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EXECUTIVE SUMMARY

- 1.1 This report details the findings of a study of autonomous working in the oil and gas industry in north east Scotland. It is part of the final output of a 30 month project run by Robert Gordon University and Aberdeen College, funded by the Scottish Further and Higher Education Funding Council in support of the Scottish Government's 'Maximising the Impact of Skills' agenda.
- 1.2 Greater employee autonomy in the workplace was identified at an earlier stage of the project as one of a number of Skills Utilisation Practices (SUPs) which could potentially result in higher levels of skills utilisation in the workplace. Advocates of autonomous working often cite a number of additional benefits deriving from the approach. These typically include:
- Better safety record;
 - Better employee engagement/satisfaction;
 - Lower levels of staff turnover;
 - Higher levels of performance and productivity;
 - Better responsiveness to unforeseen problems/issues;
 - Leaner management structures.
- 1.3 Despite these claimed benefits, very few companies in the UK oil and gas industry have experience of SUPs which give their workers greater autonomy. However, many companies are keen to find out more about how to make the transition from a more traditional 'directive' approach to people management towards a more autonomous approach.
- 1.4 In this study, we worked with representatives of five 'directive' companies to identify the barriers which prevented companies like theirs from taking steps to move towards implementing more autonomous working practices. We identified a number of barriers to more autonomous working in our discussions with the directive companies. The barriers they identified fell broadly into six groups: safety barriers; cultural barriers; resource barriers; company barriers; skills barriers; and evidence barriers. Of these, the barriers which were felt to be most profound were those relating to safety, resources and company characteristics.
- 1.5 In particular, these directive companies explained that some of the key barriers were:
- Autonomous working was seen to be inherently more risky than directive working;
 - Companies, individuals and the industry as a whole are inherently sceptical of change;

- Autonomy needs to be mainstreamed across an organisation in order to be successful;
- The resources needed to implement autonomy (especially time and money) across an entire organisation would be prohibitive for many companies;
- Autonomous working would automatically mean that employees spend more time debating how to carry out specific tasks, and less time actually performing those tasks;
- Autonomous working was thought to require far more generalised skillsets than those currently available to the industry;
- A lack of evidence to directly link autonomy with improved business outcomes in an oil and gas context make it difficult to convince companies of the case for change.

1.6 We then worked with three autonomous companies to explore whether they too had faced these barriers and, if so, whether there were any lessons from their experience which might be useful in assisting directive companies to make the transition. In addition, we sought to explore with these autonomous companies a number of additional issues, such as how autonomy works in their companies, the limits to autonomy and critical success factors in implementing an autonomous working culture.

1.7 Rather than providing guidance on overcoming these barriers, the autonomous companies we interviewed often disputed the barriers identified by the directive companies. They argued that objections to autonomy were often based on a misunderstanding of the concept. It was felt by our autonomous interviewees that some directive companies in the industry had a 'straw man' understanding of autonomy as being inherently free from regulation and supervision. It was also felt by these autonomous interviewees that where barriers could legitimately be said to exist, these applied equally to directive companies and not just to those who work in a more autonomous manner.

1.8 The barriers which were particularly disputed were those relating to safety. Autonomous companies explained that health and safety is as important to them as to any directive company. Given the potential volatility of the offshore environment, there was a far higher degree of 'proceduralisation' of operations at the 'coalface' than had been expected by some of our directive interviewees. Rather, offshore autonomy was more typically found among more senior staff, usually in relation to issues such as management, budgeting and planning rather than operational tasks. Autonomous interviewees were also critical of the belief that a more directive approach was inherently more successful than autonomy in addressing safety issues, arguing that the culture of 'passing decisions upwards' can lead to decisions being made by people who are not best placed to pass judgement on an issue.

- 1.9 Where barriers were perceived by autonomous companies to be legitimate, it proved difficult for them to provide guidance on how to overcome these. In terms of cultural barriers, all of our autonomous companies felt that entering the UK industry without a strong tradition of directive working had been crucial to their success. It was felt that for many directive companies, their traditional approach may be difficult to overcome, although some successful examples of autonomy being introduced to directive companies were identified (e.g. the BP MAST assets in the 1990s).
- 1.10 In terms of evidence, autonomous companies felt that their success, safety compliance, operating/production costs and staff retention should be sufficient to convince directive companies that an autonomous model can work in the oil and gas industry.
- 1.11 Autonomous companies also argued that their approach yields great benefits for their contractors. By empowering contractors to exercise their best judgment on the delivery of a contract (e.g. by providing them with a very low level of technical specification), autonomous interviewees claimed that this provided greater job satisfaction and retention levels within contractor companies. In addition, the autonomous interviewees argued that certain directive contractors had already begun to alter their model to introduce greater elements of autonomy. We were keen to speak to these contractors to find out more about this, but were unfortunately unable to do so within the timescale available to us. Further investigation of this issue should be a key research priority in future.
- 1.11 Based on previous experience (e.g. BP MAST assets) and the experience of our autonomous companies (particularly in their work with directive contractors), there may be potential in an approach which seeks to introduce autonomy to functional divisions or specialist units/teams within directive companies, rather than trying to 'autonomise' an entire company at once.
- 1.12 Autonomous interviewees also provided information on the factors which had been critical to the successful deployment of autonomy within their company. These largely confirmed the perceptions of the directive companies we interviewed. In addition to the factors which make any business successful (e.g. access to skilled employees), critical success factors included the following:
- Management buy-in (particularly a willingness to devolve authority and to have far fewer middle managers);
 - Mainstreaming of autonomy across the organisation;
 - A willingness to invest time, money and effort into instilling the culture;
 - Being a young, relatively small company (in UKCS terms).

- 1.13 The dynamics of autonomy and the way it works in autonomous oil and gas companies was also explored. In each case, the general guiding principle was that decisions are best made at the lowest possible level of the company. This was based on an understanding that those best placed to make informed decisions are those closest to a particular issue and those most directly exposed to risk if a wrong decision is made.
- 1.14 Devolving autonomy was typically seen by our autonomous companies to result in quicker decision-making, better engagement of staff with the tasks they carry out, and in better 'risk ownership'. This was contrasted with a perception among autonomous companies of directive companies fostering an unquestioning attitude to tasks, and the culture of passing decisions upwards to managers who are perhaps not best placed to make informed decisions due to lower direct risk exposure and less specialised knowledge of the problem. It was generally felt by the representatives of autonomous companies (many of whom had worked for directive companies in the past) that this led to much slower decision-making processes, which in turn was thought to have implications for project timescales.
- 1.15 However, autonomous companies stressed that this does not mean that all decisions are routinely passed downwards. Individual competence and financial authority typically determined the extent of autonomy devolved. Decisions lying outwith an individual's scope of competence and financial authority must still be passed upwards to a manager, although interviewees claimed that compared to more directive companies, the culture of increased 'risk ownership' meant that managers within autonomous companies were far less likely to reject the recommendations of employees approaching them with suggested solutions to problems lying outwith their competence and/or financial authority.
- 1.16 Interviewees did not mention health and safety as a factor which limited their autonomy. However, this was because health and safety was seen to be just as fundamental and non-negotiable as would be the case in a more directive company.
- 1.17 Companies also disputed that skillsets within the industry were currently too specialised to allow for autonomous working, claiming instead that functional specialisation, highly specialised skillsets and autonomous working were in no way incompatible.
- 1.18 The coming years will be crucial to further developing a clear understanding of how autonomy can work in larger companies. The two autonomous companies we spoke to highlighted the importance of company scale (i.e. being relatively small) as a factor in their successful deployment of autonomy. With both of these autonomous companies gearing up for considerable growth after significant recent asset purchases, it will be of great interest to follow the extent to which autonomy can continue to operate within

much larger workforces. Early evidence suggests that there may already be signs of a dilution of autonomy within one of our autonomous companies.

- 1.19 In terms of next steps, we are very keen to receive feedback from a wider range of companies on our findings and their relevance to their operations and to the industry as a whole. We believe that future attention should be directed towards two key issues: firstly, the way in which the principle of autonomy develops within a workforce which is undergoing rapid expansion; and secondly, the way in which the principle of autonomy can develop within an company whose organisational culture has traditionally been more 'directive' in nature.

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ROBERT GORDON UNIVERSITY•ABERDEEN

Autonomous Working in the Oil and Gas Industry

Research Report

July 2012

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INTRODUCTION

Overview

This report is the final report detailing the findings of a study of autonomous working in the oil and gas industry. This study is part of the final output of a 30 month project run by Robert Gordon University and Aberdeen College. Funding for this study (and the project more broadly) was provided by the Scottish Funding Council in support of the Scottish Government's 'Maximising the Impact of Skills' agenda.

The first stage of this 30 month project was a 6 month study looking at patterns of skills utilisation in the oil and gas industry (Gibbons-Wood, MacLeod and Tait, 2010). This study established that autonomous working was an important issue in the consideration of skills utilisation in the industry. On this basis, the project's Steering Group agreed to make available funds which allowed the research team to conduct a follow-up study into a number of aspects of autonomous working.

This report provides an overview of the process followed by the research team, and reports upon the findings which emerged.

Research Team

The research team for this particular project comprised David Gibbons-Wood (Centre for International Labour Market Studies) as Principal Investigator, and Dr Iain MacLeod (Institute for Management, Governance and Society) as Lead Researcher. Both were heavily involved in producing the Interim Research Report (Gibbons-Wood, MacLeod and Tait, 2010) which informed this suite of follow-up work.

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BACKGROUND

Previous Research

In 2009, an application by RGU and Aberdeen College was one of twelve selected for funding by the Scottish Funding Council in order to carry out research on skills utilisation. As part of the project, the Steering Group commissioned a team from the Robert Gordon University's Centre for International Labour Market Studies (CILMS) and Research Institute for Management, Governance and Society (IMaGeS) to undertake primary and secondary research to establish the relevance of the project to the industry and to identify possible ways forward. This research team comprised David Gibbons-Wood (CILMS) and Dr Iain MacLeod (IMaGeS), whilst Dr Elizabeth Tait (formerly of CILMS) also played a significant role in the early stages of the research work.

Key Findings of Previous Research

This research resulted in an interim research report which established a number of key findings. The idea of empowering employees by giving them greater autonomy in the way they do their job emerged from the literature we reviewed as a practice which could potentially result in much higher levels of skills utilisation in the workplace. We referred to the literature to identify a list of workplace and individual practices (Skills Utilisation Practices) which were linked with higher performance working. However, our interviews revealed that although many Skills Utilisation Practices (SUPs) are in widespread use in the oil and gas industry, very few companies have experience of the type of SUPs which empower their workers by giving them greater autonomy. We also established a very interesting paradox in relation to this practice. We found that only a small number of companies we spoke did have experience of giving greater autonomy to their workers. The remaining companies we spoke to were opposed to the idea of giving greater autonomy to their workers. Paradoxically, the small number of companies with experience of greater employee autonomy argued that it had played a crucial role in their success, and that greater employee autonomy could help to deliver noticeable improvements in the following areas:

- Staff performance;
- Safety compliance;
- Productivity;
- Staff motivation;

- Employee engagement;
- Staff retention;
- Use of initiative;
- Innovation; and
- Creativity.

In addition, these companies argued that a rigid and prescriptive approach worked against the very idea of skills utilisation. This matches the findings of the literature review, which showed that a number of effective employee engagement practices depend upon empowering individual employees. Furthermore, the idea that individuals should have some role to play in determining the way that their skills are used has also gained support at ministerial level in the Scottish Government.

“Some managers may have boxed expectations of skills. They see a need. Fill that need. Job done. Move on. However, we are asking them to consider if people’s skills can be used more effectively. With the right encouragement, opportunity and support can people make better use of their skills? They may be able to do more, much more, than simply work within that ‘box’.”

(Extract from a speaking note for Keith Brown MSP, former Minister for Skills & Lifelong Learning, 2010)

This extract was developed as a direct result of our interim research report dissemination event (7th June, 2010). It highlights that a number of key aspects of skill use – encouragement, effectiveness and opportunity – depend upon the organisational environment. Companies with limited expectations of their employees are unlikely to achieve high levels of individual performance. By allowing decisions to be made in a decentralised and devolved manner, individuals are often better able to draw upon their skillsets, whilst also recognising the limitations of their capabilities. However, changing a company’s expectation of what is possible may be an issue of organisational culture/structure.

We already know from our research that of those companies which opposed the idea of introducing greater employee autonomy, only a very small number opposed the idea in principle. The majority of those who opposed the idea did so on the basis that there was too little evidence

of it having been tried and tested in the oil and gas industry. As such, they were not entirely opposed to the idea of trialling this type of approach if a larger body of evidence was available to show how this practice can be operationalised in an oil and gas context. At present, most of these companies depend upon a more traditional hierarchical structure which is claimed to be necessary in order to satisfy health and safety requirements. However, the companies with experience of greater autonomy claimed to have safety records which were at least as good – in some cases far better – than the companies without this autonomy. As such, the way in which practical and attitudinal obstacles to greater employee autonomy can be overcome in the oil and gas industry is the issue which we propose to investigate in greater depth in this particular set of activities.

The research showed that although few companies have direct experience of these practices, there was nevertheless an interest in the way that employee autonomy works in practice, and whether it could be transposed to other companies' organisational practices. Given the potential 'payback' of greater employee autonomy, we propose to focus our attention firstly upon the obstacles which so-called 'directive' companies³ perceive to exist in relation to implementing greater employee autonomy, and secondly upon the way in which so-called 'advocate' companies have addressed these obstacles. An additional important aspect of this proposed activity is a more detailed exploration of differential levels of autonomy in practice in these companies, and the limits to this autonomy at different levels.

This study does not aim to provide the last word in operationalising greater employee autonomy in the oil and gas industry. Rather, it aims to stimulate greater debate and practice-sharing within the industry in relation to greater employee autonomy.

At the heart of this activity is a desire to bridge the divide which currently appears to exist between 'directive' and 'advocate' companies. Our interviews during the research phase suggest the existence of a thirst for more knowledge about the mechanics of employee autonomy on the part of the 'directive' companies and a keenness on the part of the 'advocate' companies to share their views on how this works. At present there is no mechanism for this within the industry, meaning that organisational paradigms are rarely challenged. We hope that by acting as a collaborative conduit, we can stimulate and facilitate a greater level of dialogue in the industry on the issue of employee autonomy. We believe that a thirst for this exists on both sides of the

³ Please see the 'Contextualisation' section (page XXX) for a full definition of 'directive' and 'advocate' companies.

debate and that the opportunity to support the development and validate the results of the first examination of the feasibility of greater employee autonomy in the industry will be attractive to both sides.

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CONTEXTUALISATION

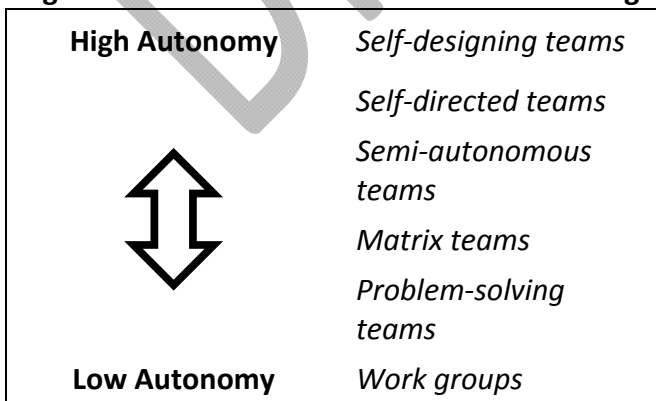
What is Autonomous Working?

The idea of autonomous working is not a particularly new one. It was first developed by the Tavistock Institute in the immediate aftermath of World War II in an attempt to maximise efficiency and productivity in UK coal mining. Since then, it has been used in a variety of contexts, most notably at small group level (autonomous work groups).

Although a range of variants of the original autonomous work group have since emerged, the core unifying principle remains the same: “a high degree of self-determination by employees in the management of their day-to-day work” (Wall et al, 1986: 280). This self-management may relate to issues such as the structure of the group, the personnel employed, the pace of the work, distribution of tasks, the priority of work objectives, the reward structure for group members and the approach used to complete certain tasks, among others.

Tata (2000) establishes a hierarchy of autonomous working, identifying a number of different levels of autonomous team-working, ranging from teams with low levels of autonomy (e.g. simple work-groups or teams tasked with solving a particular problem) to teams with considerable autonomy (e.g. those empowered to select their own personnel and direct their own work). Again, this reinforces the idea that ‘autonomous working’ is not a fixed, immutable concept within workplace design or organizational analysis. Rather, the idea of autonomy is best represented on a spectrum, with varying levels of autonomy available in different circumstances.

Figure 1: Levels of Autonomous Team Working



Source: Tata (2000)

Studies of autonomous working cite a range of benefits, most commonly including increased employee motivation, increased job satisfaction, better individual and collective performance, reduced staff turnover, increased organisational commitment and improved mental health (Hackman, 1983; Emery, 1959; Herbst, 1974; cited in Wall et al, 1986; Kirkman and Rosen, 1999, Manz and Sims, 1993; Scott et al, 2003).

However, despite the abundance of evidence claiming positive benefits from autonomous workings, other studies (e.g. Ashley, 1992) suggest that the success of autonomous working can be strongly context-dependent and is not a given (see also Tata, 2000). This is consistent with some of the most influential studies of autonomous working. For example, Burns and Stalker (1961) argue that autonomous working is the most appropriate approach when certain environmental factors are present. In particular, they stress that more organic or autonomous people management practices will have the greatest chance of positive benefit when they are used in companies which conform to the following characteristics:

- Organisation exists in an unstable, turbulent or unpredictable environment, in which environmental changes have a big impact on the organisation (as opposed to existing in a relatively stable operating environment).
- The organization is more 'organic' in nature: structures, processes and roles are flexible and respond and adapt to the environment (as opposed to acting like a machine in which structures, processes, and roles are highly specialised).
- A focus on effectiveness, problem solving, responsiveness, flexibility, adaptability, creativity, and innovation as organisational goals, in which processes and procedures try to empower employees to be creative, to experiment, and to suggest new ideas (as opposed to a focus on predictability and efficiency, where production processes and techniques try to minimize waste and maximize outputs for a given quantity of inputs and processes outside established protocols are seen as uncertainties to be brought under control).
- A decentralised and networked chain of command with flatter, less hierarchical decision-making structures, where employees participate in decision-making, often interactively and in groups (as opposed to a well-defined hierarchy of command with highly formalised 'top-down' decision-making, where operations and working behaviour are determined by management and decisions are mainly concerned with application of appropriate predetermined rules, policies, procedures or criteria).

- Employees are encouraged to deal with problems as locally as possible, without passing them upwards, downwards or sideways and innovation is triggered by employees throughout the organization in a 'bottom-up' manner (as opposed to problems being identifiable by employees at all levels, but acceptable solutions being determined by senior management in a 'top-down' manner, where areas of innovation are usually identified by management).
- A network communications structure (horizontal and vertical) in which communication is about negotiating outcomes (as opposed to having formalised, vertical lines of communication, in which communication is about passing instructions downwards and requests for instructions upwards).
- A strong focus on generalized skills, broadly defined jobs and flexibility to move between operational roles if necessary, in which employees and groups are more interdependent and know more about the bigger picture (as opposed to having a strong focus on specialisation, with employees focussing on their own niche area of work, and not needing to know or understand the bigger picture).
- Relatively few (but broadly defined) rules, regulations, procedures, and processes (as opposed to rigidly defined technologies, procedures and processes).

Even at first glance, it can be seen that these factors hold considerable relevance for the oil and gas industry. However, although in some cases (e.g. operating environment) the conditions appear to be strongly appropriate for successful autonomous working, in other areas (e.g. the regulatory and process-driven framework of the industry) the opposite would appear to be true.

As such, we approached this study with no firm preconceptions of how autonomous working would work in practice. We expected that the benefits cited above would be key motivating factors for the companies involved, and based upon the fact that autonomy operates as a spectrum rather than a dichotomy, we also expected that there would be differences between the two companies⁴ in terms of the way autonomy worked for them.

⁴ Please see the 'Methodology' section (page XXX) for an introduction to the two 'advocate' companies.

Definition of Terms

In this report, we use a number of terms to describe two broad groups of companies. For the purpose of clarity, it is important to spell out what we mean when using certain key terms.

The first group of companies is comprised of those which attempt to give greater autonomy to their workers. Most commonly, we refer to these companies simply as 'autonomous' (or some variant thereof). On occasion, we also refer to 'advocate' companies. By this, we refer to the same group of companies, but wish to draw attention to the fact that they advocate or champion a more autonomous approach to working. Finally, we also occasionally refer to 'organic' companies. This term derives from an influential early study of autonomous working (Burns and Stalker, 1961), which drew a comparison between companies with an organic approach to people management and those with a mechanistic approach to people management. Where the ideal type of the former is fluid, adaptive and autonomous, so the ideal type of the latter is hierarchical, prescriptive and directive. We accept that employee autonomy and organic management structures are not one and the same thing. As such, where we use the term 'organic', we do so because we are referring explicitly to some aspect of organisational structure rather than the concept of autonomy more generally.

The second group of companies includes those with a more traditional, hierarchical approach to employee autonomy. We refer to these companies as 'directive', in order to reflect the fact that they typically adopt a more prescriptive approach to working practices. In this model, employees are generally less free to use their own initiative in a work environment, and are typically more constrained, whether through formal specifications or informal expectations in the workplace.

As outlined above, Burns and Stalker (1961) draw a distinction between 'organic' and 'mechanistic' organisational structures. Where we use the term 'mechanistic', we do so in favour of 'directive' because we are referring explicitly to some aspect of organisational structure rather than the concept of autonomy more generally.

Finally, we also refer on occasion to 'hierarchical' companies. Again, when we do so, we are contrasting the increased tendency for hierarchical stratification within directive companies with the ostensibly more streamlined approach claimed by autonomous companies.

METHODOLOGY

Securing Company Participation

The project began by re-approaching the two companies we identified with experience of implementing more autonomous working practices ('advocates') to ensure that were still happy to provide more information on their working practices. These companies were Apache North Sea and TAQA Bratani. We met with both companies and explained that we wanted to explore in greater detail the potential of autonomous working practices for the industry, and that we would be very keen to speak to a number of their employees at different levels of the company about this.

Whilst Apache were happy to be involved in this way, TAQA Bratani felt that such involvement would not be possible. They did, however, agree to being interviewed again. Following further discussions with our contacts within Apache North Sea, it emerged that one of their main contractors also employed autonomous working methods. We sought their permission to approach the contractor, and the company in question – Flexlife – agreed to be interviewed in the same way as TAQA Bratani. As such, we were able to include three autonomous 'advocates', with a high level of involvement from Apache North Sea and interviews with TAQA Bratani and Flexlife.

It had been hoped at the outset that we would have a high level of involvement (i.e. more than an interview) from more than just one company and as such, we approached our industry contacts on the External Advisory Group with a view to identifying more companies with experience of autonomous working practices. Despite efforts made by each company and industry body represented on the External Advisory Group, we could find no other companies who used (or had previously used) more autonomous working practices (which largely confirmed one of the key contentions underpinning the study; namely, that very few companies within the industry employ this type of approach). As such, we proceeded on the basis that we would have a high level of involvement from Apache North Sea, and interview input from TAQA Bratani and Flexlife.

Having secured the participation of Apache North Sea, TAQA Bratani and Flexlife, we turned to securing the participation of those companies who had expressed a degree of scepticism towards autonomous working during the previous research phase. Although we had already assembled a range of opinions on autonomous working during the previous research phase, we wanted to

explore the issues associated with autonomous working in much greater detail in this follow-up project. As such, we contacted a number of our prior interviewees in order to ask them to share their opinions with us. In total, we contacted 13 of the companies involved in the previous research phase in order to see if they would be prepared to contribute to this follow-up study. The companies whose representatives a) were involved in the previous phase, and b) agreed to participate in this phase of the research were:

- Aker Solutions
- EnerMech
- S&D Fabricators
- Tritech
- Wood Group Engineering North Sea

We are extremely grateful to all those companies who agreed to participate in this piece of work. Without their contribution, this project would not have been possible.

Methodological Approach

From the outset, it was intended that the project should broadly follow a two-stage research process. These were as follows:

- Stage 1: the identification of barriers to autonomous working
- Stage 2: the identification of solutions to barriers to autonomous working

Below, we provide a brief overview of the planned approach to these stages.

Stage 1: the Identification of Barriers

In Stage 1, we arranged to meet with our directive companies in order to discuss the potential benefits identified by 'advocates' and to identify the key obstacles which they believe are most profound in terms of discouraging non-autonomous companies from adopting these working methods. In particular, we sought to identify specific practical issues, and to obtain detailed information on the range and nature of these barriers, as well as the type and scale of evidence they believed would be required in order to convince them and other non-autonomous companies

of the merits of greater employee autonomy. In this respect, these interviewees played a crucial formative role in determining the focus and direction of the remainder of the activity.

Stage 2: the Identification of Solutions

In Stage 2, the research team arranged to return to the 'advocate' companies in order to explore with them their opinions on and experience of overcoming the barriers identified by our directive interviewees, and to identify critical success factors required to implement a greater degree of employee autonomy. In particular, advocates were asked to elaborate on the extent to which these barriers have also impacted upon them and how they have been overcome. Again, this aimed to engage participants in the type of reflective problem-solving approach which characterises action research. The research team also explored with advocates the nature of autonomy in their company, including how autonomy works in operational terms, and whether there are differing limits to autonomy at different levels of their organisation.

Finally, as the first phase of the research was heavily informed by management-level perspectives, the research team then arranged to speak to a number of more operational-level employees from Apache. These interviews allowed us to gauge their perspective on the contribution of autonomous working practices to performance, productivity and skills utilisation within their company, as well as finding out how important the idea of autonomy was to them in terms of individual job satisfaction.

Documenting the Impact of Autonomy on Skills Utilisation

The literature review already conducted as part of the project identified that linking skills utilisation practices (SUPs) to specific performance outcomes (including productivity) is extremely difficult due to the multivariate nature of the environment in which SUPs are typically deployed. However, unlike the other pilot activities, this activity does not aim to test a hypothesis through reference to pre/post figures of performance and/or productivity.

Rather, the activity is heavily reflective and interpretive. As such, the data gathered in support of this activity was intended to be almost entirely qualitative in nature. 'Directive' companies' views on barriers were to be probed in semi-structured interviews, and the response of 'advocate' companies would be explored in a similar format. The interviews with the additional 'advocate'

company employees were also to be semi-structured, with a focus upon capturing rich qualitative accounts of their experiences of workplace autonomy and its impact upon their levels of skills utilisation, performance etc.

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BARRIERS IDENTIFIED TO AUTONOMOUS WORKING

In the following four chapters, we set out the results of the analysis of our interviews. We begin by providing an overview of the way in which our directive interviewees responded to the claims made by the advocate companies in our Interim Research Report; namely, that autonomous working is a more effective way of maximising the skills use of your workforce, leading to better performance, productivity, safety compliance and staff satisfaction. We then move on to consider the barriers to autonomous working which were identified by our directive interviewees, before turning to consider the testimony received from our advocate interviewees. We begin this section by considering the way in which autonomy works in these three companies, including a consideration of the way they define autonomy, the different levels of autonomy available to employees in their company and any limits to autonomy within the company. We then consider the factors identified by interviewees as being critical to the success of implementing autonomy, before returning to the specific barriers identified by directive companies, in order to document the responses of advocates to these barriers.

Firstly, we spoke to our directive companies about the type of barriers or obstacles they perceived to the adoption of autonomous working practices in their own company and across the industry. Broadly, the barriers identified fell into one of six categories: safety barriers; cultural barriers; resource barriers; company barriers; skills barriers; and evidence barriers. In general, the most pervasive barriers were those relating to safety, culture and resources. We now present an overview of the different types of barrier identified in the following sections.

Safety Barriers

The most prominent category of barrier identified by our directive interviewees related to safety issues.

Inherent Risks of Autonomy

Most of our interviewees believed that for many companies, there would be an automatic tendency to suspect that autonomous working practices would be inherently more risky than more traditional, hierarchical working methods. Regardless of the operational/functional area in which our interviewees were active, offshore safety was highlighted as being an industry concern

which would always supersede any possible benefits offered by potentially less safe working methods. According to our interviewees (some of whom shared this belief, some of whom did not), this was based upon the expectation that unless some degree of procedural control was exercised by companies, individuals would be likely to 'overstep the mark' and choose to approach tasks in a way which may not meet the standards (safety, quality etc.) typically demanded in a more hierarchical company. As an extension of this, our interviewees stated that autonomous working methods would therefore pose a problem in terms of accountability and responsibility: if employees are given too much latitude to make decisions themselves without following a clear set of company procedures or guidelines, identifying the root cause(s) of any problems arising in relation to standards could potentially be extremely difficult.

The Three Ps: Procedure, Process, Protocol

This belief links strongly to the industry's heavy reliance upon procedure, process and protocol. The industry is widely seen as being very strongly proceduralised at all levels, from operational offshore work (sometimes referred to by interviewees as 'coalface' work) to office-based support functions like procurement. The most common rationale cited by interviewees for this was the need to demonstrate safety compliance, but it was also felt by some interviewees that a move towards proceduralisation and process-driven approaches to work was seen as a 'natural' consequence of company growth and the need to operate in an industry in which there is a significant degree of technical specialisation. Indeed, the oil and gas industry would not be alone in this respect: such a trend would fit well with Weber's sociological construct of an 'iron cage' of rationalisation and bureaucracy in modern societies, which involves such familiar concepts as hierarchical authority, the specialised division of labour, efficiency and written rules of conduct (Weber, 2001).

An issue specific to the offshore environment was the 'permit to work' system, which is accepted as an industry norm. Because of the need to follow permits closely, it follows that creative, autonomous solutions may be difficult to introduce. Indeed, the opportunity for debate or deviation from the permit system was seen as dangerous: in such a potentially volatile, time-critical environment, the need for hierarchical working and a clear command structure was seen as essential.

Staff Transience

The transience of the workforce within this particular industry was also earmarked as a safety barrier by a majority of our interviewees. This had two main (unrelated) aspects to it. Firstly, the offshore side of the industry had an inherent transience in the form of work rotations. This mitigated against the introduction of autonomous working methods, as it was felt that this shift pattern worked against the idea of employees working creatively or innovatively, as the reasoning behind approaching certain tasks in a certain way may not be easily communicable if handed over halfway through the task as the shift workers cross over. Furthermore, the individual judgements typically associated with autonomous working may not be consistent across different crews, hence the need to proceduralise tasks in order to remove the element of uncertainty.

Secondly, the idea of transience was highlighted in relation to the idea of staff mobility and company loyalty: it was generally felt that the oil and gas industry had a particularly high level of staff mobility and turnover and this also led to greater enthusiasm for strong codification or proceduralisation in order to allow new employees to have a quick reference guide which would enable them to 'hit the ground running' and to remove the uncertainty associated with reliance upon the judgement of specific individuals in specific situations. It was argued that failing to have this codification in place could lead to dangerous individual judgement calls being made by people who were insufficiently qualified or skilled to do so.

Cultural Barriers

After safety concerns, the most regularly identified barriers related to cultural factors, both at individual, company and industry level.

Industry Conservatism

In terms of industry level cultural barriers, our interviewees explained that in many ways, the industry is inherently conservative, and pointed to this as an obstacle to certain types of change. Whilst technological and safety-related progress were identified as the key types of change welcomed by the industry, other changes – such as working practices and management processes – were reported to be widely seen as an unwelcome distraction from getting on with everyday business. The industry was also thought to be extremely reactive in nature, as opposed to proactive: without some sort of major exogenous pressure to make changes (e.g. the legislative

environment, safety incidents etc), interviewees suggested that the industry tends to follow an established course rather than adopting a proactive or forward-thinking approach.

Industry Culture of Resistance

In addition, we were told that there exists a general culture of resistance within the industry in relation to any type of fundamental change. Despite advances in areas like drilling technology, basic workplace practices were widely seen as being relatively unchanged since the early days of the industry (the exception to this was a far greater degree of emphasis nowadays on health and safety compliance). Other than this, the industry was seen as prizing stability above virtually everything else: again, the importance of maximising uptime and productivity is the uppermost concern after health and safety.

Company Acknowledgement of Change

Cultural attitudes at company level would also frustrate a move towards more autonomous working (or preclude such a move ever being initiated), according to our interviewees. In particular, they explained that in many companies there would be no acceptance that change is needed: by and large, the industry is a very lucrative one and many within it see this as testifying to the effectiveness of the current prevailing approach to management (i.e. a traditional hierarchical one). The existing culture of 'command and control' within the industry was also seen as being deeply embedded and widely accepted across the industry, thus making it very difficult to envisage alternative models being accepted.

This seemed to be particularly relevant to the interviewees we spoke to within the supply chain. These interviewees described the very highly specified nature of most of the contract work they carry out for clients. Although many of the specifications they follow are industry standards which are non-negotiable, many of them are also specified by clients. This high level of technical specification from clients in many jobs further reduced the likelihood of employees within the supply chain being able to use their initiative or autonomy to design solutions to problems. Rather, the expectation of many clients is that their contractors act more as assembly lines for pre-specified items than as autonomous, creative sources of solutions. In addition, it was felt that a move towards more autonomous methods could result in a 'maverick' reputation, which in turn could jeopardise future contracts, particularly from the major operators (who were identified as being those most likely to produce extremely detailed, bespoke design specifications).

Strategic Framework

There was also a perception among our interviewees that for autonomous working to be successful, there was a strong need for a clear strategic framework in which employees would work. However, it was felt that implementing just such a shared vision may be problematic across larger companies divided into functional autonomous units. In short, people need to be working to the same agenda rather than working in silos. Communicating this – particularly across larger organisations – was seen as potentially problematic.

Individual Scepticism

The first major individual-level barrier we encountered in our discussions with ‘directive’ companies was a resistance to changes in working practice among operational employees. Interviewees explained that a number of different management techniques have been trialed in the industry previously, before being abandoned in favour of the next new technique to come along. Accordingly, many employees (both managerial and operational) are frustrated by or suspicious about changes in management style and the instability and potential upheaval in working practices which can accompany these changes. As such, some of our interviewees stated that there is a culture of resistance to changes in management style within the industry, making any changes difficult to implement. A fear of the unknown and a managerial unwillingness to devolve authority were further identified as being well-established attitudinal barriers to adopting different approaches.

Lack of Employee Interest

In a similar vein, another individual-level cultural barrier we encountered among our directive companies was a perceived lack of interest among operational workers in moving towards a culture of more autonomous working. In addition to the general resistance outlined above, many of our interviewees also felt that their employees – particularly those employed ‘closer to the coalface’ – would see the introduction of autonomous working practices as some form of management ‘trick’ designed to increase efficiency, productivity or other output indicators, rather than genuinely giving them greater control over their own work. Rather than devolving control, this perspective suggests that employees would see this as an opportunity for management to increase control over them. This lack of trust was also reported in the opposite direction, too:

some interviewees explained that it would be very difficult for individual managers to trust their employees to act responsibly within a more autonomous framework.

'Comfort Zone'

A number of the directive companies we spoke to also argued that many employees in the industry would be unhappy with the idea of being challenged to move out of their 'comfort zone' and take greater decision-making responsibility for their work. Interviewees stated that many employees enjoy the stability and predictability of a precisely specified role, and that many offshore workers in particular would be uncomfortable with the idea of being asked to engage more deeply with the job they do. In other words, employees were thought to be happy to remain within an unchallenged comfort zone; a "don't ask me to think" scenario.

Resource Barriers

The next prominent category of barrier identified by our interviewees related to the resources required to implement an entirely new approach to personnel management.

Effort / Cost

Firstly, it was felt that any such change would require an enormous amount of effort if it were to be successful. However, the pressures of everyday business meant that the effort required to affect such a fundamental change would be difficult to achieve whilst also maintaining high levels of performance and productivity. This was linked to a general reluctance identified on the part of many companies to invest in 'intangibles'. Although companies within the industry may well state that getting the most out of employees is a priority, one interviewee made it clear that the ultimate priority was simply making money as consistently as possible, and anything which threatens this – even if there may be longer-term benefits which accrue – would be viewed with suspicion by many.

Time

Similarly, it was felt that even if the requisite level of effort was in place, the amount of time required to turn around company culture from a traditional hierarchical management approach to a more autonomous approach would be so great that it would act as a disincentive to companies interested in experimenting with autonomy. In addition to the time required to make the change,

it was also felt that once the change had been made, it could take a considerable period of time before the new approach actually begins to pay dividends. This was seen as a further disincentive.

More Time Talking, Less Time Doing

This was accompanied by a widespread perception among our interviewees that autonomous working would necessarily lead to a situation whereby their employees spent more time *talking* and less time *doing*. In the absence of procedures, guidelines or hierarchical instructions to structure their approach to a given task, autonomous employees were thought to be more likely to spend a greater amount of time discussing possible approaches to the task than actually getting on and doing it according to a predetermined script. Given the industry's relentless pace and emphasis on maximising uptime and productivity, it was felt by our interviewees that many companies across the industry would see this use of time as unacceptable.

Along similar lines, one interviewee spoke to us about a 'criticality' triangle. According to this model, the projects on which the industry is based are typically structured around three key factors: time, cost and quality. The way the industry typically works is that as harmonious a balance as possible is achieved between these three. Any adjustment to one will necessarily have consequences for the others: for example, an increase in the output quality expected of a certain project or contract (whether in exploration and production or the supply chain) will likely result in a knock-on effect on the cost and time required for the work. Similarly, a reduction in the amount of time available will have consequences for the cost and quality of work involved. Given the potential for new working methods to impact upon any one of the three factors involved in the 'criticality triangle', this interviewee suggested a multiplying effect of autonomous working compared to other initiatives which directly affect only one or two aspects of the triangle.

Company-Level Barriers

A number of interviewees argued that any attempts to encourage more companies to introduce a greater degree of autonomy to their working practices was unlikely to be met receptively, as there was a general perception that autonomous working practices were only ever likely to succeed in companies with certain characteristics. These barriers were strongly linked to the cultural barriers explored above. The essence of the argument was that certain company characteristics would

almost always strengthen the commitment of a company to a more traditional, mechanistic management approach.

Mainstreaming

In particular, interviewees explained that they thought it was important for autonomy to be mainstreamed right from the start of a company's operations. The difficulty of making any fundamental change was thought to increase in line with the age of a company's operations: once a company has established a particular modus operandi, an element of path dependency emerges, with institutional change becoming more of a resource-hungry endeavour (in terms of the amount of time, effort and money) as time passes.

Age / Scale

As such, it was felt that long-established companies would see their age as a barrier to changing their people management approach. In addition to the age of a company, the scale of a company was seen as being an important factor in the likelihood of autonomy succeeding. The literature we reviewed suggests that autonomous working tends to be most successful when deployed in smaller companies which operate in a structure based around small operational groups arranged by function. Whilst our interviewees also identified this type of company as being the one most likely to succeed if it were to introduce autonomous working, there is a tendency for companies within the industry to either grow rapidly (thus decreasing the likelihood of autonomy continuing to operate successfully) or to be bought out by the larger companies (which tend to conform to a more traditional mechanistic approach). On this basis, our directive interviewees felt that the profile of companies in the industry did not generally match the type of companies in which they understood autonomy would be most likely to succeed. On this basis, they felt that other companies would also believe that their size would be a barrier to successfully introducing autonomous working practices.

Skills Barriers

Remaining with individual-level barriers, our interviewees also identified a potential barrier relating to individuals' skills and competencies.

Skillsets

Firstly, there was concern that there may be a mismatch between the type of skillsets required to support autonomous working, and the type of skillsets currently available in the industry. It was felt by our interviewees that more autonomous working would require greater flexibility from their employees. This in turn would require more generalised skillsets. However, it was explained to us that the industry tends to depend upon heavily specialised job roles and an emphasis on depth (rather than breadth) of technical expertise within a particular functional role. This contrasted sharply with the 'jack of all trades' character with good all-round technical ability, which our interviewees believed would be required for autonomy to work well. On this basis, it was felt by some interviewees that the existing skills base within the industry would need to be fundamentally overhauled in order to provide the type of generalised technical skills required to support a more autonomous culture. For some, this was seen as being simply unattainable; for others, it was seen as less efficient (again evoking the rationalisation of Weber's division of labour [Weber, 2001]) and therefore still a significant disincentive to any company considering introducing autonomy.

Evidence Barriers

The final category of barriers we identified in our directive interviews related to the degree of evidence required to convince non-autonomous companies of the value of trying to introduce autonomy to their company. Specifically, our interviewees felt that a major barrier to convincing companies of the potential benefits of autonomous working would be the difficulty of linking this type of working practice to improved outcomes in the workplace. Much of the knowledge and literature on autonomous working is drawn from studies of industries (e.g. hospitality) which are seen by the oil and gas industry as having little direct relevance to their operations.

At present, whilst there is evidence that the three advocate companies we interviewed are strong performers within their respective areas of industry, doubt was expressed by our directive interviewees in relation to how much of this success could be attributed to autonomy, and how much was attributable to the financial reward structures within these companies, the enthusiasm and dynamism which often characterises new companies (regardless of their management structure) or simply the calibre of staff they have working for them. Until such time as it is possible to provide a direct, quantitative causal link between autonomous management practices and

individual/team/division/company performance, it was felt by our interviewees that most non-autonomous companies would remain sceptical.

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IMPLEMENTING AUTONOMY

In our discussions with the three companies who told us that they include a degree of employee autonomy in their operations, in addition to overcoming the barriers identified above, we wanted to gain a better understanding of how autonomy works in each company.

We explore the way in which autonomy works within these companies below, and consider a number of different aspects of this. We consider these companies' understanding of autonomy, the differential levels of and limits to autonomy within the companies, the role played by autonomy in company performance, and critical factors in the successful implementation of an autonomous working culture.

We then move on to consider the way in which our advocate companies have overcome the barriers to autonomous working identified above. At a general level, it is worth noting at this stage that the concept of autonomy encountered among our 'advocate' companies differed from the understanding encountered among our 'sceptic' companies. Although the difference between the two was not radical, it nevertheless had implications for the extent to which 'advocates' felt it necessary to overcome certain of the barriers identified in the previous sections. We explore this in greater detail below, before turning to consider the extent to which advocates have experienced these barriers, and how – if at all – they have overcome them.

How Autonomy Works

In our discussions with the advocate companies, autonomy was broadly understood in two key ways. Firstly, the main type of autonomy these companies identified when asked to describe their understanding of the concept was the autonomy of the regional division of the company for which they worked. Thus, Apache North Sea was identified as having a high degree of autonomy from the Apache Corporation centrally, and TAQA Bratani was seen as being largely autonomous relative to TAQA North in Canada, TAQA Energy in the Netherlands and TAQA Power & Water, for example.

However, the focus of this study is the second aspect of autonomy identified by the advocates; namely, the ability of employees to employ their own discretion and best judgement when making

decisions concerning their work. However, as discussions progressed, it became clear that the understanding the advocate companies had of autonomy was different in certain crucial respects from the understanding generally found among the directive companies we interviewed. In particular, the perception held among directive companies was that autonomous working represented a system in which virtually every employee was free to exercise their own best judgment on how to act in any given set of circumstances. However, the advocate companies we interviewed made it clear that this was not an accurate depiction of what they consider to be autonomous working. Rather, it was made clear that whilst devolved decision-making is at the heart of their approach to autonomy, there are definite limits to the extent of autonomy available to workers at different operational levels (although the limits and boundaries of this autonomy are not necessarily always clear-cut, as will be discussed later in the section on implementing autonomy).

We asked our interviewees to elaborate upon the way in which this culture worked. The general thesis in each company was that decisions are best made at the lowest possible level of the company. The rationale for this is that the people best placed to make an informed decision are those who have the most information on the decision at hand, who are most immersed in the context of the decision at hand, and who carry the most localised personal risk in relation to the decision at hand. This approach was contrasted by our interviewees with the approach they believed to be prevalent elsewhere in the industry (i.e. a more mechanistic approach to decision-making). The perception was that in other companies, decisions are routinely passed upwards, through a formalised decision-making support structure: one interviewee mentioned that in a company he previously worked for, decisions would routinely be passed through six to eight layers of management. Whilst interviewees understood that this approach was intended to minimise risk by ensuring that decisions are made by individuals or bodies with strategic oversight and responsibility, they argued that these processes could actually contribute towards an increased risk profile. This was due to the perception that by removing the decision from the remit of the individual most informed, most immersed and most at risk, decisions may ultimately be made by managers whose portfolio of projects is so large that the issue in question may only be of minor importance to them. In addition, our interviewees suggested that in some cases, managers may be so far removed from the issue at hand that they may not fully understand the localised ramifications of the decision they take, or be sufficiently technically competent to judge the situation.

A further problem identified in relation to this approach was the time required for decisions to be made, when issues have to be referred upwards through several layers of management. As such, the time taken for issues to be referred upwards and for the according decisions to be passed downwards may be so long that the situation may have changed and the instruction may be out-of-date by the time it reaches the appropriate operational level, resulting in further potential delay and cost. Particularly within Apache, the speed of decision-making was identified as being a vital component of their success, and this rapid turnaround of decisions was thought to be possible only because of their culture of devolved decision-making. On this basis, it was explained to us that in relation to decision-making, the cardinal sins within the company were to defer, to delay or to do nothing.

Additionally, the mechanistic approach was criticised by advocates for introducing the possibility of an unquestioning approach to work, even where decisions handed down from above may, in the opinion of those closest to the decision(s), introduce a greater element of risk. Our advocate interviewees did not believe that it was sensible for workers to carry out instructions in an unquestioning manner, which to them was seen as the result of divested them of decision-making power. On the understanding that they are simply following a process or procedure handed down from above them in the chain of command, workers may unwittingly be introducing a greater element of risk through a lack of engagement in the decision which is ultimately made.

As such, it was explained to us by the advocate companies we interviewed that within their companies, all employees are expected to adopt a questioning approach to their work. Furthermore, rather than passing decisions upwards through several layers of management, their employees are encouraged to take on the responsibility of making decisions on issues which fall within their competence. As set out above, this is based upon the understanding that in most cases, the workers who are faced most directly with a problem are likely to be better informed of the situation than their manager(s), more immersed in the context of the issue (and the knock-on effect of any decisions made) and are most likely to understand the risks associated with a particular decision.

They're best placed; they're immersed in it. I say to them: 'Look, it's no good phoning me up at 2 o'clock in the morning to say you've got a problem, and what should we do,

because actually you've been living it, you've seen the build-up to it, you can go and you understand everything that's happening out there, you're better placed than I am to answer that question. So make the decision. Because if you do it early you're probably going to make a good decision and solve the problem before it escalates'.

(Apache interviewee)

There are two crucial points to add to this before moving on. Firstly, it must be noted that each of the advocate companies made it clear to us that their approach does not force employees to take on full, individual responsibility for decisions. Within each company, although autonomy is strongly encouraged, support is nevertheless available for employees who wish to seek counsel in relation to a particular decision. As such, there is no sense of workers being 'abandoned' within the autonomous approach adopted by these companies. Where employees feel able to make decisions autonomously within their area of competence, they are encouraged to do so. Where they do not feel able to do so, or where they have doubts about the decision in question, each of the advocate companies made it clear that support is available. Thus, adopting an organic, autonomous approach does not necessarily preclude the option of seeking help with an issue from above.

The second point to add is that unsurprisingly, not all decisions were thought by our interviewees to be suitable candidates for delegation to the lowest possible level. As has already been mentioned in passing above, individuals are encouraged to make decisions within their own area of competence. This, of course, begs the question as to the levels within these companies at which a significant degree of autonomy is most usually granted to employees. We now turn to explore this issue.

Differential Levels of Autonomy

The examples of autonomy provided to us by our advocate companies covered a wide range of employees and positions within the companies. However, it is worth noting at this stage that the concept of autonomy in the companies we interviewed tended to exist at the individual level, rather than having self-directed teams or workgroups as exist in other industries and as are described in the literature on autonomous working.

You break it down into the constituent parts of what you have to do, so each of the individuals is set the same mission but with respect to whatever that component part is that they're doing, so it filters all the way down and it goes all the way right down to the individual.

(Flexlife interviewee)

Both of the exploration and production companies interviewed explained that they incorporate a degree of autonomy in both onshore and offshore environments. There were, however, important caveats to the idea of offshore working – these are explored in greater detail in the section below on overcoming barriers.

When discussing examples of autonomy with our two key interviewees in Apache and TAQA Bratani, the most prominent examples of autonomy being deployed within their companies were typically located at management level in each company.

Autonomous working starts at the management level, and actually, that's where it applies the most.

(Apache interviewee)

For example, in terms of offshore working, both companies asserted that the extent of autonomy given to their Offshore Installation Managers⁵ (OIMs) was considerably greater than in other companies. Both Apache and TAQA Bratani stated that they give significant budgetary autonomy and discretion over workforce deployment and task allocation to their OIMs. In this respect, their OIMs were seen as having a very different role from OIMs elsewhere in the industry. Both Apache and TAQA Bratani interviewees explained that in other companies, OIMs are seen as much more of a conduit for instructions, essentially acting as a mouthpiece for senior management onshore. In contrast, our Apache and TAQA Bratani interviewees both claimed that their OIMs are given much more authority to actively run their platforms (albeit in line with the company's overarching strategic priorities).

⁵ This position is essentially the most senior 'company man' on an offshore installation and is responsible for ensuring safety and productivity.

We'll take over a [company name removed] boat that will have had three or four telephone conferences a day to speak to the onshore management, decide where their vessels should go [...], what next piece of work they should do, dah dah dah [...] We have one 9 o'clock call and that's it, and that's purely to pass what have you done, what are you about to do, what's the weather like, are there any issues. But they tell us what they're doing, when they're going to do it, what they're going to do next. They know the overall intention of the project. We don't manage them. We don't coordinate their activities. They tell us what they're doing.

(Apache interviewee)

[In other operators], all of the decision making would be done on shore and then the OIM would be advised on what was going to be done, whereas [at TAQA Bratani] the OIM is captain of the ship and with us he has responsibilities and the authorities that go with that.

(TAQA Bratani interviewee)

The same was also true in relation to onshore working.

There's also quite a degree of autonomy that ties back to onshore activities, regardless of whether it's learning and development, whether it's in operations, whether it's in subsea or whatever. Maybe less so in some of the more prescribed functions such as HSE or finance or whatever, but certainly in the operationally active areas, yes. It's definitely present.

(TAQA Bratani interviewee)

However, both companies explained that although the clearest examples of autonomy can be found at management level, there are also examples of autonomy being devolved to much lower levels, including to contractors working on platforms run by the two advocate companies. Again, the crucial determinant of the extent of autonomy granted was the sphere of competence of each individual (which is explored in greater depth below). This was also borne out by additional data we collected. We were fortunate to be able to speak to a number of employees within Apache who work at more operational levels of the company (as opposed to management) and these interviews also provided us with valuable testimonies on the operation and importance of the culture of autonomy at slightly lower levels of the company.

Overall, we found nothing but enthusiasm for the principle of autonomy among the operational interviewees from Apache. In each case, it was made clear that the working culture was a key factor either in attracting interviewees to the company, or convincing them to remain there over the longer term.

In many cases, it was made clear by our interviewees that they could not countenance the possibility of going to work for one of the major operators, given their reliance on more mechanistic, less autonomous approaches. Usually, this was on the basis that our interviewees were so accustomed to autonomous working that they felt they would not be able to fit back into more traditional methods of working. This is not to say that they could not fit, but rather that they could not imagine ever being satisfied working in that type of culture again.

It would be very, very difficult for me to now go back into a major to work, because I'd just be a complete maverick. I'd be making decisions all over the place, and people would be panicking.

(Apache interviewee)

I would struggle with it to be honest [but] I would never say never [...] The expectations on you are high here. People do put demands on you, but equally, you are rewarded for it if you perform.

(Apache interviewee)

The same was also true in relation to TAQA Bratani.

A lot of people join TAQA because they don't want what they had previously. They don't want to be sort of stuck in the very formalised, excessively structured regimes that they had. TAQA is seen to be different, we tell people we're different and as such, that makes it quite attractive.

(TAQA Bratani interviewee)

In addition, some explained that a key part of the job satisfaction derived from working for Apache was that they felt able to make a personal difference to the company's fortunes, in a way which simply would not be possible within a more traditional personnel management setup.

From my own personal opinion, I would prefer to be an Apache rather than a [company name removed] employee, purely because [...] I can have some input in to the way this business is shaped rather than following a dictate (sic) from somebody who doesn't really understand my part of the business [...] I couldn't imagine going back, but some people like to live in that kind of world where they don't have to think too hard. Follow a process and go home!

(Apache interviewee)

I officially retired a year and a half ago and [...] I was asked would I come back again [...] I'm only doing that because I want to get the job done for Apache [...] I want to make sure that they can get ahead. I don't get paid any more to do that, but that's what I want and I think that kind of tells you the psyche in here: you want to be here.

(Apache interviewee)

[In Apache] there's more drive to get things done, there is a bigger focus on what we're trying to do. I like the fact I've got control on my work here and the way I'm doing things. I like that style.

(Apache interviewee)

Others simply referred to the amount of job satisfaction/enjoyment or learning derived from being immersed in a more autonomous working culture.

Would I really want to leave? No, to be honest. I wouldn't want to leave [...] I'm learning too much here; I'm always learning [...] I'm not bored; I've got that length of rope to run with.

(Apache interviewee)

On bad days here when you're really up against it, it does sound quite appealing to go and scratch about a bit at one of the bigger operating companies and hiding a little while, but I don't find it hugely satisfying.

(Apache interviewee)

Of course, this abundance of enthusiasm among our interviewees may be the result of the fact that those who feel uncomfortable with the culture of autonomy tend to leave (or not join the company in the first place). Nevertheless, the key finding was that from the perspective of the operational employees we interviewed, the culture of autonomy played a key role in their job satisfaction and their performance in their given roles within their company.

Limits to Autonomy

We also sought to explore the limits of autonomous working within each company. This proved to be much more of a challenge than initially expected. Whilst all of our interviewees said that they knew roughly what the limits of their autonomy would be, none of them had a clearly defined description of the extent of their decision-making latitude. The only factors they identified by our interviewees as limiting their autonomy were finances and individual competence. We were initially surprised to note that health and safety was not seen as a limiting factor, but this was due to the fact that health and safety was no more of a limiting factor in employees' actions than it would be in a more mechanistic, command and control management structure.

When you say how could it [autonomy] be constrained, I personally don't see it [being constrained] where I sit in the hierarchy of the organisation; certainly not.

(Apache interviewee)

The most prominent limit to individual autonomy identified in the interviews was finance. This was seen as being the major factor identifying the boundaries of an individual's decision-making remit. Every one of the operational staff we interviewed within Apache had some degree of budgetary authority, and the occasions on which they would be most likely to have to seek the approval or authorisation from managers were those on which they sought to commit expenditure above and beyond their budget.

Ultimately, it comes down to financial limits [...] I don't actually know the limits here, so that tells you something! We work without knowing [...] Even secondaries can go and purchase things without having to get a justification.

(Apache interviewee)

Anything that's deliverable to a client will have its own budget. If it's outwith that budget, that's one of the limitations that somebody might find. Actually, that's the only time that they then need to go back to ask for permission.

(Flexlife interviewee)

I've got a team of three who report to me [...] and everyone is given the autonomy – within financial limits – to sign off and authorise things. You're given a job; you're trusted to do it and do it responsibly.

(Apache interviewee)

Individual competence was also highlighted as an important factor in delineating the extent of autonomy granted to workers. In essence, individual autonomy was available within the breadth of a given worker's expertise. Although this was seen as one of the critical checks and balances in preventing individuals from overstepping the mark, it again proved difficult for interviewees to identify exactly how they knew where their limits were. In each case, interviewees did not have a precise specification of the extent of their competence, and therefore their autonomy. Rather, in each company the competence issue seems to work according to an implicit understanding of loosely defined individual roles and responsibilities within a framework of overarching strategic objectives and resources. When the potential for confusion or misunderstanding was raised with interviewees, interviewees insisted that this had not arisen, and that the system has always worked well for them.

We don't go to great lengths to spell out people's roles and responsibilities [...] You know where you sit in the organisation and you know what's expected of you, because people will tell you in broad terms, and then you make decisions that will allow you to meet what's expected of you, if that makes sense. It's difficult to describe more tangibly than that, because again we don't tell people what to do; we rely on them understanding their place in the business and what our regional goals are.

(Apache interviewee)

I don't actually have written roles and responsibilities for my job [...] There really aren't any particular limits, but you know where your area of expertise lies. I know what my missions are from my boss, and what my tasks are. I know what our resources are, and if I want to do something outside those unwritten boundaries, then I have to go and speak to him.

(Apache interviewee)

Overall, the interviews clearly showed that the autonomy within these companies does not work in a completely unfettered manner: rather, where decisions must be made on matters outwith an individual's competence or budgetary limits, authorisation is sought from managers. However, when probing this process, our interviews found that in most cases, this authorisation procedure is typically something of a formality. Broadly speaking, where employees could show that they had undertaken an informed consideration of the situation and could justify the decision being proposed to their manager(s), it was very unlikely that their request would be refused. This held true across all three of the advocate companies we interviewed.

I can't see any scenario where, if somebody is trying to achieve an objective and they think that in order to do that they would be stepping outside their remit, that they then wouldn't be able to go back and say: "I think we should do it in this way," because everybody is empowered to do that. That's the core principle which we're setting up here.

(Flexlife interviewee)

The decision making power is proportionate to the role you're in [...] If, for example, I feel the need to raise what we call a facilities change proposal to actually engineer a change or instigate a piece of work, then I'll just go ahead and do it. Yes; you'll get a sign off by the engineering manager, but the engineering manager will not be looking to agonise over it. If I can come up with a justification and provide it to him then it will happen.

(Apache interviewee)

As outlined above, we were particularly interested to note that none of our interviewees actively suggested that health and safety might be a limiting factor of autonomous working. In particular, we expected this to be mentioned on the basis that health and safety was identified so regularly as

a barrier to autonomous working in our discussions with directive companies. However, the fact that our advocate interviewees did not mention safety as a limiter of autonomy was particularly interesting in that there was no sense that autonomy was necessarily in tension with health and safety any more than a traditional 'command and control' approach would be. Indeed, as explained above, the opposite seemed to be the prevailing attitude among advocates; namely, that autonomy generally improved health and safety by increasing employees' engagement with the decisions affecting their work.

At the end of the day the real non-negotiables are health and safety related.

(TAQA Bratani interviewee)

As such, far from being the case that interviewees disregarded health and safety when considering autonomy, it was simply the case that they did not generally think it necessary to mention it. When actively prompted in interviews about whether or not health and safety might be a limiting factor in their use of autonomy, the response received was consistent across every interviewee in our three advocate companies: health and safety is an absolute priority, and should never be compromised under any circumstances, whether in an organic or mechanistic management structure. In the same way that it would be unheard of for managers to demand that operational employees break health and safety protocol in a mechanistic culture, so our interviewees argued that it would be unheard of for operational employees to think it appropriate to compromise health and safety protocol in an organic, autonomous management culture. This is explored in greater depth below in the section on overcoming barriers.

Critical Success Factors

We then turned to consider the factors which were identified by our interviewees as being critical to the success of implementing a degree of autonomy in their working practices. In particular, we were keen firstly to identify what needed to be in place in order to allow autonomous working to flourish, and secondly to consider the potential transferability of autonomous working methods to companies whose experience up to now has been firmly grounded in traditional, directive, 'command and control' type people management structures.

Our interviews revealed a wide range of factors which were thought to be essential or greatly helpful in allowing a culture of autonomy. However, interviewees generally believed that the potential for transferability to other companies was somewhat limited. We now explore these issues in greater detail.

Management Factors

The most commonly identified factor in our interviews related to the importance of management structures within companies. This may seem obvious given that the comparison of organic and mechanistic approaches relates entirely to the management of people, but the issues flagged up by our interviewees were more detailed than simply arguing that management needed to be ‘on board’. Of course, this was indeed a prerequisite. In all three of the advocate companies we interviewed, the importance of having managers receptive to the idea of delegating authority was stressed. This was not seen as being something with which everybody in the industry would be comfortable: some interviewees described how some managers can become territorial and very protective of the power vested in them, and without the willingness and ability to surrender some degree of control, there would be virtually no prospect of autonomy succeeding. This held true for all layers of management, right up to the most senior levels of the company.

It's got to be led by the senior management. CEO, COO, local VP: they've all got to understand that they have got to be completely immersed and bought into it. As soon as they require assurance, then the system collapses because I can't spend my time providing assurance for them about making the right decisions. It will just fall apart.

(Apache interviewee)

Also crucial in relation to management structures was the number of managers and their alignment within the company. The advocate companies we interviewed described their management structures as being much leaner than would be expected in more traditional, mechanistic companies. The relationship between fewer managers and devolved decision-making operated in both directions: with decisions being made further down the chain of command, there was less need for middle managers; and with fewer middle managers, it was important for the company's managers not to be inundated with decisions passed up from below. As such, the relationship represented something of a virtuous cycle, with devolved decision-making reinforcing the need for fewer managers, and vice versa.

When I first arrived [at Apache North Sea], [...] it was CEO to VP to me [...] When I was in [company name removed], there were eight layers of management between me and the CEO [...] and I was doing a project manager's job, the same as what I'm doing now.

(Apache interviewee)

If you've got layers of management filtering out things as they go all the way up to the top, then you only get ten decisions up here [i.e. senior management level], and there's a thousand down here [i.e. operational level]. But we just say: look, those thousand down there, answered by the thousand people down there asking the questions: you answer it all down here, so you don't need layers of management to filter things out.

(Apache interviewee)

With the relatively lean management and organisational structure that we've got, you don't have layer upon layer that you need to report to [...] We don't go about executing pieces of work or procuring equipment without going through proportionate checks and balances, but equally you don't have people putting values out where they're not required.

(Apache interviewee)

The logical result of this is a much flatter management structure, with fewer lines of reporting for employees. Several interviewees in both Apache and TAQA Bratani were able to compare and contrast their experience of working for their current company and their experiences of working in other less autonomous companies.

In every case, the number of reporting lines was much smaller in Apache and TAQA, allowing interviewees to devote more of their time to the job at hand rather than reporting the same message to numerous layers or technical divisions of management. The lack of intermediaries and multiple lines of reporting meant that employees would liaise directly with senior management and vice versa, cutting out the time and potential message dilution resulting from using several layers of middle management as a conduit.

In [company name removed] I had three reporting lines. If you want to approve something, it's got to go through three signatures, plus all the external signatories [...] Whereas in here, we decide: if we think it's right, we can sign it off.

(Apache interviewee)

Because it's such a flat structure, you can get a message communicated down very quickly [...] and it doesn't get diluted. I think some people say that 25% or even 40% of a message gets diluted as it goes through each management level. Well if you've only got those three, it doesn't get diluted, and if you've got nine, then it does. The message just disappears by the time it gets to the people on the ground. That flat structure only works because of devolved decision-making, because nobody could cope with that level of decisions, that number of decisions; so many different operations around the globe.

(Apache interviewee)

Again, it must be emphasised that this was not seen by interviewees as a case of cutting corners. Rather, it was seen as reducing unnecessary bureaucracy. Crucially, this bureaucracy was not seen as having any positive impact upon safety compliance. However, reducing this bureaucracy was thought to have considerable benefits in terms of on-the-job productivity.

Overall, it was felt that attempting to secure this type of management buy-in and flatter organisational structure would prove to be extremely challenging in other companies. Given that the system depends upon having a very lean management structure, any company wishing to replicate the approach laid out by our advocates would likely involve a reduction in the number of managers. As this would likely be met with hostility by people working at management level within companies considering a move towards greater autonomy, our interviewees believed that generating the required support for autonomy among these managers would be akin to 'turkeys voting for Christmas'.

There's really two sets of people that benefit from autonomous working, and that's the senior managers and the most juniors (sic). Everybody else in between becomes unnecessary. And so actually it's the whole of the middle management structure [that] gets removed, so it's in their least best interest to actually implement it. They will fight tooth and nail with their senior managers to say why it shouldn't happen.

(Apache interviewee)

Mainstreaming

In this regard, another important success factor identified by our interviewees was the mainstreaming of the principles of autonomous working across the entire company from the outset. In all three of the advocate companies we interviewed, the fact that a commitment to autonomy was standard across the entire company was seen as being vital to the success of the approach. This did not mean that the transition into an autonomous working culture was always seamless for new arrivals at the advocate companies we interviewed, but the all-pervading nature of autonomy across the whole organisation was seen by our interviewees as being a vital factor in ensuring that more mechanistic practices do not 'creep in' at the expense of the autonomy which the companies are seeking to preserve. Most of our interviewees explained that it had taken them some time to adjust to the new working methods within Apache and TAQA Bratani, particularly those who had been schooled in more traditional mechanistic management cultures in other operators. Without this consistency of approach across the entire organisation, it was felt by interviewees that it would be virtually impossible for companies to implement autonomous working: it was seen very much as an 'all or nothing' scenario, with very little scope for autonomous individuals or autonomous teams to exist within a wider mechanistic context.

Everybody throughout the whole chain has to buy into it. Everybody has to be completely bought into the idea of autonomous working, because as soon as you have a manager somewhere [who] says: 'No, I want the assurance process; I want to have this policy; this practice installed into my piece of the work', it's just such a complete mismatch to the rest of the organisation. It slows everything down; it just doesn't work any more because of that one person, that process approach. So no, it has to be embedded and it has to be part of the culture.

(Apache interviewee)

To an extent, this confirmed much of the testimony from the directive companies interviewed beforehand: whilst a small number of these directive companies had experience of self-directed working in small teams, they made it clear that their experiences had been very mixed, and that trying to mix autonomous and mechanistic cultures was a gamble which few in the industry would be likely to consider.

However, a small number of interviewees argued that it might be possible for autonomy to be introduced to companies with a more mechanistic management tradition, and some examples of doing so were identified during the course of our interviews.

The first of these related to a BP initiative from the mid-90s. Faced with declining output from its interests in the Beatrice, Buchan, Clyde and Thistle oilfields, in 1994 BP established a Mature Asset Team (MAST), which was tasked with extending the life of these fields, whilst continuing to adhere to the highest possible standards of Health, Safety and Environmental performance. Over the following two years, the MAST team achieved a considerable extension of field life, before BP sold three of the fields (Beatrice, Buchan and Clyde) to Talisman in 1996 (BP, 1996). One interviewee with experience of working for BP explained that the MAST experiment proved that autonomous working could be implemented within an autonomous division of a company which has a more mechanistic heritage. However, it was seen as vital that the division be granted true autonomy to run its own affairs.

BP actually did go down this route a long time ago [...] They said: 'Right, here's an autonomous group that's going to work not under the BP banner, and make those, what were ageing assets, they still remain within the company and make them a completely autonomous function, manage those assets.' And they were incredibly successful [...] It really was a completely autonomous group, worked outside the whole BP function system, just asked for money and that was it [...] They increased production, they improved safety and suddenly these ageing assets that they didn't know what to do with, completely turned them around.

(Apache interviewee)

Similarly, interviewees from Apache explained that they aim, wherever possible, to work with contractors who 'buy in' to their principles of autonomy. As such, contractors within the supply chain are encouraged to adopt similar working practices. In most cases, this tends to be more evident in the contract specification provided by Apache: typically, the company aims to provide as loose a contract specification as possible, with the rationale being identical to the rationale for autonomy within Apache: namely, that whilst the client (Apache) is setting the overall strategic

objectives for the contract, the contractors themselves are the ones who know how such a piece of work might best be delivered.

[A] prime example is the satellite platform that we're building at the moment [...] Our first step was to not write a thick detailed technical specification for the platform and top sides. We deliberately went out and said: 'Okay, we're going to produce a statement of requirements and a basis of design.' [...] That scope of requirements told them what it was we wanted. We didn't tell them how to build it, or what to build, or what it should look like, what shape it should be, or anything. That's their expertise.

(Apache interviewee)

If you specify something, you should have built it yourself. You should know how to build something before you go off and become an expert and specify [...] We've gone to a fabrication contractor, used their competence and said: 'Look, there's your mission: we need this platform, we need it installed here, and these are the circumstances of it [...] You tell us what to build and how to build it, how it should be formed, because you've done it before and we haven't.'

(Apache interviewee)

However, in a small number of cases, the extent of 'buy in' within supply chain contractors appeared to go much further. In the case of Flexlife – a major contractor for Apache – the entire company operates according to a philosophy which is virtually identical to that which is prevalent within Apache. As was the case when Apache entered the North Sea, Flexlife was founded upon this philosophy. However, perhaps more interesting from the perspective of this piece of work was the claim that another of our advocates' contractors had begun to implement more autonomous working methods, despite the company being strongly rooted in a traditional management culture. Our interviews suggested that in this case, the transition had been possible due to the relative independence of the contract team within the company in question, lending further weight to the MAST thesis; namely, that the best opportunities for successfully introducing elements of autonomy to mechanistic organisations lie where a clearly delineated division or discretely managed functional group is able to attempt this in relative isolation from the mechanistic, command and control divisions of the parent company.

We were very keen to explore this further with the company in question. Although we met with representatives of the contractor in question and agreed a plan for further investigation of the way in which the principle of autonomy had developed within this contract team, it proved impossible for the contractor to formalise these arrangements. As such, whilst anecdotal evidence would appear to suggest that the principle of autonomous working has begun to transfer within this specific contractor, this remains an issue which should be further investigated by additional research in future.

Time

The third critical success factor identified by our advocate interviewees was time. As mentioned above, for an individual to make the transition from a mechanistic to an autonomous culture can take some time. Furthermore, all three advocate companies explained that whilst many people may be attracted by the dynamism, responsibility and financial reward which can accompany autonomous working, in practice many people struggle to cope with the new working culture. As such, whilst these companies expect employees to begin delivering quickly, there also needs to be a degree of patience in allowing new arrivals at the company to bed in to the new working culture. This was particularly the case at the outset for Apache: when the company entered the North Sea market by purchasing BP's assets in the Forties field, many of the staff who joined Apache from BP took some time to make the adjustment to the new culture.

If you look at Apache, basically it was BP staff: they [Apache] bought the asset and the BP staff. Then, the Apache expatriates came across and told us the Apache culture and showed us the Apache culture. It took probably took two to three years for everybody to get ingrained in the Apache way of doing business, but once they realised that that was the better way of doing things, they just wouldn't go back.

(Apache interviewee)

Company Age and Size

When discussing the way in which Apache, TAQA Bratani and Flexlife entered their respective areas of the North Sea oil and gas industry, the young age and relative size of each company were also identified as having been crucial to their success. In relation to age, their youth (compared to most other operators in the North Sea) meant that the only links to more traditional forms of

people management were at individual level, which were seen as far easier to change than an entire corporate culture.

It means that we're not bringing through systems and procedures that were set up in the 70s or whatever, albeit when we took over the platforms we were using some of those initially, but a lot of those have been reviewed and revised and they've been changed to reflect the way that TAQA works [...] Being new on the block means that we're not encumbered by processes that were set up 20, 30, 40 years ago.

(TAQA Bratani interviewee)

Apache have come from a lean and mean organisation and have never started with a lot of processes, whereas the big multi-nationals have built up process and structure over years and years, and they're restrained by their own systems.

(Apache interviewee)

Again, this finding appears to strengthen the earlier contention that autonomy appears to be most likely to succeed within companies in which the principles are mainstreamed from the outset, rather than introduced to a company with an established tradition of more mechanistic working practices.

However, company size was seen as being more important than age as a critical success factor for Apache and TAQA Bratani, and it is one which appears likely to have implications for the culture of autonomy within each company as they grow, with both announcing expansions over the course of this study (in late 2011, Apache agreed a deal to purchase some of Exxon Mobil's North Sea assets, whilst in early 2012, TAQA Bratani acquired a significant interest in oil and gas licenses from Fairfield Energy).

Interviewees in both of these companies argued that the size of their company relative to other operators in the North Sea was a crucial factor in allowing autonomy to flourish. Having both started out with relatively small workforces (in comparison with the major operators, at least), our interviews found that working in a small company was crucial to establishing the cooperative, collaborative and collegiate atmosphere which facilitated the type of autonomous working put in

place in each. Without the advantages of a small workforce, it was recognised that greater proceduralisation was almost inevitable.

As soon as you are concerned – because you’re such a large organisation – that you can’t guarantee that your people are competent, then you put in processes, processes to, checks and balances against that person’s competence.

(Apache interviewee)

Going back to the analogy of the super tanker, if it’s a big super tanker, it’s going to take an awful long time to change direction from the habits of a lifetime [i.e. a mechanistic approach], but if you’re just in a small boat, you can give it a quick nudge and it moves off in a better direction.

(TAQA Bratani interviewee)

So important was this factor to the Apache culture, that it was explained to us that individuals were actively discouraged from trying to grow their department(s) or, indeed, the organisation as a whole.

Everybody’s encouraged not to grow the organisation; everyone’s encouraged to keep the organisation as small as possible. Because the bigger things grow, the more meetings you have, the more communication lines are, the more networks you have [...] and it just slows everything down, so nobody’s encouraged to grow their departments [...] People are just encouraged to keep things as small and as tight as possible.

(Apache interviewee)

However, the announcement of Apache’s purchase of a number of Exxon Mobil’s North Sea assets, including around 200 staff (Wall Street Journal, 2011) and TAQA Bratani’s acquisition of oil and gas licenses from Fairfield Energy are both likely to signal a degree of expansion. We were able to discuss this issue with a number of members of Apache staff in January and February 2012, and found that a number of the operational-level workers we interviewed had picked up on this element of uncertainty, but were hopeful that the Apache culture would remain unaffected. However, the need to work with partners on the old Exxon assets was contrasted with Apache’s

free reign in the Forties field, and led to a degree of caution from employees as to the future prospects for Apache's culture of autonomy.

The other aspect that will change our behaviour to an extent is the fact that we now have partners to work with. On Forties we can do what we want, and by and large on the Exxon Mobil assets we don't have that luxury. We have the partners that have their own expectations and their own different working practices and ours will be quite alien to them [...] so we will have to modify our behaviour, but we will still be getting after things in our fashion and will be trying to shape them, rather than the other way round.

(Apache interviewee)

There is a tendency when you do start employing more people [...] that they do start putting processes in place that will slow you down; it's natural.

(Apache interviewee)

One interviewee in particular was pessimistic about the potential for autonomous working in Apache. Whilst the Exxon Mobil purchase was the focus of most interviewees' attention in terms of a potential challenge to the culture of autonomy, this interviewee explained that Apache's success in the North Sea mean that over a number of years, it has been adopting a different mentality towards exploration and reserve replacement in order to maintain that success. It was claimed that the company's approach in this respect was reminiscent of established major operators. As a result of the company growth and the change in mindset with regard to exploration, this interviewee felt that the culture of autonomy within Apache had been eroded somewhat.

[Apache] has doubled in size in the last ten years, both in terms of staff and production [...] We needed to set up a different exploration structure to go and explore in a different way, and they're adopting basically big company models for exploration, so Apache is effectively evolving in to a [company name removed] or a [company name removed]. It hasn't got there yet, but there's more of that centralisation coming in. The idea that Apache is lean and nimble is beginning to disappear, from the workers' point of view. From my perspective, it's a significant change in the corporate culture and it's a really tricky one because [...] you can't run a small company in the same way that you run a big company.

Additional Factors

In addition to these factors, a number of additional factors were identified as being important to the successful implementation of autonomous working. These included appropriately skilled employees and a significant element of trust. However, our prior work on skills utilisation in the oil and gas industry suggest that these are not specific to companies who incorporate a degree of autonomy in their work, but rather are common across all types of successful company within the industry. Whether autonomous or mechanistic, the success of any company is contingent upon having a good supply of skilled employees, the correct attitude and mentality among workers, and a degree of mutual trust between and across different levels of the company. On the basis that these factors would be critical to any type of company in the industry, we do not cover them here.

DRAFT FRAMEWORK

OVERCOMING BARRIERS TO AUTONOMOUS WORKING

We now return to the barriers originally identified by our directive interviewees, and consider the evidence given by our advocate interviewees in relation to the way in which they have overcome them.

Prior to elaborating upon their responses, it is worth stating that most of our advocate interviewees disputed the type of barriers identified during our interviews with directive companies. It was argued that the barriers identified were based upon a misunderstanding of the reality of autonomous working in their companies. As such, advocate interviewees stated that the barriers identified by our directive interviewees were either based upon a perception of autonomy as being an anarchic, unregulated free-for-all (when in reality the autonomy offered to employees in Apache, TAQA Bratani and Flexlife was seen to be entirely different from this extreme characterisation) or an unfair depiction of autonomous working as being the only management approach to suffer from the barriers identified (for example, advocate interviewees stated that it was incorrect to raise safety as a barrier to autonomous working, when in their opinion, a more mechanistic approach was equally dangerous – if not more so).

The remainder of this section therefore does not always provide the type of data which we had expected to provide at the outset of this project (i.e. advice/guidance on overcoming barriers). Rather, in many cases the data collected was useful in another sense: correcting some of the misunderstandings relating to autonomous working in the industry. However, in providing this information, we believe that we ultimately achieve the same net outcome as had originally been intended: namely, a better understanding of how autonomy works and how it can be implemented within the industry.

Safety Barriers

The most prominent category of barriers identified by our directive companies related to safety. Specifically, they were concerned about the impact of autonomy on offshore safety. The specific issues mentioned were the need for work to be process-driven rather than discretionary, the need to conform to work permit specifications, the potential issues arising from handovers between

different offshore rotations, and the potential issues arising from the problem of high staff turnover.

Inherent Risks of Autonomy

When asked for their views on overcoming these barriers, our advocate interviewees were keen to correct what they saw as a misunderstanding of what autonomy means in an offshore environment. As explained previously, they felt that the prevailing understanding of autonomy within the industry was that it is a semi-anarchic free-for-all in which employees are given the authority to do whatever they wanted, whenever they wanted. They felt that this was at the root of the belief that autonomous working was inherently unsafe in an offshore environment, and as such, they felt that the idea of safety as a barrier to autonomy was unfounded. As they did not recognise this as a barrier, the advice they provided was not directed at overcoming any obstacle (as per the original purpose of the study) but rather to provide clarification on how their variant of autonomous working was entirely compatible with health and safety.

Firstly, the advocates we interviewed with offshore experience made it clear that they conform to exactly the same health and safety requirements as any of the operators with a more traditional, mechanistic approach. Our interviews also found that in relation to offshore working, there is considerably more proceduralisation within our autonomous companies than was expected among our directive interviewees.

The autonomous working works down to a level but, of course, you always need procedures for certain things. You have to follow a distinct direct process. Everything has a limit as to how far you go. You can't have complete autonomy; just wander round the platform doing what you want on a daily basis [...] Not at the grass roots levels, where things have to be proceduralised. They have to, at that lowest level. You can't get away from that [...] If people assume that autonomous working is not having procedures and that sort of stuff, it's just wrong. It's giving people the power and control over their work but some elements have to be proceduralised; you can't get away from that.

(Apache interviewee)

We put a lot of emphasis on giving people responsibility for their actions within the pre-defined guidelines and requirements that obviously that are dictated by health and safety,

by procedure and so on, so rather than having people continually referring back to Supervisors or Line Managers for confirmation of what they should be doing, we would expect them to have a job plan, a procedure, a process to follow, but that they would have that degree of autonomy to allow them to progress through it without as I say, harping back the whole time.

(TAQA Bratani interviewee)

This was also true in relation to the work permit issue raised by directive companies. In this respect, our interviewees argued that they were no different from other companies in the industry.

Once you're in that offshore environment, you have to follow a procedure-like system, and a work permit is part of that [...] You must go through this check list and sign to say you're going to follow this specific procedure.

(Apache interviewee)

As such, the autonomy which these companies have been able to introduce appears to relate less to the core duties and responsibilities of 'coalface' workers, and more to the management, planning and budgeting responsibilities of their more senior offshore staff. As such, for most operational levels, employees in organic, autonomous companies work in a very similar way to those working in traditional, mechanistic and hierarchical companies. Some exceptions to this were identified: issues such as procurement, for example, or sequencing of non-critical activities could be devolved to 'coalface' employees.

There is autonomy in that the guy can say: 'Is there a better way to do this, is there a better sequence of me working in the morning?' So rather than 'Here's my process and procedure; I've got the cover for today, my maintenance routines. Okay, I have to turn this switch and turn this key and pull that... But actually, if I did that job first, and that job second, I'd have more time for this job.' And for him to then decide that's a better routine, that's where you can be autonomous. For him to decide 'Okay, we've installed these seals every time we change out this valve, and they cost £3,000 and we've got ten of them in the store, and half of them go rotten before you use them, let's only have five.' That's autonomous.

(Apache interviewee)

Look at the PMC, the Materials Controller on the platform [...] He does the buying now, he buys his stocks and stores and he's responsible for that budget. Beforehand, it was somebody else's budget, somebody else's money [...] He now gets his business bonus on how he manages those stores and stocks, and he can choose the suppliers he goes to [...] It's that level of autonomy, where people right down to the lowest level are told: 'You go ahead and find the best way to do this more effectively'.

(Apache interviewee)

Moving upwards from the 'coalface', our interviewees also criticised the assumption that addressing safety through processes, proceduralisation and the introduction of more management was inherently more successful than doing so through the devolution of decision-making responsibility. Firstly, it was felt that despite best intentions, it simply is not possible for a micromanagement approach to predict every possible safety issues before it arises. Secondly, it was felt that by relying on senior managers to make decisions on minor technical issues (which may nevertheless have grave safety consequences), the decision was being removed from those best placed to judge it. As such, it was felt once again that there was no significant safety disadvantage to a more autonomous approach which takes decision-making responsibilities away from senior or middle-managers and hands it downwards in the chain of command.

If somebody's sitting back and micromanaging something, the chances are that they will miss something [...] Nobody has the brain capacity to micromanage everything to the nth degree [...] The risks are greater from trying to say: 'Here's the process, policy, practice we all follow, and these senior managers are the only people who can make these decisions'. But actually, they're so far removed from the job. If I get a decision on one of my pipelines wrong and it blows up and kills everyone on the platform, [...] it will affect me, but it won't physically affect me [...] Somebody who's removed from that, especially a very busy manager who has 100 decisions, he'll spend 1% of his time on it. And the guy that's just, that's his life, is 100%, is going to make a better decision, as long as he understands the overall strategic intent of what he's doing.

(Apache interviewee)

Staff Transience

The final element to this group of barriers related to staff mobility and transience. In particular, our directive companies explained that under an autonomous system, the lack of continuity between different teams working on the same offshore project may have implications for the consistency of decisions made, and the communication of individual judgement calls between different judgement calls. Again, our advocates generally argued that this was again based on a misunderstanding of the true extent of freedom given to their employees, and that by and large, the operational, 'coalface' workers were largely bound by process and procedure in the way that they would be in a non-autonomous company. In addition, TAQA Bratani explained that their staggered approach to project crew changes helps with this issue.

I think we've actually removed that issue. When we have a crew change, it's not a complete vertical slice that changes, but we have [it] staggered, so that for example, one level will crew change on one day, and another level within that organisation will crew change three days later, so you've still got the regular rotational cycles, but you've got an overlap to sort of carry over what's being done.

(TAQA Bratani interviewee)

We are, however, unsure if this is standard practice among non-autonomous operators in the North Sea industry and would welcome the feedback of directive companies on this point.

The Three Ps: Procedure, Process, Protocol

In terms of staff transience, our directive companies identified potential barriers arising from staff turnover within the industry. For them, having clear policies, processes and procedures in place to structure the work of new arrivals at their company was seen as being extremely valuable in safety terms. On the understanding that these would not be present in an autonomous company, it was felt that this would be a real disincentive to any company interested in pursuing an autonomous approach.

However, both of the offshore advocate companies we spoke to made it clear that for them, this is not a significant issue. Firstly, much of their core lower-level offshore work is governed by policy, process and procedure, as outlined above. As such, the operational demands within their companies are no different in this respect than in companies with different approaches to people

management. However, in relation to introducing somebody to the concept of autonomy, the advocates we interviewed suggested that the only way that you can do this is to ensure that people are introduced to an appropriate level of autonomy, with a support network around them.

You've got a big support network round about you. You've got loads of really experienced guys round about you, so if you're going to make a howler, they're going to catch it before you make a howler [...] It's not until you get that level of experience behind you, that knowledge and experience behind you, that you can make informed command decisions [...] In that position, everything I did was collaborative. I relied on everyone round about me.

(Apache interviewee)

From this point onwards, it is very often a 'sink or swim' scenario in terms of adjusting to autonomy. It was acknowledged that in some cases, adjusting to the culture of autonomy could be difficult, and that it may not be suitable for everybody. As such, it was vital to focus on picking the right people with the right behavioural attributes (such as a sense of urgency or 'fire in the belly'), rather than expecting everybody to be able to make the transition easily.

Offshore reps now aren't used to making decisions. You have to pick the right ones, because some of them have just become conduits for information, just messengers. That's not what they're there for. [If] they just find it too difficult to work in that [autonomous] organisation, they will leave [...] Nobody is ever going to suit every organisation.

(Apache interviewee)

I can't remember the exact statement that someone made to me years ago [but] it was along the lines of: working for Apache, you do the work of five people that they usually take two years to do. You do it yourself and you do it within three months. It's just the way it is, and either you fit in with it or you don't.

(Apache interviewee)

Despite the apparent difficulties faced by some individuals in adjusting to the autonomous culture, both of our operator interviewees explained that they had extremely low staff turnover rates, which to them was a great testament to the fact that once people make the transition to

autonomous working, they appreciate the way in which the system allows them to flourish. In addition to this job satisfaction, working for a relatively leaner (i.e. smaller) but nevertheless productive operator also brought greater financial rewards.

We have a very low staff turnover rate, which is probably reflective of the fact that people do like the company and want to stay with it. We've also had some people who've left the company and then six weeks later they've been knocking on the door saying: 'Excuse me, the grass isn't quite so green, can I come back?'

(TAQA Bratani interviewee)

There's low turnover. I think it's down at 1% now, our turnover [...] Nobody wants to leave [...] because if you deliver the results, then you get rewarded for it. And that happens right the way down through the chain [...]

(Apache interviewee)

However, as explored above, these companies are already growing quickly and this growth potentially has implications for their culture of autonomy. We have already detailed the evidence from our operational interviewees in Apache, which suggests that the extent of autonomy may already be decreasing slightly. As such, a key point of interest in future will be the extent of autonomy granted to new arrivals to the company, and the way in which the induction process for autonomy develops (if at all) as the company grows.

Cultural Barriers

The next group of barriers we put to our interviewees was the cultural barriers identified by directive companies. In terms of industry culture, these comprised the industry's inherent conservatism, focus on constant productivity, its reactivity and its resistance to change, whilst in terms of company culture, these covered a strong preference for the 'command and control' management approach, an insistence among clients on providing very highly specified pieces of work when paying contractors to carry out work and the need for a clear strategic vision across autonomous companies. Finally, in terms of individual culture, interviewees pointed to suspicion or resistance to the idea of either surrendering (managerial) or receiving (operational) decision-making responsibility.

Industry Conservatism / Culture of Resistance

Overall, there were few suggestions made in terms of overcoming these cultural barriers. At industry level, it was recognised that the industry is indeed a conservative one, and that this would likely be a very strong barrier to a wider acceptance of autonomous working.

With a conservative industry, the culture of working takes a long time to become embedded.

(Apache interviewee)

If you do things quickly, things will go wrong, you will make mistakes, you will have projects that are not successful. But actually the sheer competence of the workforce out there will make things be successful. Our engineers are good enough to pick up as they go through a project: 'Actually this is not going to work, we need to change'. And that's the flexibility of things. But it is all done at a pace.

(Apache interviewee)

However, this is not to say that interviewees agreed with the rationale behind this conservative acceptance of a mechanistic, 'command and control' approach as the correct one. Indeed, there was a very strong opposition to the idea that the micromanaging, 'command and control' approach delivers the stability which is so important to the industry in terms of delivering consistent uptime and productivity. Most of our advocate interviewees argued that to their mind, quite the opposite was true, and that the traditional approach was not only ineffective in achieving its stated strengths (i.e. stability and predictability) but also that it nurtured an aversion to risk which may be justifiable in relation to safety issues, but which could also lead to overly cautious business decisions.

It's that idea of studying everything to death. It's that 'paralysis by analysis' [...] Sometimes it comes back to bite you, in that further down the chain you may have bigger problems. I don't know a single project I've ever done with or without a FEED [Front End Engineering Design] and concept study that hasn't had problems as you get further along [...] [But] the earlier you make a decision, the more time you've got to recover from it if it's wrong.

That's more the Apache approach. Whereas if you spent all that time analysing all the things that could go wrong and then make the decision, by then it's often too late.

(Apache interviewee)

They become so risk averse and they're so much in the fear of failure, that they'll miss all these opportunities [...] They said that this field would be shut down in 2012: we're installing a new platform. They said it was 144 million barrels recoverable remaining; we've drilled that up in March 2010, found another 177 million barrels.

(Apache interviewee)

Again though, within both of the advocate operators we interviewed, it became clear that their lack of 'baggage' was crucial to their successful implementation of autonomous working. Without the 'clean slate' with which they entered the North Sea industry, they felt that it would be extremely difficult to overcome the inherent conservatism of the industry.

Company Acknowledgement of Change

A similar response emerged when examining company culture. At company level, the earlier section on critical success factors made it clear that addressing a company's cultural reliance upon a mechanistic tradition would be exceedingly difficult without being mainstreamed right from the outset. Trying to engineer the change on a small scale was not expected to be successful by many of our interviewees.

That's the thing: it's such a step change [...] Somebody can't suddenly wake up and think 'Oh we're going to apply this culture'. It has to be completely embedded in the way they do business, in the way that they think. Everything they do is along those same lines.

(Apache interviewee)

However, a small number of interviewees pointed to examples such as the BP MAST assets discussed above, and suggested that it might be possible for autonomy to be introduced to companies with a more mechanistic management tradition, but only in cases where the parent company is prepared to give complete autonomy to a division of its operations (mixing autonomous and non-autonomous approaches within the same division not seen as a feasible prospect). From the point of view of the operators we interviewed, this was seen as being the best

possible means of gradually overcoming the cultural attachment to command and control, although they accepted that it still represented a significant 'leap of faith'. Despite this, it is worth noting again that one of our directive interviewees had enjoyed mixed success in his experience working autonomously in a very small number of High Performance Teams some years ago. Although the scope of this particular project is limited to a small number of companies, there may be potential for industry representatives to consider this particular approach to autonomous working with a view to collating experiences, distilling success factors and considering whether it might be possible to consider the potential for trialling small autonomous teams working within a wider mechanistic framework.

Another barrier identified by directive companies related to the extremely detailed project specifications imposed by client companies upon contractors within the supply chain. For as long as this level of detailed specification was insisted upon by major clients, it was believed that the opportunity for supply chain and service companies to introduce autonomy would be severely curtailed. This was certainly borne out by our interviews with Flexlife.

These big companies [...] have very onerous, very specific, standards, processes and requirements on every single project and, this will go right down to a bolt. When you manage a project for them, you have to make sure that you adhere to those specifications, whether they're right or wrong, for that application and they try to write the specifications to catch all. So, you can imagine, we're starting to talk about some pretty serious documents now, which everybody has to read and they have to sign up to before they do it. There is an example of a process stifling initiative.

(Flexlife interviewee)

It was felt that ultimately, the only way to overcome this was to showcase the work which has been done using this approach. Our interviewees explained that over time, the realisation will spread that companies who work autonomously are often able to run leaner. It was argued that as more and more companies start to work with autonomous contractors in the supply chain, the realisation will spread that the greatest payoff occurs when the contractors are granted ever greater amounts of autonomy rather than highly detailed design specifications.

This model only works in terms of delivering projects to clients if the client is accepting this method of working. You can chip away at the corners, you can make certain improvements in certain areas [...] but you're never going to be able to achieve the pace, the true project pace that can be delivered as we currently deliver.

(Flexlife interviewee)

It was also explained that autonomous working in the supply chain typically lends itself to a certain type of commercial model, which – in theory – could be more appealing to many clients, in that it is less driven by man-hours and more driven by target-related performance and alignment with key client goals. However, the difficulty arises in convincing other supply chain contractors to adopt such a system, given that it goes against the traditional way of generating contractor profit on projects.

The way that they make their money out of a contract is by generating man hours. Now, an easy way to generate man hours is to produce a document and then have three different people review that document [...] This is why I don't believe [traditionally aligned] companies who want to work autonomously will be able to, because it will come at a cost [...] It's in their interest to put more men on that job, doing that job and creating problems on that job, but ultimately delivering it but, as long as they've maximised their return, then they maximise their profit. And therein lies the problem in the oil and gas industry.

(Flexlife interviewee)

On the other hand, autonomous companies in the supply chain maximise their profit by ensuring that their goals are aligned with those of the client (e.g. timescales, early delivery) and allow people to work autonomously and creatively, ultimately saving time (and money) for the client.

If you're not incentivised by man hours, then what you are incentivised [by] is in delivering the project [...] Let's say we're going to buy a rigid pipe, just a tubular piece of steel, and it has to convey a fluid that might be nasty, it has to be at a certain temperature and a pressure. Well, why should we define what that steel is going to be? Why should we not just say: 'This is what it's got to do, this is why we want it to do it' – i.e. the mission – and then allow the company that is best at manufacturing that product to engineer it and deliver it and we check that it meets the functional requirements of the project? [...] Going

down the traditional route, you're going to get it, and you'll get it heavily engineered and it's going to take a long time to get it, whereas we can deliver it quicker.

(Flexlife interviewee)

Indeed, a number of companies were mentioned as having 'softened' their previous opposition to autonomous working after having dealt with both Apache and Flexlife in the Forties field. A number of these companies are major service companies and duty-holders in the North Sea, which suggests that the approach outlined above (i.e. gathering support for autonomous working by showcasing its benefits) may begin to gather momentum in years to come.

Strategic Vision

The final company barrier identified by directive companies was the difficulty of implementing a shared strategic vision across the entire company. It was felt that this would be a prerequisite for any company aiming to make a success of autonomous working. However, this assumption was also challenged by the advocate companies we interviewed, who claimed that although a clear strategic vision may be important, it need not be any more complicated than a small number of guiding principles. In this respect, an interviewee from Apache explained just how straightforward their company strategy was:

People have made strategy and strategic vision just too complicated. Apache does not have a strategy document for the North Sea. You could ask anybody in here: production up, cost down, safety. That's it; that's the strategy [...] There is no other strategy. There's nothing more complicated below that [...] I think everybody can understand that. You ask anybody in the organisation. If you said to them: 'What's the next line in this sentence: production up and...' they would say: '...cost down, safety.' Because that's it. What's so difficult about that?

(Apache interviewee)

As such, our interviewees made it clear that they did not feel that having a detailed company strategy was in any way a prerequisite to successful autonomous working.

Finally in this section, we consider the individual barriers identified by directive interviewees. Broadly speaking, these related to individual resistance to changes in management practices. It

was felt that many managers would be resistant to the idea of devolving authority, whilst many operational workers would be uncomfortable with the idea of more autonomy, either because of suspicions that it would be a management fad or 'trick', or because they preferred not to be challenged to move out of their comfort zone.

Individual Scepticism

The section above on critical success factors showed how crucial it is to secure management buy-in for autonomous working. Indeed, it was felt that without this support, autonomous working was a non-starter. However, it was also made clear that this support was very unlikely to be forthcoming, from middle managers in particular.

As outlined above, autonomous working depends upon having a far more lean management structure than is usually the case in non-autonomous companies. As such, any move towards more autonomous methods would require companies to dispense with large numbers of middle managers, which would be seen as costly and risky. On this basis, there was no clear way forward from our interviews as to how this particular barrier might be overcome. As all three advocate companies interviewed had been established according to a principle of autonomy, and as such, they began with a lean management structure. Even then, it was explained that in Apache, the first few years were a real challenge in terms of trying to win people round to the new way of doing things, including devolving decision-making responsibility.

It required some pretty forceful characters from Apache to come across and actually run the region for the first two or three years [...] They all came with the Apache culture already embedded in them, and [name removed] who was the original local VP was very, very forceful in the way that we should do business [...] He very much led the culture, and it was a culture change over two or three years while he was in charge, and it was a lot of effort.

(Apache interviewee)

Lack of Employee Interest / 'Comfort Zone'

Individual willingness was also seen as an issue for more operational employees, whom directive companies believed may see autonomy as a management gimmick or an unwelcome pressure to remove them from their comfort zone. By and large, our interviewees accepted that autonomous

working does require employees to engage more with their work and – on occasion – step outside their comfort zone, but on the basis of their own experience, they generally rejected the notion that operational workers would be hostile in principle to autonomous working. Linking the two aspects together, our interviewees suggested that the only ones who would really be opposed to the approach would be those who were unhappy about being removed from their comfort zone, but overall, they felt that their companies struck a good balance.

I think people would be happy to buy into it. Obviously, you're going to get some people who, as I said previously, it will take them out of their comfort zones, but the majority of people are skilled and able and they would welcome the opportunity.

(TAQA Bratani interviewee)

I think in general, we manage to strike a balance behind pushing people but not pushing people beyond what they're capable of or comfortable with.

(Apache interviewee)

Of course, in many cases – particularly high-risk operational roles offshore – there would be little notable difference between working for an autonomous company and working for a non-autonomous company. In relation to the type of roles which would incorporate a degree of autonomy though, advocates echoed a point made above in relation to critical success factors: namely, that choosing the right people with the right behavioural attributes was essential to ensuring the success of autonomous working. Whilst some employees would love it, others may hate it. In the same way that someone with specific technical skills would be required hiring someone for a specific technical position, so specific behavioural attributes (again, a sense of urgency, 'fire in the belly' etc) are usually required when hiring someone for a more autonomous position.

Some people just think: 'Oh, this is just too much, I can't handle it'. But that cultural change takes a bit of time for people to realise. Some people just can't handle it, and other people just think: 'This is great, people are actually finally trusting me to do something without leaning over my shoulder, constantly changing priorities'.

(Apache interviewee)

Resource Barriers

A number of resource-related barriers constituted the next group of obstacles identified by our directive interviewees. In brief, these comprised of a reluctance to devote resources (time, money and effort) towards the implementation of a new approach, a general reluctance across the industry to invest in 'intangibles', a refusal to accept the long lead-in time required to see the results of radically changed management processes, and a belief that autonomous working would ultimately lead to far too much time being spent debating the merits of options in a given situation (rather than following a predetermined procedure).

People [who] didn't like it left, and people that bought into it, flourished.

(Apache interviewee)

Time / Effort / Cost

The first three of these barriers (essentially a reluctance to expend the time, money and effort required to change management practices) was ultimately seen as an issue on which our advocate interviewees could provide little guidance. As each of their companies had entered the North Sea industry with a commitment to autonomous working already in place, they had not been involved in a change of this nature. The closest proxy (i.e. the individual transitions made from a mechanistic to an autonomous culture) were not thought to be directly relevant to this barrier, which relates much more to company willingness to make the change. Any transition of this nature would inevitably require a significant resource commitment; there was simply no alternative. However, it was felt that making the change (in companies where this might be possible) would ultimately lead to payback in terms of two of the key resources under discussion: time and money. By making a successful move to autonomous working, the qualitative evidence we have collected here suggests that significant savings could be made in relation to operational costs and the timescale for working, and therefore also profit margins. However, the key to this is once again ensuring that the autonomous approach is appropriate to the company in question. In terms of lead-in time before seeing beneficial results from the implementation of autonomous working, interviewees again asserted the idea that autonomy was best suited to smaller companies. This was true not only for companies at the outset of their operations, but also for any established company looking to make the change. Again, a significant lead-in time was seen as

inevitable, and despite the potential paybacks discussed above, the time required to change the culture of an entire established major may ultimately be a barrier which is simply insurmountable.

Again, I'll come back to the fact that we're a small organisation, you know, it's fairly easy to do; likewise Apache. If you were to take for example, [major operators' names removed], imagine stopping the juggernaut, putting the whole learning process into place and then change its direction, and getting it moving again. You wouldn't mind being the consultant who got that contract, would you! That would be a major, major job to do and that's why I think that the likes of the big organisations may have the will to start it, but I don't think they could hold their breath long enough to actually see it through.

(TAQA Bratani interviewee)

Again though, there was a certain degree of optimism in relation to doing this on a smaller scale. This was based on an understanding that many of our interviewees had in relation to the expectations placed upon staff in established majors (virtually all of our interviewees had worked for at least one of the major North Sea operators previously). It was felt that in the case of these major operators, there was an extremely long lead-in time before new arrivals at the company are expected to make a significant contribution, and that it might not be unreasonable for these companies to expect more from their recruits at an earlier stage.

Apache will throw people in at the deep end and basically are supposed to be contributing from day one. [company name removed] might expect people to start becoming productive after five to ten years. I've heard it recently described that a fully rounded explorer takes ten years to develop [...] Well actually, I know people who've made a contribution in their first year, two years, three years, no problem at all in the Apache culture, so there's an expectation of performance whereas [elsewhere] there's an expectation of training, training, training [...] I don't think there was a culture of empowerment in that way in [company name removed]. There was an expectation it's going to take a long time to learn to be great.

(Apache interviewee)

However, it should be added that this may also be due to company recruitment policies. Whilst many of the major operators have very strongly developed programmes for graduate recruitment

and development, a number of our interviewees explained that the recruitment policy at Apache depended far more upon bringing in workers who already had considerable levels of skills and experience.

Apache typically hasn't recruited that many junior people [...] We don't recruit in ten or fifteen "Challenge" graduates⁶ in the same way that BP would, and you'd go on some formal training programme with BP, so that training side is very different as well.

(Apache interviewee)

Whilst this is in no way a criticism of the policy, this may go some way towards accounting for the differential expectations for contributions in companies like Apache and those with a policy of attracting less experienced talent. However, this also raises interesting possibilities in relation to the earlier suggestion of introducing High Performance Teams or attempting to 'autonomise' functional divisions as a starting point for mechanistic companies seeking to 'test the water' with regard to autonomy. Whilst it may well take a long time for new recruits to adapt to this way of working, the best prospect might be a mixture of highly skilled and experienced employees working in this kind of team or division whilst nurturing a supply of young talent before they become acclimatised to a more mechanistic approach. Again, this is a suggestion on which we would be greatly interested in industry feedback.

More Time Talking, Less Time Doing

The final type of barrier within this category related to the perception that autonomy necessarily involved more time spent talking and less time doing (compared with a more mechanistic approach). It was felt by our directive interviewees that this was the prevailing perception within the industry, and that it would be a challenge for companies to overcome this when moving towards a more autonomous culture.

Again, rather than providing guidance on how to address this barrier, our advocate interviewees challenged its validity. In each case, it was felt that quite the opposite was actually true: rather than producing a type of negotiated decision-making process, the approach consistently allowed for the best qualified competent individuals to make unilateral decisions (within existing regulatory parameters such as health and safety or ISO compliance). The best proof of this was

⁶ "Challenge" is the name of BP's graduate recruitment and early development programme.

typically thought to be the leanness of the autonomous companies we spoke to, all of whom claimed that rather than generating debate, autonomy allowed them to push on with jobs far more quickly than was the case under more traditional, mechanistic approaches.

It is absolutely, completely the opposite. It's about specifying the minimum requirements needed and then allowing people's initiative, knowledge, understanding, experience, to then say: 'Right, now I understand what the ultimate mission is, then the sub tasks below that. I understand my resource boundaries, and then I can decide how best to employ those resources to mission'. And if I can't, that's when I go back to my boss and say: 'Can't do with that amount of money or that amount of people, I need more' or 'There's a better way to do this, let's change the mission level.' But the last thing you do is sit around discussing it with everybody. It's just absolutely completely the opposite. That's how our teams are so small. That's because you don't need to discuss with lots of people.

(Apache interviewee)

Indeed, a number of interviewees claimed that a greater degree of discussion was generated within more traditional companies. This was typically argued to be the result of efforts to reduce individual decision-making responsibility (often, it was claimed, due to a lack of confidence or trust between management and operational workers).

If you're not competent, that's when you discuss it with lots of people; get consultants in; or you are scared of failure, or you think there's too much risk. But most of it is the fear of failure, so let's discuss it with lots of people, because the wider spectrum of people you discuss it with and the bigger the population you discuss it with, the less you feel exposed that you made the wrong decision as an individual. No, it's just not that way at all, absolutely not.

(Apache interviewee)

On this basis, our interviewees were once again keen to correct any potential misunderstanding of autonomy, rather than provide any guidance on how to overcome a barrier whose existence they disputed.

Company-Level Barriers

To a large extent, the barriers identified in relation to company characteristics have already been covered at length in the section on critical success factors, and we do not propose to reiterate this information. Rather, we will simply cover the main points from the section.

Our directive interviewees stated that a key barrier to autonomous working for many companies in the industry would be the perception that autonomy is only possible in certain circumstances. In particular they explained that there was a belief that it would most likely succeed in small companies and young companies, and would typically have to be mainstreamed right from the start. This was broadly confirmed by our interviewees, all of whom attributed at least some of their companies' success with autonomous working to their age or scale, as well as the fact that the approach was mainstreamed from the outset.

Age / Scale / Mainstreaming

It was widely agreed that firmly established companies would find it very difficult to overcome the management style path dependency which emerges at an early stage of a company's existence, making any change in management style more difficult as the years progress. The same was generally seen to be true in relation to company scale. Most advocate interviewees agreed with directive companies that autonomy was likely to work best in smaller organisations, although a small number argued that scale was irrelevant so long as a willingness to commit to the principles was in place.

The whole scale issue is complete nonsense, because devolved decision-making has no scale boundaries whatsoever. In fact, it's more applicable the bigger you get, because the bigger you get, the more decisions you have to make, the more things have to get filtered up. The system can't cope with it, whereas devolved decision-making just naturally keeps everything flat and at the lowest level. So anybody that says they have a flat structure but doesn't have devolved decision making is, it's impossible, you can't do it.

(Apache interviewee)

In this respect, the example of the BP MAST assets suggests that this may be the case, in that it demonstrates that it may be possible to effectively 'cut loose' certain divisions or platforms within a wider mechanistic context (even within a large, establish operator), so long as everyone working

on that asset is aware of the new approach and enthusiastic about it. In addition, the testimony of one of our directive interviewees in relation to his experience of working in High Performance Teams suggests that there may be potential in resurrecting this on a small scale.

Skills Barriers

The penultimate type of barrier identified by directive companies related to the belief in the industry that the type of skillsets currently available in the North Sea would not be able to satisfy the requirements of companies wishing to work autonomously. This was based upon an understanding that autonomous working required people to be much more willing and able to contribute to a wider range of tasks than was the case under a more traditional mechanistic approach.

Skillsets

Again, this was a barrier which was rejected by the advocates we interviewed, who claimed that autonomous working depended upon technical specialisation just as much as was the case for more mechanistic approaches. As was explained to us, highly specialised skillsets were beneficial to autonomous working, given the need for trust in the competence of the workforce if decision-making responsibility is to be devolved to them.

Having a very specific skill set means that I have to tell them less what they have to do. If somebody has a particular skill, I just say 'I need you to achieve this' [...] because I can't even begin to describe in the best manner to do his job [...] The more highly specialised people are, then the easier it is to manage them, because you can say quite clearly what your mission is, and resources, and value, but how you do your black box magic is up to you; just give me this result.

(Apache interviewee)

As such, there was once again no practical advice to give on overcoming the barrier, but rather a clarification of the misunderstanding behind the barrier.

Evidence Barriers

The final barrier identified by directive companies related to the need for absolutely indisputable evidence that autonomy produces superior quantitative outcomes than a mechanistic approach. Whilst other operators might recognise the success of Apache and TAQA Bratani as companies, some directive companies reported that some people in the industry might believe this success to be more attributable to the calibre of people they have working for them rather than the management approach.

There was a clear acceptance across both TAQA and Apache that the quality of people played a large part in their success. However, it was also made clear that in both cases, when the companies established themselves in the North Sea, they took over assets previously run by other operators. In doing so, they took on large numbers of the staff who had previously worked on the same asset under the previous company. Whilst the companies argued that these employees were already highly skilled, it was the change to a more autonomous culture which allowed them to inject new momentum and increased production to the assets in question.

I can quantify it. When TAQA took over these platforms, productivity went up by something around 30% within days, because TAQA started listening to the people at the coalface about ways that things could be done differently, more economically, more effectively, more efficiently. There was no big investment that brought that about, it was simply listening to what people had to say, and letting them do the job the way they felt it would be better done.

(TAQA Bratani interviewee)

If you look at Apache, basically it was the [company name removed] staff, they bought the asset and the [company name removed] staff [...] The Finance Manager, Production Manager, myself, the Safety Manager, these are all original [company name removed] employees [...] I think we've imported perhaps two or three OIMs out the 30 odd that there are. They're all ex-[company name removed] employees. There's no special selection process people have gone through, apart from the fact they've wanted to remain in Apache because of the culture. So it's not any special people they've been employing. It's just the way of working and that freedom of action.

(Apache interviewee)

This was felt to be the most convincing possible evidence of the impact of autonomous working on company performance. Using almost the same teams of people as their predecessors on the same assets, both TAQA and Apache interviewees claim to have increased productivity significantly in a very short space of time. This – coupled with their success and expansion since entering the North Sea – was thought to be as convincing as proof possibly could be that devolving a degree of autonomy to employees can yield significant performance and productivity improvements.

DRAFT FINAL

SUMMARY OF KEY FINDINGS AND NEXT STEPS

Key Findings

We use this section to provide a brief overview of our findings.

We firstly identified the barriers which are perceived to exist within the industry to the idea of implementing a greater degree of employee autonomy. These barriers were identified by our interviews with a number of 'sceptic' companies, who described both the barriers which they themselves faced, and those which they knew or believed were in place for other companies within the industry.

These barriers fell into six categories. These were safety barriers, cultural barriers (in terms of industry culture, company culture and personal culture), resource barriers (particularly time and money), company barriers (in the sense of company characteristics like size and age), skills barriers, and evidence barriers.

Prior to considering the way in which our 'advocate' interviewees responded to these barriers (including details on how – if at all – they had overcome them), we provided an overview of the way in which autonomous working operates within our advocate companies. The general principle is that the best decisions are made when they are made at the lowest possible level. This is based upon the belief that those closest to a problem or question are likely to be the people with the greatest wealth of information on which to base an answer. In addition, this approach allows companies to make decisions far more quickly, far more safely and with fewer middle managers. We found that the autonomy they devolve is not unrestricted. Interestingly though, our interviewees explained that there are no precise limitations to individual autonomy, but rather that the concept operates rather amorphously, with the key boundaries being financial limits and the extent of one's technical competence. As such, autonomy appears to be strongest within their management levels, decreasing as the operational 'coalface' is approached.

We then turned to consider the factors which our advocates believed to be essential to the successful delivery or implementation of autonomous working within their company. The first of these was the need for management 'buy-in' to the concept of autonomous working. Without a willingness to devolve some decision-making authority, the idea of autonomy was seen as a non-

starter. In a similar vein, the number of managers and their alignment within the company were also seen as crucial – for autonomy to work, it is vital to run with a lean management structure, ideally with as few layers as possible. Similarly, it was seen as important to have contractors who can buy into this ethos.

Another important factor was the idea that the principle of autonomy had to be mainstreamed across the entire organisation. However, some interviewees discussed previous examples of companies ‘autonomising’ certain assets or divisions. In addition, some interviewees had experience (both successful and unsuccessful) of working in High Performance Teams within a mechanistic company. These examples suggest that there may be potential for the gradual ‘autonomising’ of companies, starting on a small scale and building outwards if/when they are found to be successful.

Two further important factors were identified: time and size. With regard to the former, our interviewees argued that implementing autonomy across an entire organisation takes time. Even ‘converting’ individuals from a mechanistic to an autonomous mindset can take time. In relation to size, our interviewees were divided. A minority believed that autonomy was scalable, whilst others believed that it was only truly possible within a small organisation. Given that both Apache and TAQA Bratani look set to undergo considerable growth due to recent acquisitions, we will be interested to see what the consequences are for their respective cultures of autonomous working.

Interviewees also identified a number of other factors which we did not examine in depth, due to the fact that these factors (e.g. skilled employees, organisational trust) are important within any company active in the North Sea, whether autonomous or mechanistic.

Finally, we turned to consider the way in which our advocates responded to the barriers presented to them from our directive interviewees. In relation to safety barriers, the most important point to emerge was that our advocates were keen to correct what they believed to be a misunderstanding of how autonomy works: rather than being an approach in which workers are free to do whatever they want, whenever they want, there are in fact very clear procedures and processes for offshore working, meaning that at the operational ‘coalface’, there may sometimes appear to be little difference in the way that workers carry out tasks. However, behind the scenes in issues like budgeting and task management, there may be scope for autonomy at all levels. They also

challenged the idea that greater proceduralisation necessarily results in greater safety at higher levels. As such, they did not provide information on how to overcome this particular barrier, but rather they refuted its applicability in the first place.

A number of cultural barriers were also identified. These tended to impact upon the industry as a whole, specific companies or individuals. Industry barriers – generally relating to conservatism, a reluctance to change and a constant focus on productivity at the expense of everything other than safety – were broadly thought to be very difficult to overcome, although our advocates stated that their existence showed that this could be done where the requisite willingness to do so existed. Company culture was also seen as being very difficult to overcome, although the importance of mainstreaming was again emphasised. However, the examples of the BP MAST assets and High Performance Work Teams were also cited as being examples of the ability to do this on a smaller scale, with the only real obstacle being the willingness to do so. The tendency to control contractors was also cited as being difficult to overcome. Interviewees felt that the best way of overcoming this was to continue to showcase the good work currently being done with contractors who ‘buy in’ to the autonomous ethos. It was argued that doing so has already resulted in a partial ‘softening’ of approach (away from a mechanistic tradition) of one of its key service companies.

In relation to individual barriers, two key issues arose. These were the problem of securing management buy-in for autonomous working practices, and the potential opposition of operational workers. In relation to the former, advocates agreed that this was a profound barrier, and one which would be very difficult to overcome within a mechanistic framework. As our advocate companies had all begun their life in the North Sea industry with very lean management, they did not have any personal experiences upon which to draw in terms of overcoming this barrier. In relation to operational-level resistance, our interviewees explained that whilst some workers would inevitably feel out of their depth within an autonomous environment and may resist it, their experience showed that most employees flourished in the autonomous culture and those who did not, left the company.

In relation to resources barriers, directive companies identified the requisite time money and effort as significant barriers, whilst the same was also true of the industry’s general reluctance to invest in intangibles, and a belief that autonomy automatically led to more time talking and less

time doing. In relation to the issue of time, money and effort, our advocates argued that there was no way of circumventing the inevitable resource commitment associated with any move towards autonomy. However, they argued that the rewards of doing so would ultimately outweigh the cost. This tied in closely with the industry's reluctance to invest in intangibles. Finally, advocates refuted the idea that autonomy means more time spent talking and less time spent working, arguing that in actual fact, quite the opposite was true.

The company barriers we discussed with advocates were based upon the issues relating to company size, age and mainstreaming. In each case, advocates attributed their company's success to at least one of these three factors (but usually a combination thereof), and argued that they felt the odds were stacked against any established company trying to make a change to autonomy. Unfortunately, there were no clear ways of avoiding or overcoming this, although once again the BP MAST asset example may be instructive in terms of introducing autonomy on a smaller scale.

In terms of skills barriers, our advocate interviewees refuted the belief that autonomous working requires much more generalised skillsets than are currently available in the North Sea sector. Rather, they claimed that the current proliferation of strongly specialised skillsets were ideal for autonomous working, as the more specialised knowledge an individual employee has, the better they able they are to use their autonomy to make decisions within their remit.

Finally, directive companies identified an evidence barrier to the implementation of more autonomous working, explaining that non-autonomous companies would require significant convincing if they were ever to consider moving to a more autonomous model. In many cases, there was a belief that the success of the companies currently operating an autonomous approach was due to their employing the best staff available within the industry. Advocates, however, argued that their staff was originally composed of employees of other major operators, and that the productivity of those same employees increased greatly simply by being given greater autonomy. This, it was felt, should be sufficient evidence to convince any sceptical party that the autonomous approach – and not just the people employed within it – was responsible for a large part of the success of these companies.

Next Steps

The findings from this study clearly suggest that although the conditions for successfully implementing autonomous working appear optimal within relatively small companies from the moment they begin operations in the North Sea sector, the testimonies we received in relation to the success of the BP MAST assets and interviewees' personal experience of working in High Performance Teams or autonomous divisions within a broader mechanistic organisational culture, lead us to believe that autonomy is potentially feasible on a small scale, even where the company in question has a long-standing commitment to a more traditional, mechanistic approach.

However, any such move will require a good deal of faith in the autonomous approach, and confidence in relation to seeing it through. On the basis of our interviews and review of previous literature, there appears to be a wide range of potential benefits to autonomous working, including the following:

- A better safety record;
- Better employee engagement/satisfaction;
- A leaner workforce;
- Lower levels of staff turnover;
- Higher levels of performance and productivity;
- Better responsiveness to unforeseen problems/issues;
- Better skills utilisation.

However, our findings suggest that the commercial rewards of introducing autonomous working are unlikely to be immediate, and the time required for a transition from a mechanistic to an autonomous culture would appear to increase in relation to the size of the company/division involved in any such transition.

We realise that for many companies, there will be little interest in this topic. However, on the basis of our previous work, we are aware that many companies in the industry harbour equal measures of interest and trepidation in relation to autonomous working.

We would encourage interested parties in the industry more widely to convene around the idea of introducing greater degrees of autonomy to small divisions of their operations. The exact way in

which this would look will vary from company-to-company, but it seems clear from our studies that those companies who have embraced autonomy are keen to share their knowledge on this topic.

We hope that this study can catalyse more widespread interest in the possibility of mutual learning around the deployment of autonomous working practices and the benefits thereof.

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REFERENCES

Ashley, S (1992) 'US Quality Improves But Japan Still Leads' in *Mechanical Engineering ± CIME*, Vol. 24, pp. 114-26.

Burns, T and Stalker, G M (1961) *The Management of Innovation*. London: Social Science Paperbacks.

BP (1996) *BP Considers Sale of Interests in 'MAST' Oilfields*. Available online at: <http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=2002135>. Link accessed 12th December, 2011.

Emery, F E (1959) *Characteristics of Sociotechnical Systems*. London: Tavistock Institute of Human Relations.

Hackman, J R (1983) 'The Design of Work Teams' in J Lorsch (Ed.) *Handbook of Organizational Behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Herbst, P G (1974) *Socio-Technical Design*. London: Tavistock Publications.

Kirkman, B L and Rosen, B (1999) 'Beyond Self-Management: Antecedents and Consequences of Team Empowerment' in *Academy of Management Journal*, Vol. 42 (1), pp. 58-74.

Manz, C C and Sims, H P (1993) *Business without Bosses: How Self-managing Teams are Building High-performance Companies*. New York: Wiley.

Scott, D; Bishop, J W and Chen, X (2003) 'An Examination of the Relationship of Employee Involvement with Job Satisfaction, Employee Cooperation and Intention to Quit in US Invested Enterprise in China' in *The International Journal of Organizational Analysis*, Vol. 11 (1), pp. 3-19.

Tata, J (2000) 'Autonomous Work Teams: an Examination of Cultural and Structural Constraints' in *Work Study*, Vol. 49 (5) pp. 187-193.

Wall Street Journal (2011) *Exxon Sells U.K. North Sea Assets to Apache*. Available online at: <http://online.wsj.com/article/SB10001424053111903703604576584503495544980.html>. Link accessed 12th December, 2011.

Wall, T; Kemp, N J; Jackson, P and Clegg, C (1986) 'Outcomes of Autonomous Workgroups: A Long Term Field Experiment' in *Academy of Management Journal*, Vol. 29 (2) pp. 280-304.

Weber, M (2001) *The Protestant Ethic and the Spirit of Capitalism* (2nd Edition). London: Routledge.

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