个人人能对改进做出贡献的持续过程。

以上论述是对实际上复杂过程的一个简单和理想化的表述。事实上,这三个阶段不是截然分开的,在强化安全文化的过程中,任何组织都可能有一些方面超前于其他方面。

在第一阶段,常常主要通过电厂实体防护系统的完善,符合诸如INSAG-12^[4] (INSAG-3 的修订版本)中的原则,以及控制危害的基本系统和程序的引进来实现改进。这些改进往往受满足监管要求的需要所驱动,而且通常通过管理指令的方式来实现,靠专职安全人员推动。员工倾向于认为安全是管理层的责任,在很大程度上是由别人强加给他们的。

The second stage of development involves the use of a framework such as that presented in INSAG-13[2]. The organization will have developed a safety related vision or mission statement with clarity about its values and goals, and will have established clear processes and procedures for achieving its goals. At this stage, individual employees will notice that work is better planned, with prior consideration of safety hazards together with rules and procedures to govern what can and cannot be done that are systematically documented. However, in many organizations, this stage of safety is still often 'imposed' on the individual worker with little involvement or consultation, and is administered and monitored by safety professionals. Although this phase of improvement can raise consciousness about the need to work in a safe environment, it does not of itself gain commitment to and identification with safety at the individual level and the team level.

The third stage of development is the ideal that many organizations are striving to attain. Achieving it is a continuing process. It requires a safety related vision and values that are fully shared. A large proportion of the individual employees in the organization need to be sufficiently committed that they are personally and actively involved in enhancing safety. As appropriate, contractors and others with an influence on safety will also be fully involved. Everyone will have a clear understanding of requirements and aspirations and, individually or particularly through teams, will show a commitment to achieving and sustaining enhancements to safety in all that they do.

At this stage safety is 'in the bloodstream' of the organization. Poor conditions and practices are viewed by all to be unacceptable and are openly challenged. Events and incidents, whether related to industrial safety, environmental issues, or radiological or nuclear safety, are seen not as part of normal working life but as exceptional and unacceptable occurrences that are avoidable. At this point a learning organization has been created with a self-sustaining safety culture.

It is important that any organization striving to move into the third stage of development does not neglect the earlier stages and the importance of going through them before proceeding to the last stage. Achieving good safety performance requires a rule based compliance culture and high quality engineering as prerequisites, and these need to be strongly maintained even while developing the elements more strongly related to human issues discussed in this report.

The following questions may help organizations to understand where they are within this hierarchy:

发展的第二个阶段包括诸如 INSAG-13^[2] 中所介绍的框架的应用。组织将制订与安全相关的、阐明其价值观和目标的愿景或使命的声明,而且将为实现其目标建立清晰的过程和程序。在这一阶段,员工个人将会注意到工作的计划性更好了,计划首先考虑了安全危害以及规则和程序,系统地以文件形式确定什么可以做和不可以做。然而,在许多组织中,这一阶段的安全对员工个人来说,往往仍然是他们几乎不介入、也几乎不曾征求过他们意见的“外加”的责任,安全的管理和监控是由安全专业人员实现的。虽然这一阶段的改进可以提高工作所需的安全环境意识,但它本身并不能在个人和团队的层面获得对安全的承诺和认同。

发展的第三阶段是许多组织正力争实现的理想。实现它是一个持续的过程。它需要充分分享与安全相关的愿景和价值观。组织中大部分员工需要做出充分的承诺,在强化安全的活动中,他们都能够亲自、主动地参与。相应地,承包商和其他与安全相关的人员也完全投入其中。每个人对要求和期望都有清晰的理解,而且以个人或者特别地以团队的方式,在其所做的一切工作中展示实现和持续强化安全的承诺。

在这一阶段,安全已融入组织的血液。不良的状态和实践被所有人视为是不可接受的,而且受到公开挑战。异常和事件,无论是与工业安全、环境事项相关,还是与放射性或核安全相关,都被视为不是正常工作的一部分,而是例外的和不能被接受的,并且是可以避免的。到了这种程度,一个自持式安全文化的学习型组织已然形成。

重要的是,任何努力进入发展的第三阶段的组织,在跻身最后的阶段前,都不忽视早期阶段和经历这些阶段的重要性。良好安全业绩的取得,需要基于遵守规则的文化和高质量的工程作为前提,即使在发展本报告讨论的与人更加密切相关的因素时,这些前提仍需要强力维持。

以下提问可以帮助组织了解其在上述层级中所处的位置:

- (a) To what extent is safety being achieved primarily by high standards of engineering control?
- (b) Has the organization developed clear safety goals and a comprehensive system for the management of safety?
- (c) Are most people, at all levels in the organization, actively and routinely involved in enhancing safety?

Although most organizations in the nuclear industry should be able to give generally positive answers to the first two of these questions, experience shows that fewer would be able to respond entirely positively to the third question. The purpose of the next section is to provide practical and pragmatic guidelines on the developments necessary for this challenging third phase and to provide some simple diagnostic questions which might aid progress on the route to improvements in safety performance. In the Appendix, simple diagnostic questions are elaborated upon and directed at specific groups in any organization, from the board of directors to supervisors and operators. It is hoped that these questions will be used as a prompt for organizations and individuals to consider openly and honestly how they can increase, on a practical everyday basis, their contribution to developing a stronger safety culture.

- (a) 主要通过高标准的工程控制,安全达到了何种程度?
- (b) 组织是否建立了清晰的安全目标和完善的安全管理制度?
- (c) 组织中各级员工的绝大多数是否主动地、例行地参与改进安全?

虽然核工业的大多数组织都应该能够对前两个问题做出大致肯定的回答,但经验表明,只有较少组织能够对第三个问题做出完全肯定的回答。下一章节的目的是,向具有挑战性的第三个阶段发展提供实用和有实效的导则,还提供一些简单的用于推动安全业绩的改进进程的诊断性提问。在附录中,针对组织中从董事会到主管和操作人员各个特定的群体,详细列举了简单的诊断性提问。希望这些提问用于促使组织和个人开放和诚实地考虑,在日常工作中如何对发展更强势安全文化做出更大的贡献。