[redacted]

[dstl]

Modern Deterrence Wargame 2017: Methodology and Observations, Insights and Lessons

[redacted]

DSTL/TR108781
18 May 2018

Dstl
Defence and Security Analysis
Portsdown West
Portsdown Hill Road
Fareham
PO17 6AD

[redacted]

[redacted]

Release Conditions

This document has been prepared for MOD and, unless indicated, may be used and circulated in accordance with the conditions of the Order under which it was supplied.

It may not be used or copied for any non-Governmental or commercial purpose without the written agreement of Dstl.

Approval for wider use or release must be sought from:

Intellectual Property Department
Defence Science and Technology Laboratory
Porton Down, Salisbury, Wiltshire SP4 0JQ

Authorisation		
Role	**Name**	**Date**
Project Manager	[redacted]	
Technical Reviewer	[redacted]	
Author	[redacted]	

[redacted]

[redacted]

Executive summary

On 19-20 September 2017, VCDS chaired the "Modern Deterrence Wargame 2017" (MDW 17), the first in a series of events designed, in large part, to reinvigorate the art of wargaming in UK Defence. It was a collaborative project between MOD SecPolOps and FMC, and Dstl, with Dstl undertaking the majority of the design and development work. [O]

During the game, senior representatives from [redacted] were split into three, interacting cells. MOD players represented a senior decision making body in MOD (Blue Cell) that gave advice to a notional NSC(O) (Grey Cell). The Grey Cell also represented US and NATO decision makers, who decided how to address an evolving, multi-axis strategic threat in a game that stopped short of war. An opposition (Red) Cell [redacted] generated an adversarial aspect to the game. [redacted]

Evolving, and at times competing, stakeholder objectives led to a challenging design process and a complex wargame design. Nevertheless, MDW 17 was largely successful in achieving the objectives set for it. [redacted] The success of MDW 17 also demonstrated the utility of wargaming for addressing strategic issues at very senior levels and confirmed Dstl / MOD's ability to deliver such high profile events, whilst also highlighting a number of areas for improvement in the future. [O]

This report outlines the wargame requirements, design process and final design, , and identifies a number of Observations, Insights and Lessons (OILs) to be applied to future wargaming at very senior levels. For the purposes of this report, OILs are defined as follows:

- **Observation:** a statement which **either** is important to note but has no further practical actions attached, **or** leads to single specific course of action to be undertaken within a highly specific context.
- **Insight:** a statement leading to a number of actions within a specific context.
- **Lesson:** a broadly applicable statement which has a fundamental impact on the design and/or execution processes of the wargame as a whole. [O]

The OILs identified are as follows:

Observations

1. Dynamic, multi-cell wargames can provide useful insights to senior decision-makers. [O]

[redacted]

2. Senior players are willing and able to engage in complex, dynamic, adversarial wargames, and can see the benefit in doing so. [O]

3. Dstl possesses the credible expertise and capability required to deliver complex, high-profile wargames. [O]

4. Roles and responsibilities of both the stakeholders and the wargame team should be clearly established. [O]

5. Discipline should be imposed on 'dress rehearsals' to ensure they are treated as such. [O]

6. Regular engagement with the game sponsor is essential. [O]

7. It is unreasonable to expect players to provide inputs significantly more detailed than they would usually contend with in their daily roles. [O]

8. The game design should ensure that the principal audience for the game are party to its main deductions and most important discussions. [O]

9. Facilitators, cell leads, and players should clearly understand the roles they are to play, and the constraints under which they will be operating. [O]

10. The Red Cell's role and input was generally well received. Players, stakeholders and sponsors clearly recognised the value of interactive, adversarial feedback on their actions. [O]

11. In the absence of more technical solutions, scribes dedicated to capturing the overall narrative of the game are required. [O]

12. Adjudication should not be neglected or underestimated. [O]

13. The game sponsor and stakeholders must be made aware of the nature of gameplay a scenario is likely to engender in advance of the wargame. [O]

14. It is essential to engage Cell Chairs prior to the wargame. [O]

15. Briefers should avoid improvising unless essential, and should try to retain players' immersion by only briefing gameplay and not mechanics. [O]

16. High quality visuals are an important aspect of player immersion. [O]

17. Game mechanics for use with very senior audiences should be as simple as possible. [O]

18. Maps and counters have a value beyond the wargame itself, and can also be useful parts of the design and development process. [O]

19. Access to the venue in advance of the wargame is essential for recce and rehearsal. [O]

[redacted]

Insights

1. A clear point should be set in the design phase for objectives to be frozen. Addition or changes to objectives should be resisted after this point. [O]

2. Method selection should be driven by the analytical or training objectives, not the other way around. [O]

3. Planning and allocation of roles should ensure that all aspects of the design are given sufficient attention. [O]

4. Playtests are an invaluable part of the development of a wargame. Sufficient time should be allocated to playtesting for its benefits to be realised. [O]

5. Stakeholder meetings should have a clear agenda, with specific options being presented. Meetings should also be properly documented, with minutes produced and disseminated. [O]

6. Very large player cells (above approximately 10 or 15 people), without clear delineation between players and advisors, are unmanageable. [O]

7. Identification of players' roles should be done early so that people with appropriate skills and seniority can be matched to them. [O]

8. Game Control should maintain a dialogue throughout the game with Cell Facilitators and Leads, so that outcomes can be achieved without the need for overt and contentious intervention. [O]

9. Ambition should be tempered regarding the level of structured detail senior players can be expected to provide. Mitigations, such as providing pre-populated options or asking senior players to choose between developed options, should be considered in the design. [O]

10. Reliance on people for data transfer introduces interpretation and lack of clarity. Such information transfer should be avoided where possible, or controls should be put into place to ensure actions are correctly documented when transferred in this way. [O]

11. A specific and detailed plan should be written for adjudication, as with all other aspects of game design. [O]

12. Adjudication should be given time in the game design commensurate with its complexity. [O]

13. Where possible, briefings should be from an agreed script, and sufficient time should be allocated to producing one. [O]

14. Maps and counters are likely to continue to be subject to a degree of stakeholder hostility, until it can be shown that they are essential to delivery of the wargame, and can be used without distracting or over-burdening players.

[redacted]

[redacted]

15. The use of IT to electronically replicate maps and counters is likely to increase their utility. [O]

16. [redacted]

17. Growth in participant numbers, in particular of observers and advisors, should be limited. [O]

Lessons

1. Wargames should be designed against a limited number of specific and clear objectives. [O]

2. Wargames should be primarily focussed on education/training or analysis and should not try to achieve both equally. [O]

3. Future wargames should adhere to the process outlined in the DCDC Wargaming Handbook. [O]

4. A clear plan should be produced from the outset, including key milestones and dates for freezing aspects of the design. [O]

5. Playtests can be used to refine and adjust the game design; however, playtests must occur late enough, or the design should be frozen early enough, for at least some playtests to explore near-finalised versions of the game design. All aspects of the game design should be subject to testing. [O]

6. Playtesting for strategic games is inherently difficult, especially when they are the size and complexity of the MDW. It is very difficult, if not impossible, to accurately reflect the dynamics of a large senior game (over 50 players, the majority above 1* in the case of the MDW). Allowance should be made for this when assessing the outputs of playtesting. [O]

7. Despite the difficulties, efforts should be made to ensure the playtests are as representative of reality as possible. This might include playing multiple game turns or inviting external participants to provide more realistic gameplay, including those who can provide more senior perspectives. [O]

8. Wargames should have a single stakeholder suitably empowered to make clear decisions relating to the game objectives and design. [O]

9. Wargame stakeholders should be exposed to the complexities of wargaming, and the requirements of the wargame process, at the start of a project. The DCDC Wargaming Handbook is a useful tool to support this. [O]

10. Engagement with stakeholders and the senior sponsor should make very clear the compromises inherent in wargame design, and ensure these are being

[redacted]

[redacted]

made in the right areas. Over-abstraction should not be conducted in areas of major interest to game sponsors. [O]

11. Engagement with the game sponsor should be from the outset,, and in sufficient detail for specific aspects of the game mechanics to be exposed and reflected on. [O]

12. Adding extra player cells can add clarity and avoid overburdening what would otherwise be a single cell; however this can add to overall game complexity. [O]

13. An adjudication plan requires a good understanding of the nature of information that will be subject to adjudication. This needs to be clearly established early in the design, and rigorously tested with realistic inputs. [O]

The authors recommend that the list of OILs above is placed in a central repository on the Dstl shared drive. This document would serve as reference source for future game designers, delivering OILs in a quick and easily digestible format. This would distil the knowledge into its key points and avoid the requirement for game designers to study extensive lessons learnt reports in their entirety. Furthermore, this document would be updated with new lessons from subsequent wargames as and when they are undertaken. It would then become an essential reference guide for Dstl wargame designers and help to ensure that OILs are applied and knowledge is transferred between events. [O]

[redacted]

[redacted]

Table of contents

[redacted]

[redacted]

1 Introduction

1.1 Event Overview

On 19-20 September 2017, VCDS chaired the "Modern Deterrence Wargame 2017" (MDW 17), the first in a series of events designed to reinvigorate the art of wargaming in UK Defence. It was a collaborative project between MOD SecPolOps, FMC and Dstl, with Dstl undertaking the majority of the design and development work. The wargame was developed to provide senior MOD decision makers with the opportunity to consider the complexities of decision-making in MOD within the overall context of HMG strategy[redacted] and the translation of that strategy, policy and NSC direction into specific action. As such, the wargame had five overall objectives:

1. Consider the role of the MOD within the overall concept of Modern Deterrence;
2. Explore the interface between political and military decision-making;
3. Examine the potential seams between the UK's national approach and the wider international context;
4. Identify capability development implications of Modern Deterrence;
5. Test MOD's ability to conduct strategic wargames at the senior level.[redacted]

Senior representatives from[redacted] were split into three, interacting cells. MOD players represented a senior decision making body in MOD (Blue Cell) that gave advice to a notional NSC(O) (Grey Cell), who also represented US and NATO decision makers, which decided how to address an evolving, multi-axis strategic threat short of war. An opposition (Red) Cell played the part of the[redacted] and generated an adversarial aspect to the game.[redacted]

MDW 17 was largely successful in achieving the objectives outlined above, although it did not produce very detailed capability development insights.[redacted] The success of MDW 17 also demonstrated the utility of wargaming for addressing strategic issues at very senior levels and confirmed Dstl / MOD's ability to deliver such high profile events, whilst also highlighting a number of areas for improvement in the future.[redacted]

1.2 Report Methodology: Observations, Lessons and Insights

This paper describes the MDW 17 methodology, and offers a number of observations, insights and lessons regarding the execution of strategic wargames with very senior participants. [O]

Section 2 describes the factors which shaped the design of the event, as well as its overall objectives. [O]

[redacted]

[redacted]

Section 3 provides a broad overview of game design directives and structure, and examines how this evolved throughout the playtesting process. [O]

Section 4 provides an in-depth description of the final game design, mechanics, scenario, and wargame functions such as data capture and adjudication. [O]

Section 5 provides a detailed assessment of the event by drawing Observations, Insights and Lessons (OILs) from post-game analysis undertaken by the Dstl wargames team, which was underpinned by feedback from stakeholders and participants. It also gives a short assessment of how best to apply these OILs in future. [O]

Section 6 provides a summary of the conclusions as well as some key recommendations to take forward relating to the design and execution of future Dstl wargames. [O]

[redacted]

[redacted]

2 Design Factors

2.1 VCDS Wargaming Initiative

In December 2016, Dstl were tasked, on behalf of DSP, to produce a note for VCDS which explored "what would be required to reinvigorate our approach to wargaming with the aim of improving our decision-making at all levels in Defence[1]". [O]

Dstl responded in January 2017 with a thinkpiece which defined wargaming, described its benefits, outlined the current state of wargaming in Defence, and provided a series of recommendations for reinvigorating it. One such recommendation was to "inculcate a common and widespread culture of wargaming at all levels characterised by senior level sponsorship and active participation[2]". [O]

The initial requirement for a senior-level wargame stemmed from this recommendation. Although, in general, method selection should not precede the identification of a question, the relationship of this task to the VCDS Wargaming Initiative established a number of key design requirements:

1. The event should be recognisably a wargame, as opposed to a seminar discussion or Table Top Exercise;

2. The wargame should provide participants with adversarial challenge and feedback on their actions – it should therefore be a dynamic, multi-cell event;

3. The wargame should involve seniors as active participants;

4. The wargame should test Dstl's / MOD's ability to design and execute wargames of a strategic nature, which would engage senior audiences and produce outputs of utility to decision-makers within Main Building. [O]

2.2 Initial stakeholder direction

Once a requirement for a senior level wargame had been established, the initial stakeholder[3] direction was for a primarily experiential event, focused on members of the Defence Strategy Group (DSG) within the MOD. The intent was to expose the DSG to a nuanced, dynamic representation [redacted] and provide them with the opportunity to:

1. practise decision-making during an evolving crisis;

2. rehearse translating strategy and policy into more specific action;

3. consider the complexities of decision-making within the overall context of HMG strategy, and as part of NATO or a US-led coalition;

---

[1] DSTL/WP100280, 01/02/17, "Wargaming in Defence: A thinkpiece for VCDS"

[2] Ibid, p.4

[3] [redacted]

[redacted]

[redacted]

4. [redacted]

The primary focus was to be on MOD decision-making, with wider HMG, US and NATO factors to be scripted, abstracted, or considered by the Game Control team. Nevertheless, the stakeholders wished to understand the issues MOD decision-makers might face when operating in this wider context, and to identify key issues or gaps within the UK's overall strategy, policy and posture. [O]

The stakeholders also specified that the wargame should be at the strategic, or grand-strategic levels. Players' moves in the game would therefore consist of establishing broad military effects, by making alterations to posture or military lines of effort, rather than focusing on the operational or tactical employment of specific military capability. It was, however, recognised that the players' strategic direction would have to be translated into more specific military actions to allow their moves to be adjudicated. [O]

Given its strategic/grand strategic scope, the focus of the game was to be the transition from heightened tensions, with multiple potential crises, to a more focused confrontation, to limited conflict. Major war, and the operational details of warfighting, were not considered to be in scope. [O]

2.3 Modern Deterrence[redacted]

Early in the design process, the objectives outlined above were modified with the inclusion of objectives relating to the 'Modern Deterrence' conceptual work ongoing within the MOD and FCO.[redacted]This requirement added an analytical focus to a wargame that had previously been primarily intended as an experiential event.[redacted]

Although the focus of the wargame remained on the DSG, it became apparent that the addition of the Modern Deterrence focus would require[redacted]
This led to an expanding role for the non-MOD players in the wargame and consequent changes to the initial design. [O]

2.4 Participants

As already noted at 2.1, a key requirement for the MDW was to actively involve very senior players. There were stakeholder concerns that seniors' unfamiliarity with standard game mechanics (maps, counters etc.) and greater experience of participating in seminar-type discussions might lead to reluctance to engage fully with certain key elements of wargame design. In particular, there were concerns that players might not wish to submit specific orders, stick rigidly to game timings, or buy-in to the abstractions inevitable in a game of this nature. Whilst the Dstl game designers sought to test and challenge these assumptions, they nevertheless had a bearing on the focus of the event, and the design of the game mechanics. [O]

[redacted]

[redacted]

2.5 Final objectives

As requirements were added to the design, the fundamental requirements agreed at the beginning of the design process were not significantly altered or de-emphasised. As a result, the MDW sought both to provide experiential learning to participants and to generate insights into MOD's relationship with OGDs, the UK's relationship with the US and NATO, [redacted] The final overarching objectives were therefore as follows:

1. Consider the role of the MOD within the overall concept of Modern Deterrence;
2. Explore the interface between political and military decision-making;
3. Examine the potential seams between the UK's national approach and the wider international context;
4. Test MOD's ability to conduct strategic wargames at the senior level. [redacted]

An additional objective – identify capability development implications of Modern Deterrence – was stated during the introduction to the game itself, but had not been explicitly incorporated into the design. [O]

[redacted]

[redacted]

3 Initial design proposals

3.1 Player cells

Given the starting objective of providing an experiential learning opportunity for the DSG, the initial proposal was for a three cell game, with a Blue Cell focusing on MOD decision-making, a Red Cell representing the adversary, and a Game Control Cell. The Blue Cell would see the DSG representing their own real-world roles, and would be providing recommendations to the exercise NSC regarding MOD's contribution to HMG's overall strategy. [O]

It was recognised that the Blue Cell would require a considerable amount of contextual information to be able to make realistic decisions. Although injecting scripted policy direction was considered, it was thought that this would undermine the dynamic nature of the game, and that the overarching HMG direction and Allied context within which the DSG would be operating would need to be responsive to game events. It was therefore proposed that NSC, NATO and US decisions, guidance and perspectives would be provided by Game Control in addition to their role of steering and adjudicating the game. [O]

In order to simplify the game, and in light of the primarily experiential nature of the starting objectives, it was proposed that the Red Cell would be semi-independent from Game Control. Rather than entirely independently submitting orders with the intent of winning the game, Red's remit would be to work with Game Control to provide realistic and useful challenge to the Blue Cell. In addition to reducing the requirement for Game Control to produce bespoke briefing materials to the Red Cell, this would allow Game Control to ensure Red behaved in a way that best suited the learning objectives for the DSG, whilst remaining within the bounds of realism. However, in order to retain the possibility for misinterpretation and miscalculation, the Red Cell would be held at arm's length from Game Control's detailed adjudication, in order to prevent the Red Cell from gaining insight into Blue's intent and objectives. [O]

3.2 Gameplay

It was proposed that Blue Cell players would make decisions on the following issues:

1. Deployments (location, size, role, objectives etc.)
2. Use of reserves
3. Posture / presence
4. Rules of Engagement
5. Exercises
6. Mil-mil engagement
7. MOD strategic communications [O]

[redacted]

[redacted]

By contrast, the Red Cell would be free to undertake full spectrum activities not limited to Defence. [redacted] [O]

The relative benefits of the Blue and Red cells making simultaneous or sequential moves were considered. It was proposed that a partially sequential approach was taken. In this design, the Blue and Red Cells would conduct their planning largely simultaneously, but the Blue Cell would submit its orders first, giving the Red Cell the chance to react, before both sides' moves were adjudicated. This was considered the preferable approach for the following reasons:

1. Simultaneous moves would require greater conditionality to the orders (e.g. "if Red does *a,* do *x,* else do *y*"), which would significantly complicate the process for constructing orders and add complexity to the adjudication.

2. Simultaneous moves might also require communication between the cells during a game turn (if, for example, an action was being contemplated that would render all planning for the remainder of the turn obsolete). It was thought that getting players to submit usable orders by the end of a turn would already be challenging without the additional distraction of potentially needing to re-plan mid-turn.

3. Semi-sequential moves would provide Game Control with greater ability to direct Red responses towards the required game outcomes.

4. Providing the Red Cell with the opportunity to submit an initial reaction to Blue's move before adjudication would more realistically reflect the adversary's shortened planning and response timelines

5. A fully sequential approach would have created significant periods of unallocated time where the player cells were waiting for their counterparts to complete their moves and for all moves to be adjudicated. This was considered to be both an inefficient use of the limited time available, and an approach which risked losing player engagement. The partially sequential approach meant that players would be engaged in gameplay for a greater proportion of the game turn.

6. The remaining unallocated time created by a partially sequential approach provided the opportunity for seminar discussions between gameplay sessions. This was considered an important outlet for players to explore issues in more detail, outside of the very time-critical sessions in which they would be asked to construct orders. [O]

3.3 Setting and scenario

In contrast to scenarios designed for Table Top Exercises on similar topics [redacted], the decision was taken to produce a scenario that was not prescriptive and did not pre-determine Blue or Red actions. It was considered important for player immersion and buy-in that major actions within the game were determined by the

[redacted]

[redacted]

players themselves and not through scripted injects from Game Control. As a result, it was proposed that the game scenario set a start state for the region at the beginning of the game, highlighting a number of potential flashpoints and areas for conflict between the Blue and Red cells. Which of these became the focus of the game would be determined by the players themselves. However, some injects, concerning actions by third parties, would also be developed for use should the game not progress in line with the game objectives. [O]

3.4 Design evolution

The alterations in objectives described above, coupled with issues that emerged during the development process, led to a number of changes to the original design. [O]

3.4.1 Player cells

Given that Modern Deterrence is inherently a cross-Government activity, it became clear that the success of the game required high quality political context to be provided to the Blue Cell players. In order to make properly bounded decisions, and to be provided with realistic feedback on their recommendations, the Blue players would need:

1. Realistic NSC political direction and feedback on their recommended courses of action;

2. A detailed understanding of the wider HMG actions that would be ongoing during the game, and into which their proposed military actions would need to integrate;

3. Knowledge of the perspectives of the US and NATO, and awareness of the likely actions they would be taking. [O]

It was recognised that in order to provide advice on these factors of sufficient quality, Game Control would have to be staffed with a large number of senior experts [redacted] This risked overburdening Game Control, and distracting it from its purpose of adjudicating and steering the game. As a result, it was decided to move HMG and NATO political decision-making into a separate 'Grey' cell. It was initially proposed that US and NATO military decision-making should be moved into the Blue Cell – this would make the Blue Cell a slightly more abstract military decision-making construct rather than a purely MOD cell, but would allow the UK and US to more efficiently coordinate their military planning. However, stakeholders, driven in part by the original requirement for an immersive experiential game, did not wish to introduce interactions into the Blue Cell which would not happen in reality. [redacted] This meant that US and NATO military planning was also moved into the Grey Cell, alongside HMG, US and NATO political direction and planning. [O]

[redacted]

[redacted]

3.4.2 Gameplay

Initial testing of the design made clear that a more complex relationship between the Blue and Grey cells needed to be incorporated into the Wargame. It was initially proposed that information on the wider context and overall political direction would be passed from the Grey Cell to Blue, and the Blue Cell would respond with recommendations for approval by Grey. However, to ensure that the activities of the two cells remained coordinated, and to allow the cells to seek additional clarification from each other as their planning progressed, the design was modified to insert a number of cross-briefing opportunities. Each turn was therefore broken into phases, with overarching direction being agreed and cross-briefed, and the Blue Cell then producing initial, high-level, responses to this direction before receiving final approval from the Grey Cell to proceed with detailed planning. [O]

The nature of the actions taken by players was also altered as a result of testing. It proved very difficult to formulate a mechanism which would allow players to give very high-level, strategic direction whilst also providing sufficient detail to the Red and Control cells to allow them to respond and adjudicate respectively. The phased approach to each turn described above provided players an opportunity to start each turn by discussing very high-level approaches, before focusing on more specific actions, which would be expressed in terms of employment of specific capabilities linked to desired effects. [O]

[redacted]

[redacted]

4 Final game design

The final game design, accounting for the changes in objectives and design factors described above, was as follows. [O]

4.1 Player cells

4.1.1 Blue Cell

The Blue Cell consisted of senior MOD decision-makers, and was co-chaired by PUS and DCDS (MSO)[4]. The role of the Blue Cell was to represent MOD planning and decision-making, and its provision of advice to the NSC during a developing crisis. The specific outputs required of the Blue Cell were:

a) Provide MOD inputs to NSC-like discussions alongside the Grey Cell;

b) Recommend an overall military approach in line with the MOD sub-strategy for the region;

c) Recommend specific military actions the UK could take unilaterally, multilaterally, or as part of NATO;

d) Offer views on the military actions HMG should seek from the US and NATO. [O]

4.1.2 Grey Cell

The Grey Cell was composed of [redacted]

The specific responsibilities of the Grey Cell were to:

a) Provide NSC-like political direction to UK military planners in the Blue Cell;

b) Make assumptions about how the aims, activity, and political appetite of non-UK Allies (with a particular focus upon the US) could evolve over the course of the wargame scenario;

c) Decide what diplomatic, informational, and economic activity the UK would conduct in parallel to any military activity;

d) Decide which military options recommended by the Blue Cell to integrate into the combined UK pol/mil plan the Blue and Grey Cells were responsible for generating by the end of each game turn; and

e) Advise the Control Cell whether the UK pol/mil plan would be acceptable to the US and other NATO Allies, and how much of it would be implemented on a unilateral, bilateral, or multilateral basis. [O]

[4] See Annex A for a full list of attendees

[redacted]

[redacted]

Unlike the Blue and Red Cells (which played the roles of military planners and the adversary respectively) the Grey Cell mixed a degree role-playing (e.g. when representing the UK NSC) with supporting the Control Cell by generating assumptions to drive the wargame scenario forwards. [O]

4.1.3 Red Cell

[redacted] The Red Cell's aim was to provide a suitably informed opposition to play the part of the adversary leadership and generate the adversarial aspect to the game. The Red Cell was tasked with producing:

a) An agreed set of high level adversary objectives for the scenario;

b) An agreement on the level of current escalation in the scenario from an adversary perspective[5];

c) A list of ranked concerns for the adversary in the scenario;

d) Effects the adversary would like to achieve against their areas of concern, across the Diplomatic, Informational, Military and Economic (DIME) spectrum;

e) A list of adversary actions for the turn. [O]

4.1.4 Control Cell

The Control Cell consisted of the Dstl game control and adjudication team, as well as the wargame stakeholders performing the role of 'Trusted Agents' (see section 4.5). VCDS, as the Game Director, led the Control Cell. The Control Cell was responsible for monitoring progress against the wargame objectives and ensuring the assumptions and discussion were producing valid and useful outputs. The Control Cell was also responsible for adjudication. Adjudication determined:

a) Whether players' proposed actions could proceed as planned;

b) The influence of any factors that might determine the degree of success of MOD operational decisions;

c) The level of information perceived by the players;

d) The results of combat engagements;

e) The impact of wider political events which had a bearing upon the scenario. [O]

[5] The tasks in sections 4.1.1 – 4.1.4 appear as written in briefing materials issued to cell leads ahead of the game. A specific task to agree the level of escalation was only explicitly mentioned in the Red Cell's briefing, but it was also anticipated this assessment would also be made by the Blue and Grey cells. In reality, owing to the available in the Blue and Grey cells, only the Red Cell consistently provided this assessment.

[redacted]

[redacted]

4.1.5 Cell leads

Each cell had a cell lead (or co-leads) and a facilitator. The cell lead was responsible for ensuring that their cell produced the required output by the end of the session. They were assisted by a facilitator, who would ask a series of questions designed to steer their cell towards the required outputs. The cell lead would lead the discussion in response to these questions, and be the ultimate decision-maker for the cell. They would arbitrate any differences in opinion amongst cell members and make the final decisions relating to the specific moves the cell would make in each turn. [O]

4.2 Overall format

The wargame was planned to consist of four interactive turns over two days. In reality, the final turn was cut in order to allow several key participants to attend a real-world DSG meeting on the second day. [O]

The planned turn process is described below. This was followed for turns 1 and 2. A slightly modified version of the turn format was used for the third turn. A simplified visual representation of the turn format is shown in Figure 1 below. A more detailed representation of a typical turn is at Annex B. [O]

Each turn started with an NSC-like discussion, in which the UK players from the Blue and Grey cells agreed HMG's overall political and military objectives (based on HMG's extant country strategy). At the same time, the US players convened separately to agree some overarching US objectives, which informed their input to the rest of the turn. [O]

Consistent with this overarching direction, the Blue Cell generated military advice for later consideration by the Grey Cell, which nominally represented the NSC, and provided US and NATO political and military perspectives. [O]

At the midpoint of each turn, the Blue and Grey cells had an opportunity to cross-brief each other. This helped to ensure the activities of both cells were compatible, whilst preserving an opportunity to expose frictions. [O]

On receipt of the Blue Cell's advice, the Grey Cell, in concert with the Blue Cell lead, produced a combined plan covering diplomatic, informational, military and economic actions to be conducted by the UK as well as the US and NATO. The Grey Cell also decided whether the UK was able to successfully secure US and NATO agreement to these activities. [O]

The Red Cell simultaneously conducted its own planning in response to the game scenario – their move was largely proactive but they were also given the opportunity to react to Blue and Grey's move. [O]

At the end of each turn, Red's actions were adjudicated against Blue and Grey's. The outcome of adjudication and any other third-party activity was then briefed to participants at the start of the next turn. [O]

[redacted]

[redacted]

For Turn 3, the initial phase was modified slightly. On reflection following the first day's play, it was felt that the 'NSC-like' discussions at the start of the turn were too unfocused owing to the number of participating voices, and too dominated by MOD perspectives. Instead of involving all UK players from the Blue and Grey cells in the initial NSC-like discussion, in the third turn Blue Cell participation in the NSC was limited to the Blue Cell leads. This made for a more streamlined discussion and allowed clearer and more specific objectives to be set for the turn. [O]

Although the fourth turn was cancelled, the Red cell were provided with an opportunity to provide a shortened response to the Blue and Grey third turn actions, effectively giving the Red Cell only a fourth turn. [O]

[redacted]

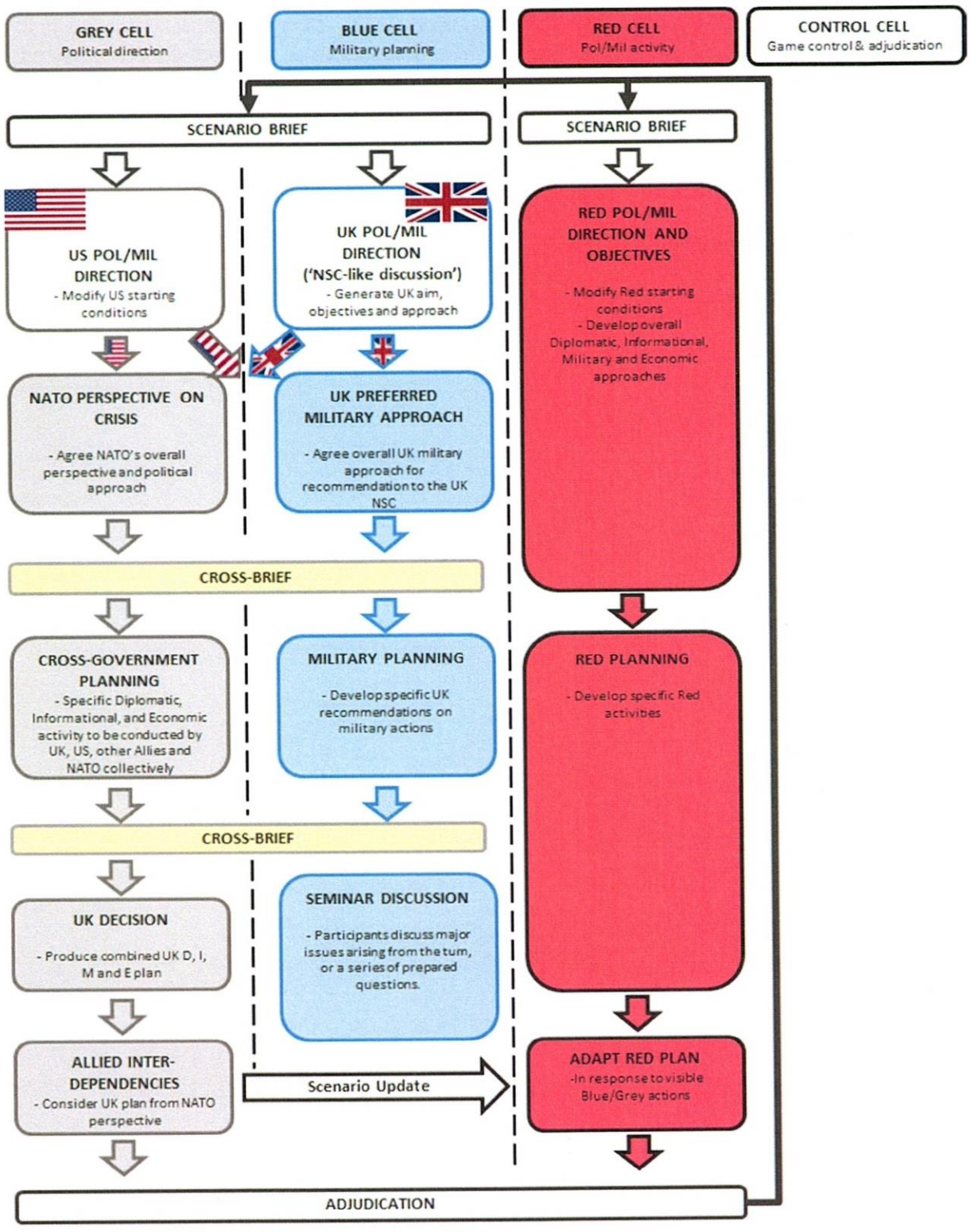


Figure 1: MDW 17 Turn Schematic [O]

[redacted]

4.3 Mechanics

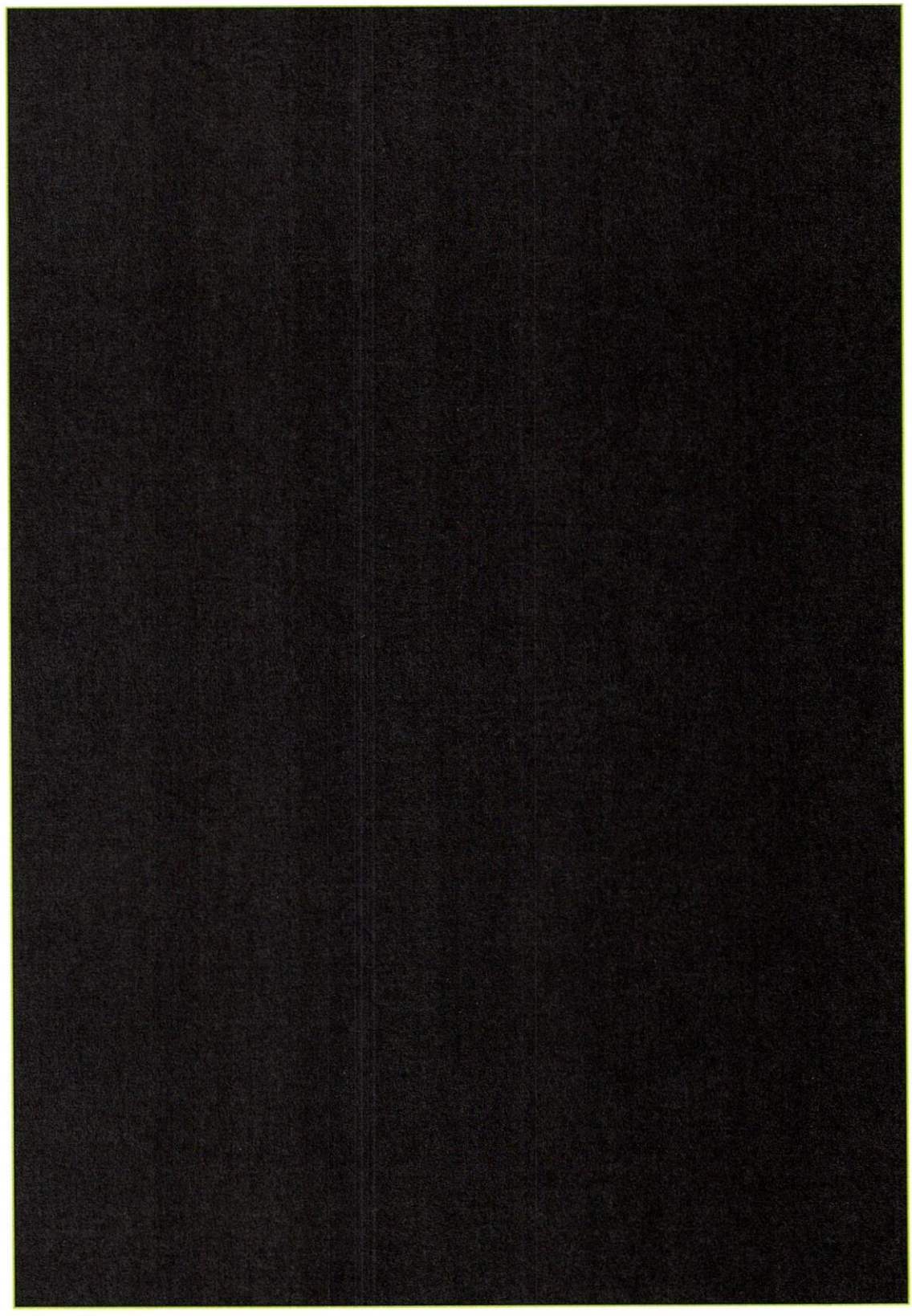
The MDW contained a number of gamic elements, abstractions and mechanics. As previously noted, an important part of the MDW design was to ensure that the event had the look and feel of a wargame, and was clearly differentiated from the more usual Table Top Exercise or seminar discussion formats. This would both help shape players' approach to discussions and test the proclivity of seniors to engage with game elements such as maps and counters. The use of visual game elements was also intended to help brief the wargame scenario and the outputs of adjudication, and thereby help players keep track of the complex number of activities taking place in each game turn. [O]

4.3.1 Game maps

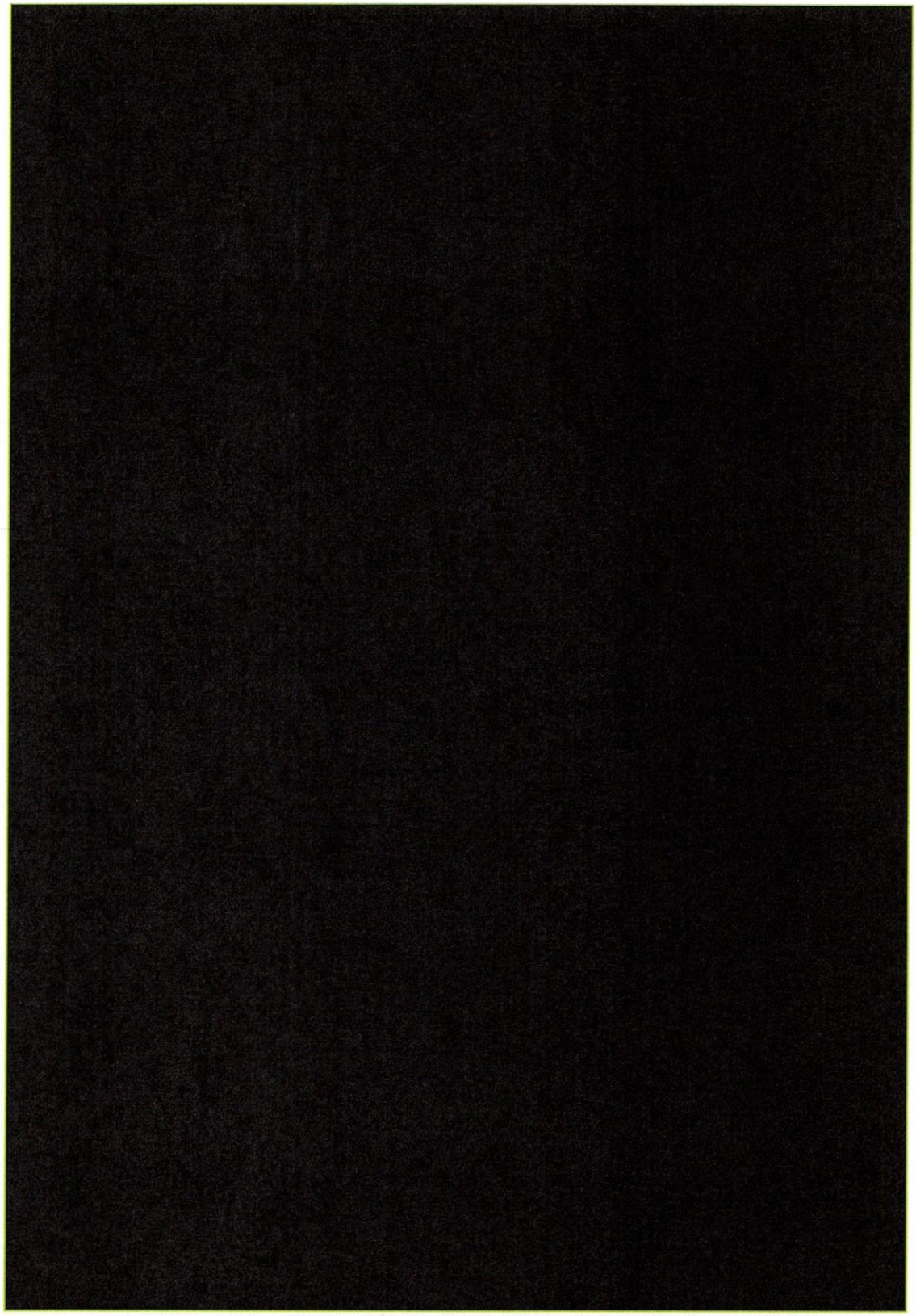
The mercator world map was divided into 3 main areas – Europe, the Americas, and the Far East. This division allowed for the world map to be printed in 3 sections of variable sizings, which helped with logistial constraints in relation to the size of the physical play area required. [redacted] Large copies of these maps were located in the Control, Blue, and Red cells. [redacted] This reflected an expectation that the Grey Cell would be conducting higher-level political discussions and would have less requirement to refer to a map. [redacted] [O]

[redacted]

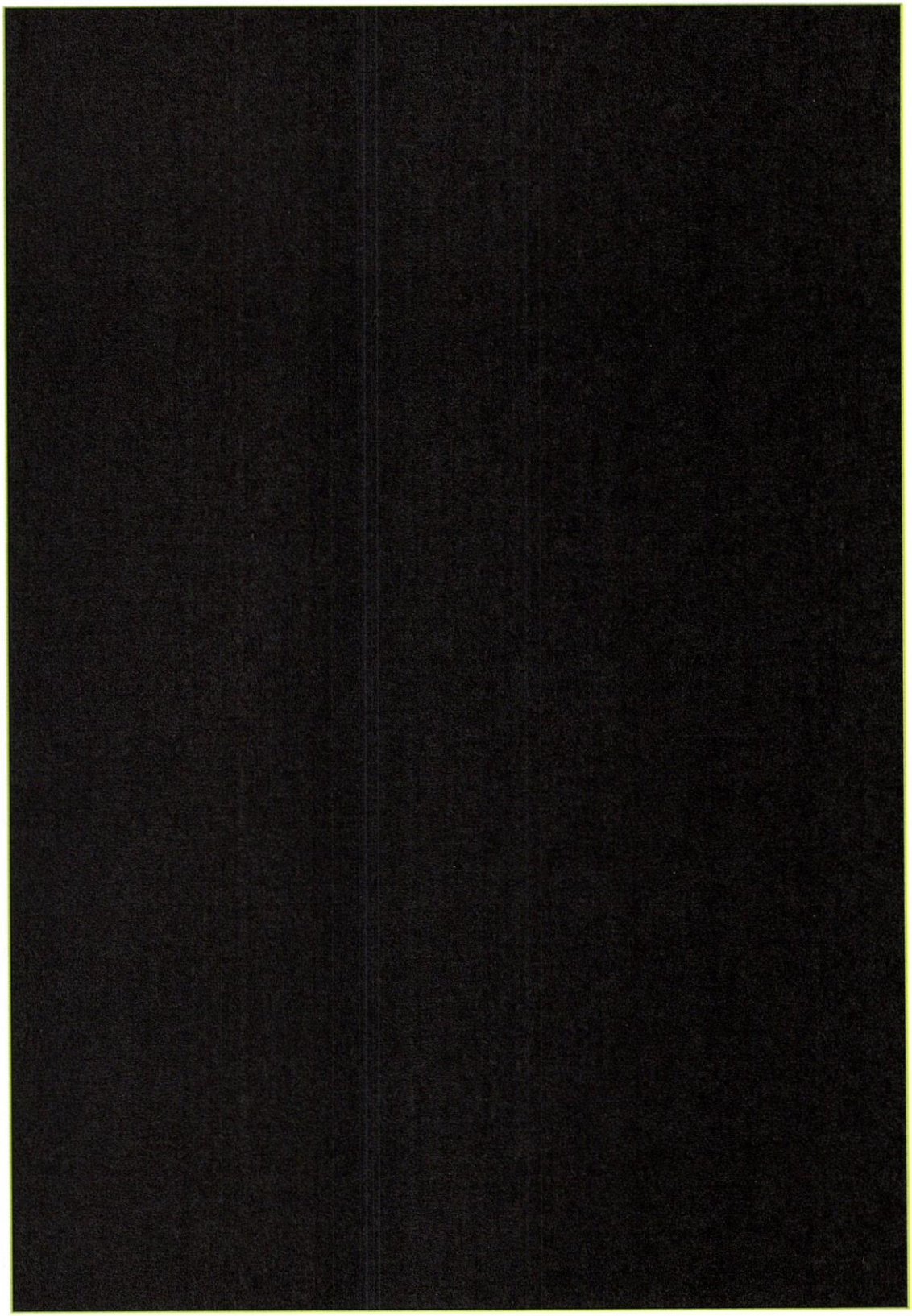
[redacted]



[redacted]

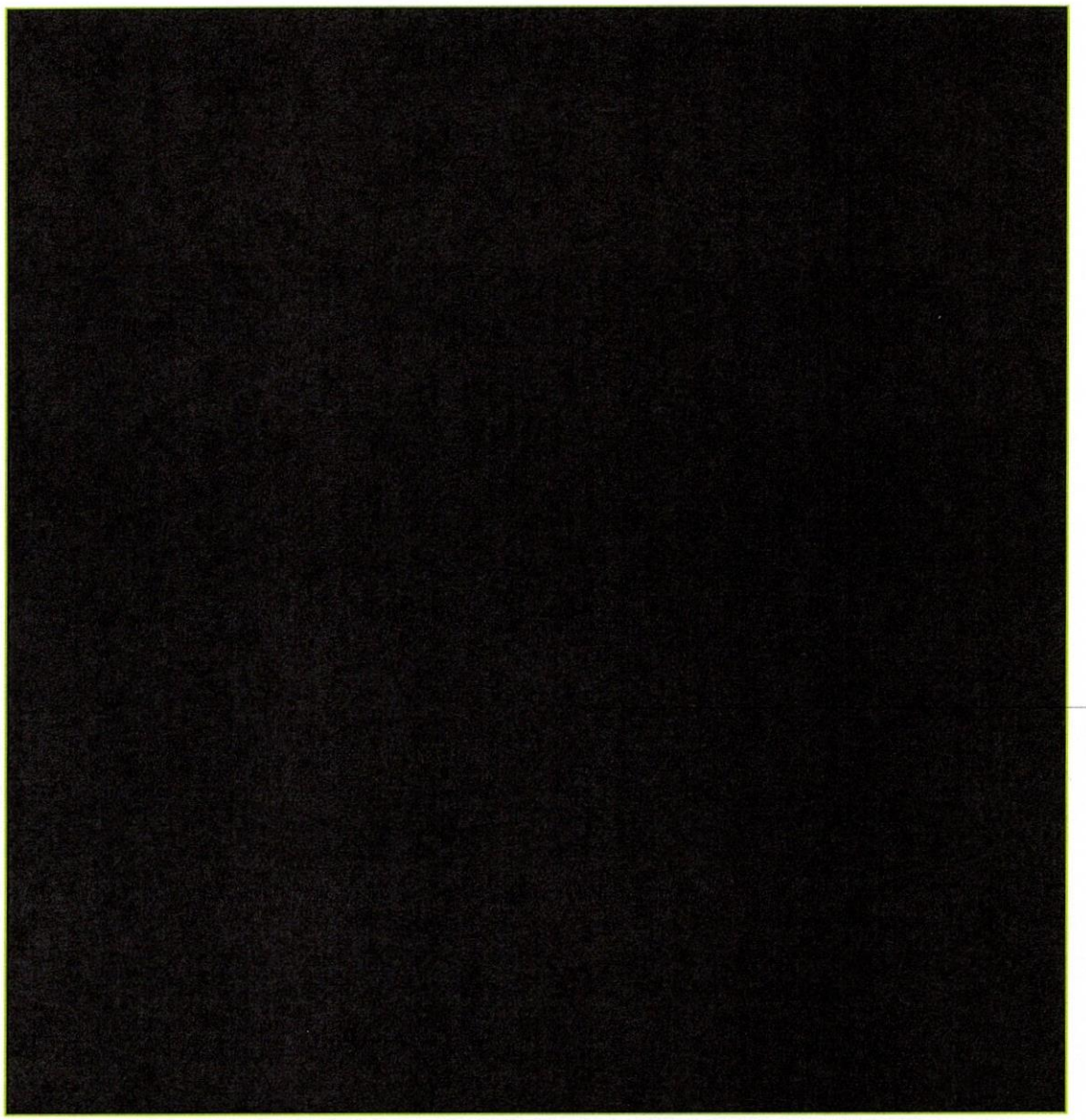


[redacted]



[redacted]

[redacted]



4.3.2 Effects counters and boxes

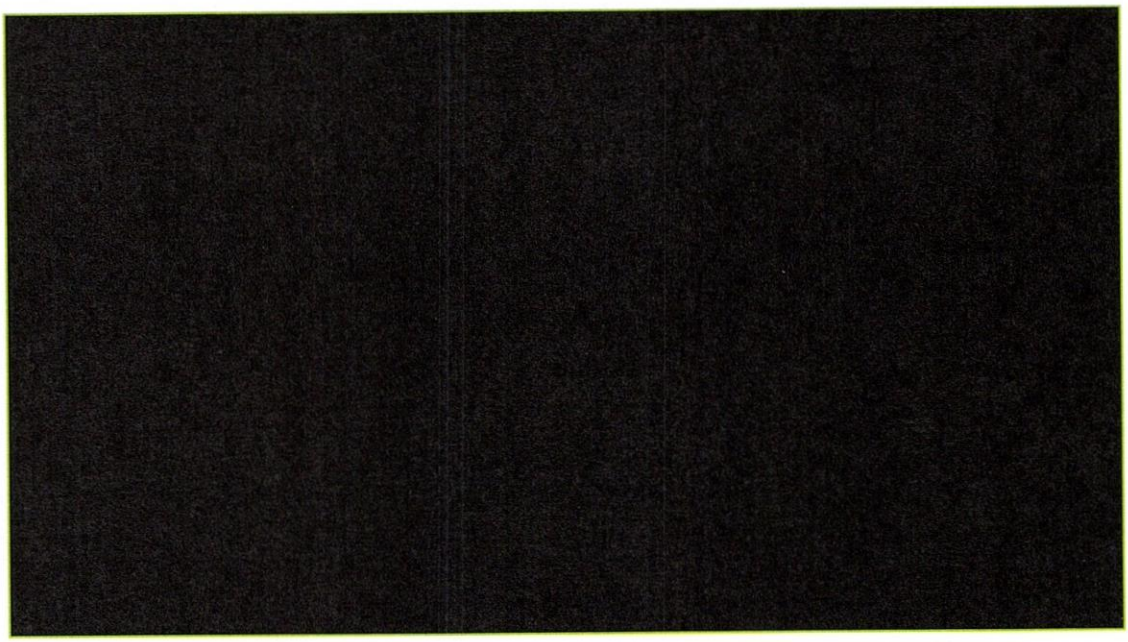
The players were asked to make moves in terms of desired effects, with associated diplomatic, military, informational and economic actions. These effects were represented on a number of effects counters, which were designed to be a memory aid so that players could reconstruct the various events which took place across the map as the turns progressed. [O]

These counters were placed in effects boxes located across the game maps. The effects box was an abstraction which allowed cells to take strategic actions in an area without being concerned with operational level details such as the exact locations of events. When a cell took an action a colour coded 'Effects Counter' was placed on the map in the effects box to represent its effect. Where logical, abstractions were also made [redacted]

[redacted]

[redacted]

Only countries or areas which were likely to be scenario-relevant had effects boxes, avoiding the requirement to provide an Effects Box for every country, as this would increase complexity without providing any real benefit. [O]



As shown in Figure 6 above, Blue cell actions were denoted by blue counters that were placed in the 'Blue Play Area' region of the effects box; Red cell actions were denoted by red counters that were placed in the 'Red Play Area' region of the effects box; and actions which were taken either by third parties or were currently unattributable were denoted by grey counters placed in the middle of the effects box, between any red or blue counters which had already been placed. The counters were designed to represent the widest possible range of political, social and military effects which players might want to achieve. [O]

Figure 7: Example Counters – A third party media effect, a Blue political statement, and a Red military movement

The map also contained a number of 'Naval Effects Zones' and sea lanes, which were demarcated by dotted lines as shown below in Figure 8. [O]

[redacted]

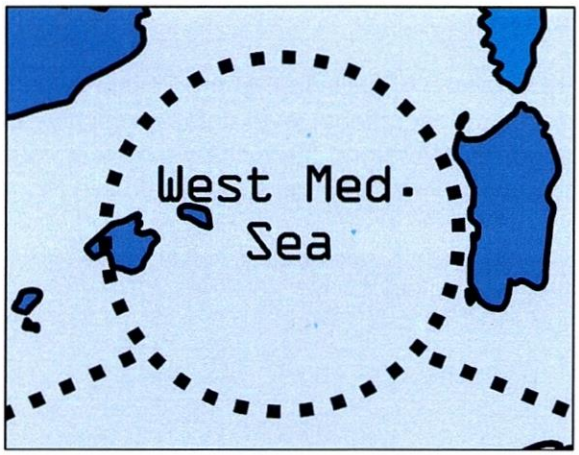


Figure 8: Example of a Naval Effects Zone [O]

These functioned similarly to the effects boxes on land – if any cells wished to take naval actions, (for example, undertaking exercises or deploying a specific task group) these could be represented by counters placed in these zones. [O]

An abstraction of aerial conflict was also designed, but in the event was not required. Unlike land and maritime domains, where it was considered reasonable to assess local superiority based on a broad comparison of the capabilities in the region, air superiority was considered to be more complex, and needed a separate system to represent myriad tactical factors at the strategic level. Aerial conflict was abstracted to the strategic level with the use of a set of 'Aerial Supremacy Counters', which were located on each map, as shown below. [O]

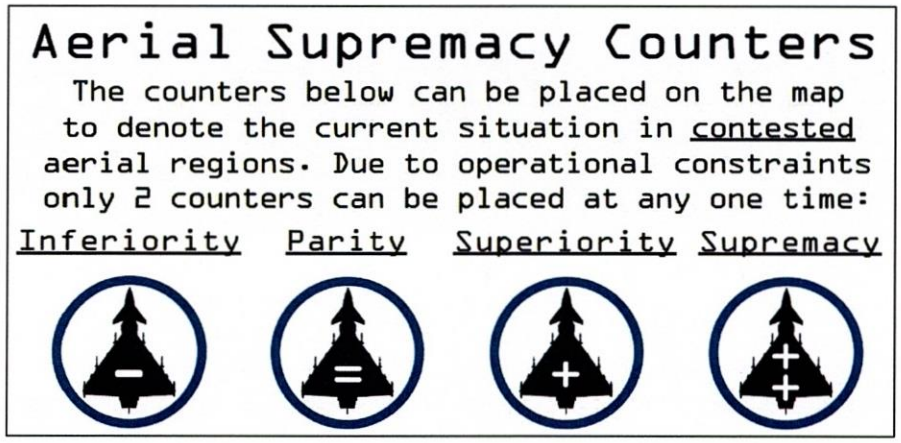


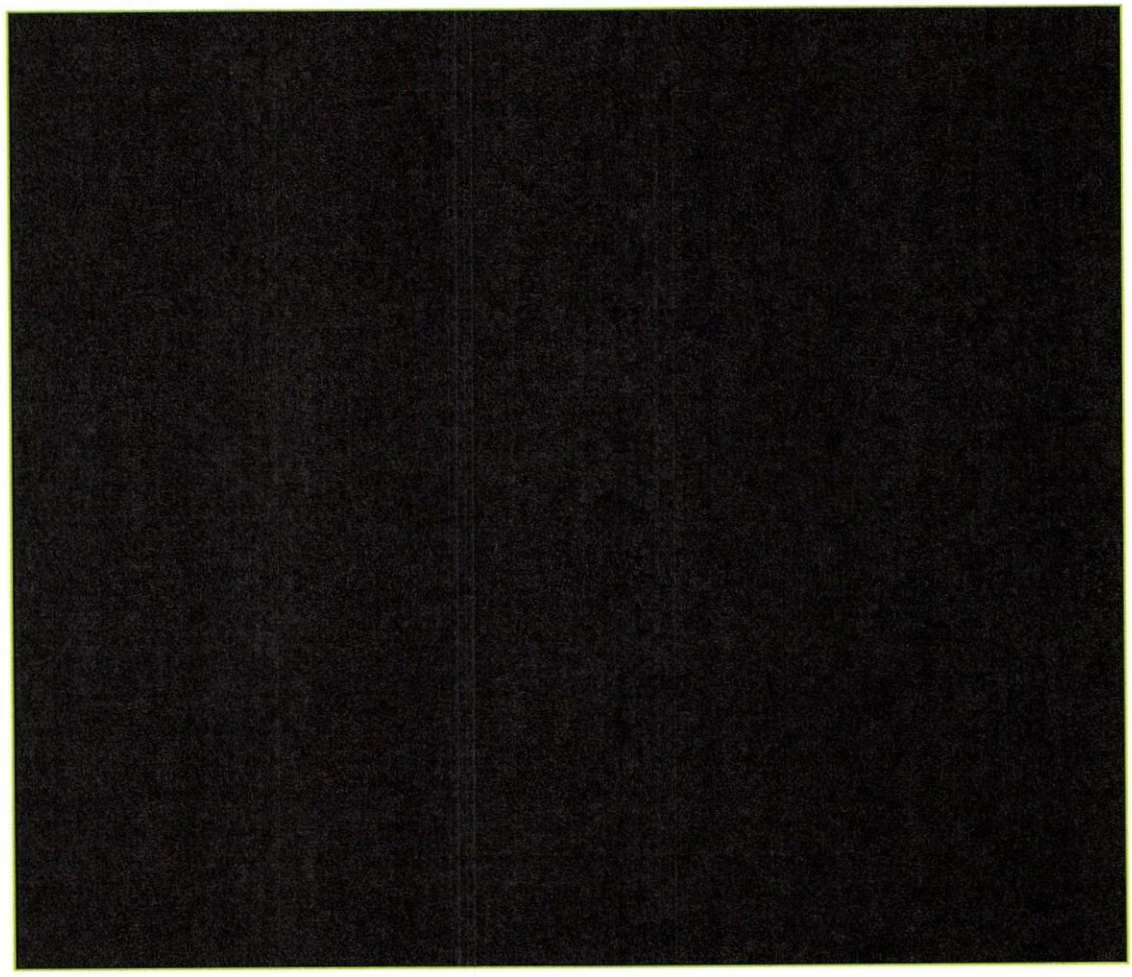
Figure 9: Aerial Supremacy Counters

These counters were to be placed in the effects boxes by the Blue or Red cells to represent the focus of their air forces in different locations across the map, without the need to keep track of specific assets. [O]

[redacted]

4.3.3 Military trackers

Tracking the locations of individual ground assets was considered likely to lead to excessive focus on operational level details, which would compromise the strategic focus of the game. Therefore, the military forces of major players were represented on 3D-printed military trackers, as shown below in Figure 10, were placed around the board. [O]



The tracker was designed to provide a high-level overview of any forces present. In its centre it displayed what forces were present and the four movable arms could be used to display key metrics in relation to the disposition of these forces – Readiness, Location, Logistics and Activity. These were used by players to make their in-game decisions, and the trackers were updated by the control team during adjudication. [O]

4.3.4 Escalation tracker

The escalation tracker was intended to allow players in the Blue and Red cells to provide a qualitative estimate of the current level of in-game escalation. The aim was to track players' perceptions of the severity of the crisis as the wargame progressed, and in subsequently in post-game analysis to compare the Red and Blue players' perspectives, and to note any differences in perception between the two sides. [O]

[redacted]

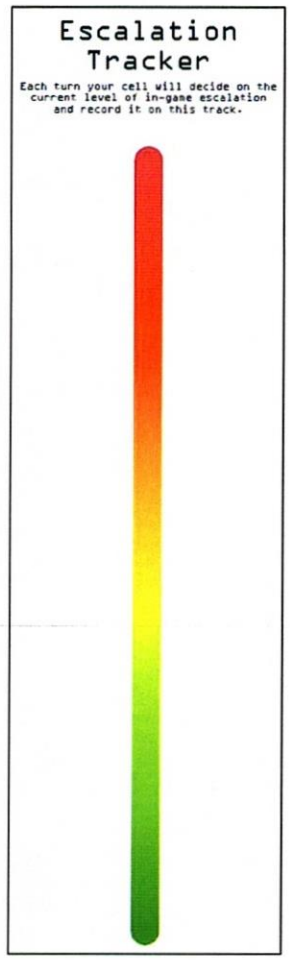


Figure 11: The Escalation Tracker [O]

The cells were to be asked to determine the level of escalation once each turn, and mark the level on the tracker. A low level of escalation – towards the green end of the spectrum – represented friendly relations. A high level of escalation – towards the red end of the spectrum – represented increased tension and potentially direct kinetic conflict. Testing of this mechanic suggested that more prescriptive trackers which provided examples of activities at each level of escalation failed to adequately convey the nuance of escalation or reflect the fact that there could be different levels of escalation in different domains. The original tracker (see Figure 12 below) was therefore rejected, and replaced with a very simple tracker which would allow participants to agree a deliberately high-level aggregate level of escalation. In practice, players in the Blue cell did not fully engage with this mechanic so its use in post-game analysis was limited. [O]

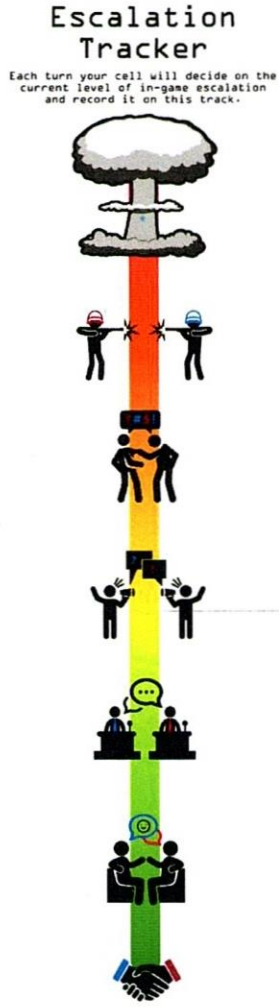


Figure 12: Original Escalation Tracker

4.3.5 Other trackers

Two other trackers were developed for the sole use of the Control Cell. These were intended to help keep track of player assumptions and the broader effects of player decisions, and to help shape the outcomes of adjudication. [O]

The economy tracker provided an aggregated assessment of the current global economic climate. It encompassed factors such as the stock market and the fortunes of energy companies, manufacturing companies and insurance companies. The tracker was intended to influence the likelihood of success of certain actions (in particular economic activities such as sanctions) as well as popular support for both sides. [O]

[redacted]

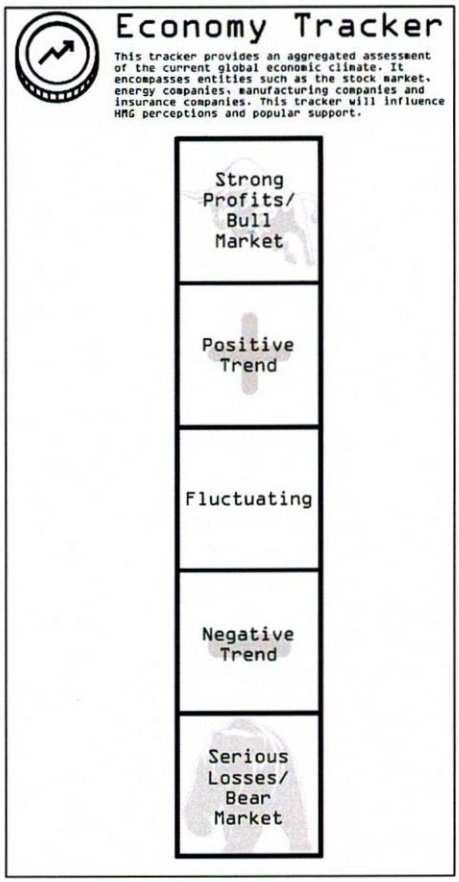
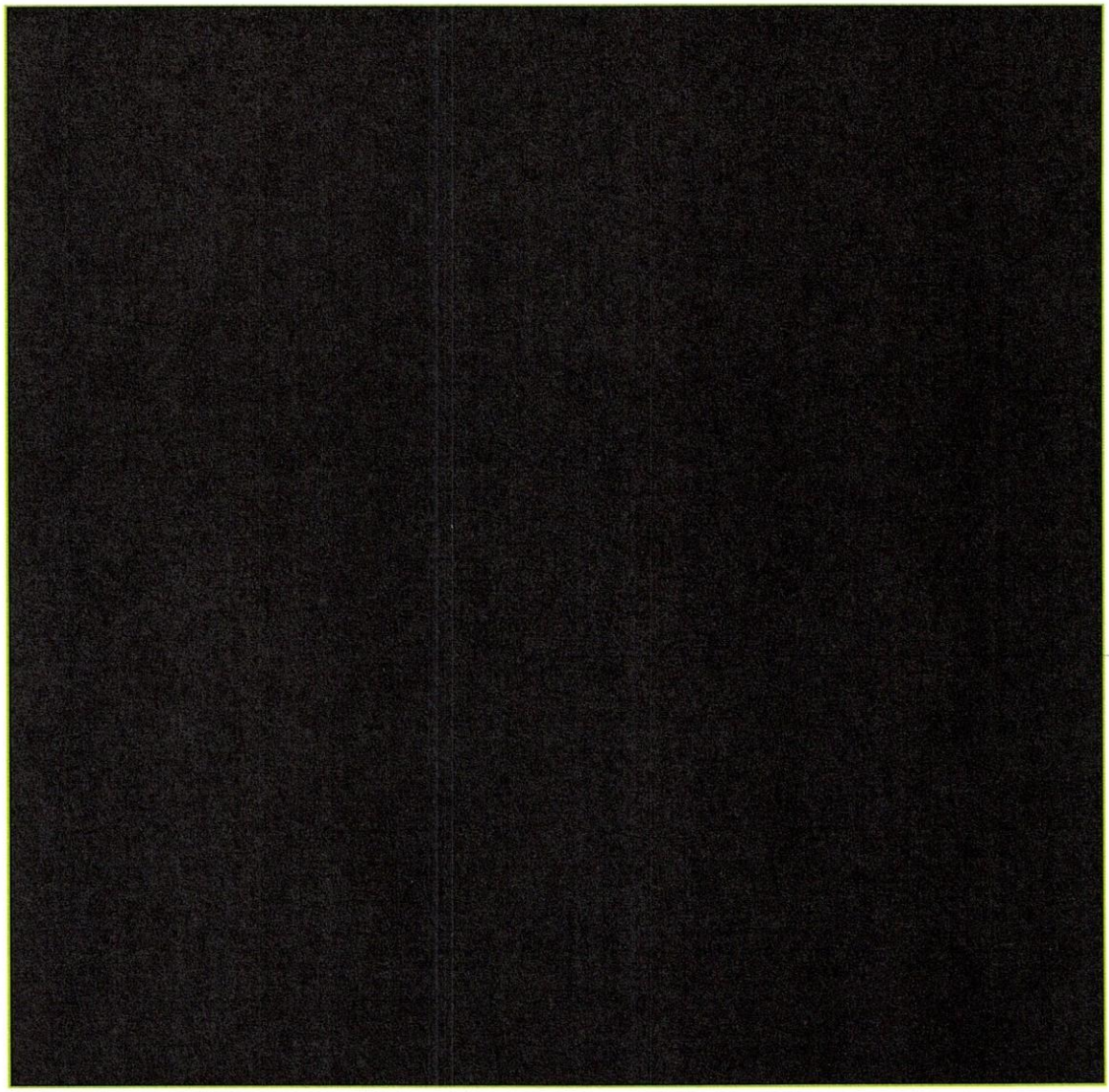


Figure 13: The Economy Tracker

[redacted]

[redacted]

[redacted]



[redacted]

4.3.6 Player moves

As described at 4.2, players progressed through a series of steps in each turn to translate high-level objectives and deliberations into specific actions. The final product of each turn was a series of courses of action which were passed to Game Control for adjudication. Each CoA was to consist of the following parameters:

1. Activity (an overall description of the activity)

[redacted]

[redacted]

2. Capability / Scale (A broad description of the capabilities to be used, and/or the scale at which the activity was to be conducted)

3. Location

4. When/Duration (When the activity was to occur and how long it would take, or last for)

5. Objective (The desired effect of the activity)

6. Why activity would occur/work (additional arguments for the success of the proposed action, to assist with adjudication)

7. Pros and Cons (Factors affecting the decision of whether the proposed action should be taken forward to adjudication).

Although not all these were essential for a course of action to be considered by the Control Cell, as many parameters as possible were to be populated by the players. [O]

4.4 Scenario

The overall approach to the scenario remained unchanged from that described at 3.3: a broad set of starting conditions was provided to which the players could choose how to respond. At the end of the first day of play, the Game Director requested that the scenario be advanced to a higher level of escalation. This was done by scripting an inject which extrapolated trends in the first day's gameplay and added additional player actions to increase the severity of the crisis. The original scenario and subsequent inject can both be found at Annex C. [O]

4.5 Data capture and transfer

MDW 17 was a very complex wargame that was highly reliant on data capture and transfer. This was essential both to the functioning of the game and post-game analysis. [O]

The primary means of capturing data was a scribe situated in each cell, using a standalone Dstl Secret laptop. A number of templates were provided to scribes to capture data in the various sessions in each turn. These templates were designed to capture data that would help cell leads conduct their cross-briefs throughout the turn, and to provide information of sufficient fidelity to aid adjudication. This required data to be transferred between laptops at every cross-brief, and at the end of turn when each cell's moves were passed to the Control Cell. In the absence of a networked Secret laptop capability, this data was transferred via encrypted USB stick, and displayed in each room with projectors. [O]

Additional data capture was conducted by a second scribe in each cell, who was tasked with capturing (by hand) overall points and observations to inform post-game analysis. [O]

[redacted]

[redacted]

An additional level of data transfer was provided by 'Trusted Agents' in each cell[6]. The Trusted Agents had two primary roles:

1. Assist the Cell lead by capturing the essence of discussion in the cell and supporting cross-briefs between the cells (either by providing notes or by conducting the briefings themselves);

2. Represent their cell during the adjudication phase. Their role was to supplement the data provided by the cell scribes and provide additional detail regarding the cell's intent when producing a given CoA, and to make supplemental decisions about turn outcomes in the spirit of their understanding of their cell's position. Since they would be exposed to the perspectives, intent and hidden actions of the other cells, they were trusted not to relay this information back to their own cells. [O]

Trusted agents also helped answer requests for information from their cell by relaying questions to the Control Cell and providing answers back to their own cell. [O]

4.6 Adjudication

Adjudication was conducted in four phases in each turn:

1. **Phase 1.** Phase 1 began after the Blue and Grey cells had completed their move, but while the Red Cell were continuing with their planning. The Trusted Agents from each cell (including Red) convened in the Control Cell, along with the USB sticks containing the detail of the players' moves. Phase 1 of adjudication determined whether the Blue and Grey cells' moves could go ahead and whether they could be shown to the Red Cell for their reaction. Each Trusted Agent briefed their cell's planned activities using the data captured by the scribes as a guide. Blue/Grey moves would not be allowed to proceed if they were considered implausible (e.g. if a force element could not be generated in the time specified in the move) or would be prevented by an external factor (such as lack of political support from a third party). Those moves deemed to go ahead would be briefed to the Red Cell for their reaction unless they were covert and would not be detected by the Red Cell, or if they would not have a visible effect within the timeframe of the turn. The Red move to date was briefed for information, and to highlight any actions that might prevent a Blue or Grey move from going ahead. However, the Red Cell's move would not be finalised until the Red Cell had seen the Blue/Grey actions. [O]

2. **Phase 2.** The Red Trusted Agent returned to the Red Cell to brief the output of Phase 1. While the Red Cell finalised its move, the Control Cell (including the remaining Trusted Agents) discussed:

    - How far game time should be advanced in the next turn

[6] [redacted]

[redacted]

[redacted]

- The likely narrative for the turn (media, public mood etc) in light of Blue and Grey's actions (recognising that the final Red move was not yet known)
- Possible third party actions
- Possible activities that might require adjudication, and their likely outcomes (based on the initial Red move) [O]

3. **Phase 3.** Phase 3 took place after the Red Cell had completed its move. With all player moves completed, final adjudication of the turn was carried out. Previous initial judgements were modified in the light of the final Red actions. Where the outcome of a confrontation was debateable, the Trusted Agents would advocate their cell's position, with the Game Director making a final decision. Where outcomes required additional decisions from the cells (for example, if a particular action would trigger a cell's rules of engagement), these decisions were taken by the Trusted Agents. The outcome of deliberations was recorded along with an indication of which cells each event/outcome would be visible to. An accompanying narrative to the adjudicated moves was agreed. [O]

4. **Phase 4.** Separate briefings on the outputs of adjudication were prepared for the Red and Blue/Grey cells, reflecting their differing levels of knowledge of who was behind certain actions and the impact they had had. The position of counters and trackers was agreed, and these materials were prepared for dissemination to the player cells in the form of briefing materials on USB sticks. Members of the Control Cell provided verbal briefings on the outcome of adjudication using these materials at the start of the next turn. [O]

4.7 Final plenary session

A final plenary discussion was held in which players could brief each other on the rationale for their actions they took in the wargame, and derive insights from comparing their perceptions of what each side was trying to achieve with the reality. The session consisted of the following elements:

1. A final Control Brief, in which the final outcome of the game was briefed.
2. A brief from each cell lead, in which they outlined their objectives and strategy, how they implemented that strategy, their perceptions of what the other cells were doing, and why, and any actions and outcomes that surprised them.
3. A discussion on what happened in the game and why.
4. Some final observations from VCDS, both on the insights arising from the game, and the structure of the game itself. [O]

[redacted]

[redacted]

5 Observations, Insights and Lessons

This section will put forward the Observations, Insights and Lessons that have been compiled from interviews with key personnel from the MDW design team[7]. [O]

5.1 Defining Observations, Insights and Lessons

There is no definitively recognised definition of Observations, Insights and Lessons.

In the context of this report:

- An observation is defined as a statement which **either** is important to note but has no further practical actions attached, **or** leads to single specific course of action to be undertaken within a highly specific context.
- An insight is defined as a statement leading to a number of actions within a specific context. Insights are potentially underpinned/drawn from a number of observations and may also contain a limited analytical component.
- A lesson is defined as a broadly applicable statement which has a fundamental impact on the design and/or execution processes of the wargame as a whole. Lessons are potentially underpinned/drawn from a combination of observations and insights. They have clear implications for future events, but the method by which they can be applied and/or integrated may not be obvious, and will often require a nuanced and complex understanding of the wargame design process. [O]

In cases where it is debatable which category a specific OIL should fall under the authors have used their own judgement to make a decision as to which is most appropriate. [O]

5.2 Overall success of the game

Overall, the game was a significant success. In very broad terms, the design functioned as intended, with the game largely following the plan and the overall relationship between the cells working as designed. The participants were cooperative, and although they did not fully engage with all the game mechanics, they largely did what was asked of them, stuck to the very tight timings and moved between the cells as required. The Dstl and MOD team functioned well and gave a strong, unified and professional impression to the players. [redacted] It also demonstrated Dstl and MOD's competence in wargame design and delivery, and

[7] [redacted]

[8] [redacted]

[redacted]

[redacted]

confirmed that strategic wargames can be designed which can provide useful support to senior decision-makers. [O]

Observation 1: Dynamic, multi-cell wargames can provide useful insights to senior decision-makers. [O]

Observation 2: Senior players are willing and able to engage in complex, dynamic, adversarial wargames, and can see the benefit in doing so. [O]

Observation 3: Dstl possesses the credible expertise and capability required to deliver complex, high-profile wargames. [O]

5.3 Wargame objectives

The MDW was over-burdened with objectives. As the wargame design evolved, it shifted in focus from a primarily experiential wargame to one which generated analytical insights to inform decision-making. However, as the focus shifted, there was a reluctance to sacrifice game elements primarily designed to support the initial training objectives. The DCDC Wargaming Handbook notes that while wargames can be designed for both education and analysis (and a wargame designed for one purpose is likely to have benefits in the other), it is better to orientate the game primarily towards one or the other, rather than trying to focus on both[9]. Failure to prioritise between these objectives, and to remove objectives of less importance to the senior stakeholders, led to a very complex game requirement, and consequently a complex design. This introduced flaws and complexities into the game design that substantially increased the risk and arguably reduced the quality of the output. For example, the need to realistically reflect the cross-Government and international nature of Modern Deterrence in order to derive useful policy insights conflicted with the requirement to focus the game on the DSG and provide them with a realistic role-playing experience. This drove the requirement for a complex relationship between the Blue and Grey cells when a single, more abstracted Blue/Grey decision-making cell would have been preferable from an analytical perspective. [redacted]

The shifting focus and addition of objectives stemmed from a failure to freeze objectives early in the design process and robustly manage changes to requirements. [O]

The methodological objectives arising from the Wargaming Initiative were also at variance with best practice – the selection of wargaming methods (or indeed wargaming at all) should be done once a question has been identified, rather than fitting a question to a pre-determined method. Some stakeholders queried whether a dynamic adversarial wargame was the most appropriate way to derive insights related to Modern Deterrence, and the relevance of certain game mechanics, included, in part, to ensure the event had the sufficient 'look and feel' of a wargame. [O]

Lesson 1: Wargames should be designed against a limited number of specific and clear objectives. [O]

[9] DCDC Wargaming Handbook, p.9

[redacted]

[redacted]

Lesson 2: Wargames should be primarily focussed on education/training or analysis and should not try to achieve both equally. [O]

Insight 1: A clear point should be set in the design phase for objectives to be frozen. Addition or changes to objectives should be resisted after this point. [O]

Insight 2: Method selection should be driven by the analytical or training objectives, not the other way around. [O]

5.4 Wargame design process

The DCDC Wargaming Handbook provides a process for designing, developing and executing wargames[10]. It outlines a number of specific steps that should be undertaken at each stage, and defines a number of key components required of successful wargames. Although the DCDC Handbook was not published until after the execution of the MDW, the wargame would have benefitted from following a clear process. For example, the Handbook advocates establishing clear roles and responsibilities for the game stakeholders and design teams, and suggests aspects of the design that should be agreed from the outset. By contrast, the MDW suffered from some ambiguity about roles and responsibilities, and as outlined above, a failure to explicitly agree and freeze key aspects of the game design. Greater clarity and adherence to process could have mitigated some of the other OILs identified in this paper. [O]

Lesson 3: Future wargames should adhere to the processes outlined in the DCDC Wargaming Handbook. [O]

Lesson 4: A clear plan should be produced from the outset, including key milestones and dates for freezing aspects of the design. [O]

Observation 4: Roles and responsibilities of both the stakeholders and the wargame team should be clearly established. [O]

5.5 Planning and preparation

Not all aspects of the game design were given equal attention during the design and development phases of the wargame. Given the high profile of the event, and the lack of experience of exposing very senior participants to an event as complex and demanding as the MDW, much attention was given to designing the activities of the Blue and Grey Cells. Considerable thought was given to how each player cell (Blue, Grey and Red) would act in isolation, and how information would be transferred between the Blue and Grey cells within each turn. As a result, these aspects of the game went much more smoothly in practice than had been anticipated. [O]

By contrast, the conduct of the Control Cell and the design of adjudication were given much less attention (see 5.14 below for a more detailed assessment of adjudication). Unlike the design of the player cells, there was more of a tendency to regard adjudication as something the Dstl Wargaming Team knew how to do and a

[10] DCDC Wargaming Handbook, pp. 51-60

[redacted]

[redacted]

comparatively low-risk aspect of the design. This assumption failed to take into account the differences between the MDW and the wargames usually conducted by the team, in terms of the nature, quantity and quality of the data that would be subject to adjudication. As a result, considerably less effort was devoted to adjudication and game control than other design aspects. The relative inattention to adjudication might also reflect a linear approach to game design – it was difficult to reach firm decisions on the requirement for adjudication before a clear design had emerged for the player cells, and a relatively detailed understanding had been arrived at of the tasks they would undertake and outputs they would generate. [O] .

It is also arguable that planning and allocation of resources tended to be done on the basis of the skills possessed by members of the wargame design team; the lack of familiarity of the design lead or other key members of the team with adjudication might also have contributed to its comparative neglect. [O]

Insight 3: Planning and allocation of roles should ensure that all aspects of the design are given sufficient attention. [O]

5.6 Playtesting and dress rehearsals

Three playtests were conducted at Dstl in the run-up to the MDW, and a final 'dress rehearsal' was conducted with representatives[11] of the 3* players two working days before the event. A 'Rehearsal of Concept' drill, in which the major moves of people and information were discussed and finalised, was also conducted a week before the wargame. Over the course of the playtests, the quality and robustness of elements of the design improved significantly, as did the confidence of the facilitators for each of the player cells. The subsequent success of the MDW underlined the invaluable role of the playtests in refining the design and exposing issues and unworkable assumptions that could have significantly disrupted the delivery of the game if not corrected. It was felt that three playtests had been the minimum number necessary, and the game preparation could have benefitted from more. [O]

There were nevertheless a number of shortcomings with the playtests:

1. The playtests extensively tested the facilitation of the player cells and transfer of the data between them; however, the Adjudication plan was finalised late and was not well tested.

2. Each playtest consisted of playing a single game turn – there was therefore no testing of the presentation of results back to the players or tracking the game narrative across multiple turns.

3. Internal playtests at Dstl did not generate data representative of that which was produced by the real 3* and 4* players. This created a false impression of some of the issues that would be faced – the playtests failed to prepare the team, in particular the Control Cell, for the volume of data that would be received and the patchy level of detail in the outputs from the player cells. This observation reflects the difficulty of expecting internal attendees (comprising SMEs, Military

[11] At approximately the OF5 level

[redacted]

[redacted]

Advisors and graduates) to accurately reflect the perspectives and approach to gameplay of very senior players. [O]

Insufficient discipline was imposed on the 'dress rehearsal'. Although it had been intended to be a realistic play-through of a game turn, it was instead used as an opportunity for stakeholders and representatives of the senior players to discuss and critique the plan. Although this was in itself useful, a valuable opportunity to conduct a final rehearsal of the finalised plan in the real game setting with more representative player inputs was lost. [O]

Insight 4: Playtests are an invaluable part of the development of a wargame. Sufficient time should be allocated to playtesting for its benefits to be realised. [O]

Lesson 5: Playtests can be used to refine and adjust the game design; however, playtests must occur late enough, or the design should be frozen early enough, for at least some playtests to explore near-finalised versions of the game design. All aspects of the game design should be subject to testing. [O]

Lesson 6: Playtesting for strategic games is inherently difficult, especially when they are the size and complexity of the MDW. It is very difficult, if not impossible, to accurately reflect the dynamics of a large senior game (over 50 players, the majority above 1* in the case of the MDW). Allowance should be made for this when assessing the outputs of playtesting. [O]

Lesson 7: Despite the difficulties, efforts should be made to ensure the playtests are as representative of reality as possible. This might include playing multiple game turns or inviting external participants to provide more realistic gameplay, including those who can provide more senior perspectives. [O]

Observation 5: Discipline should be imposed on 'dress rehearsals' to ensure they are treated as such. [O]

5.7 Stakeholders

The wargame design team directly interacted with a group of four lead stakeholders, [redacted] No single stakeholder had lead responsibility for the objectives or design of the event, the ultimate arbiter on such matters being VCDS. This caused considerable challenges. Each stakeholder had their own perspectives and requirements and these were not always compatible or reconcilable within the game design. As the game progressed towards execution, the Dstl design team needed rapid, clear, decisive input from the stakeholders and at times this proved difficult, owing to their variable availability and the challenges of arriving at mutually agreed positions. [redacted]

The conduct of meetings with the stakeholders also contributed to the difficulty in achieving clear, consistent direction. Meetings did not have clear agendas and were

[redacted]

[redacted]

not minuted. This meant that meetings often drifted from their intended purpose or re-examined issues the design team considered to have already been agreed and closed. [O]

A significant amount of discussion with the stakeholder group focused on interpretation of VCDS' direction, or debate about aspects of the design VCDS or other senior stakeholders would consider acceptable. There were insufficient opportunities to engage directly with VCDS to resolve these questions or expose the details of the issue for a reasoned decision. This led to some aspects of VCDS' requirements for the wargame only becoming apparent at the game itself. [O]

A major issue was the apparent lack of understanding from some stakeholders about the requirements and challenges of delivering a wargame of the complexity of the MDW. There appeared to a limited appreciation of the practical constraints of delivering a dynamic, interactive, multi-cell game with the number of participants invited and the time available. There was limited acceptance of the need to reduce complexity and abstract elements of the design to make it deliverable. As a result, stakeholders strongly advocated for realism and added complexity where these weren't always necessary to achieve the game objectives, and without being willing to compromise in other areas. [O]

Lesson 8: Wargames should have a single stakeholder suitably empowered to make clear decisions relating to the game objectives and design. [O]

Insight 5: Stakeholder meetings should have a clear agenda, with specific options being presented. Meetings should also be properly documented, with minutes produced and disseminated. [O]

Observation 6: Regular engagement with the game sponsor is essential. [O]

Lesson 9: Wargame stakeholders should be exposed to the complexities of wargaming, and the requirements of the wargame process, at the start of a project. The DCDC Wargaming Handbook is a useful tool to support this. [O]

5.8 The Blue Cell

The Blue Cell operated largely as designed. Players' discussions did funnel from general observations to more specific options to be offered to the Grey Cell as intended. However, the Blue Cell failed to achieve the level of detail planned for in its deliberations, and this placed a greater burden on DCDS(MSO), as Blue Cell Chair, to interpret the Cell's discussions and reach his own conclusions when briefing the Grey Cell. This meant that the precise options offered by the Blue Cell to the Grey Cell were neither visible to the rest of the Blue Cell nor those on the wargame team responsible for recording the outcomes of discussions. This created challenges in both adjudication and the subsequent analysis of the game. [O]

Although the Blue Cell did produce outputs largely resembling those required by the design, they did not follow as systematic a process as the one envisaged by the facilitation plan. [redacted]

[redacted]

[redacted]

[redacted] A more interventionist facilitation style might have resolved this, but this was precluded by the unclear relationship between the Cell Lead and facilitator (see below). [redacted]

The Blue Cell was large (approaching 20 participants) and at times was unmanageable. The design intent had been that discussion in the Blue Cell would be focused on the 3* players, with the 2* and 1* participants available to be called upon to provide detail or additional perspective when required. In practice, all participants contributed equally, making it very hard to manage or focus conversations and prevent the cell becoming side-tracked. [O]

Although the Blue Cell validated the design team's expectations that senior players could be directed to make specific decisions within a restrictive timeline, it is probable that the game asked for too much detail from the senior players. Asking for very specific information on force elements, deployment times and so on, was probably focusing at a level of detail not regularly considered by 3*s and 4*s, and for which they would normally rely upon subordinates. It was therefore unreasonable to expect this level of specificity from these players at the wargame. [O]

Several Blue Cell players commented that the game had made a false distinction between political and military decision-making, and that having an MOD-only Blue Cell had shifted focus on the most interesting issues to the Grey Cell. Several Blue Cell players therefore expressed frustration that they were not party to the truly strategic issues being discussed elsewhere. This concern had been anticipated by the design team, and raised to the stakeholders on several occasions; however, very strong stakeholder insistence that the Blue Cell should realistically represent MOD decision-making led to the requirement for an MOD-only cell. [O]

Insight 6: Very large player cells (above approximately 10 or 15 people), without clear delineation between players and advisors, and risks becoming unmanageable. [O]

Observation 7: It is unreasonable to expect players to provide inputs significantly more detailed than they would usually contend with in their daily roles. [O]

Observation 8: The game design should ensure that the principal audience for the game are party to its main deductions and most important discussions. [O]

5.9 The Grey Cell

As described at 3.4.1, the Grey Cell emerged from a requirement to provide context and direction to the Blue Cell of a quality and fidelity that would have overwhelmed Game Control. As a result, they Grey Cell was regarded to some extent as more of an adjunct of the Control Cell than a fully independent playing cell. Although the Grey Cell became an increasingly independent cell as the design progressed, its origins as a Game Control function continued to shape how it was regarded. As a result, there was not a strong requirement for the Grey Cell to realistically emulate the functions it was tasked to represent. The focus instead was on ensuring the Grey Cell provided

[redacted]

[redacted]

the Blue Cell with all of the contextual information it could require. The Grey Cell was therefore given four tasks:

1. Represent the NSC to provide strategic direction and decisions;

2. Determine all cross-government activity that would flow from such NSC direction;

3. Feed NATO perspectives and dynamics into gameplay;

4. Determine US decision-making and activity. [O]

The requirement to do all of these significantly overburdened the Grey Cell. The Grey Cell had limited time available to cover all of these topics, and as such only gave them broad consideration. Cross-Government and Alliance decision-making dynamics were therefore given little attention. Post-game feedback from VCDS and others highlighted this as a significant deficiency of the game. A better balance between the Blue and Grey cells could have provided partial mitigation. However, design options which made the Blue Cell a more generic 'military' cell which also considered US and NATO military actions, or an HMG cell which incorporated cross-government responses to the NSC's direction were both rejected by the stakeholders because of their desire to focus the Blue Cell solely on MOD decision-making. Whilst the Blue Cell was more realistic, the consequent lack of realism and detail provided by the Grey Cell was noted – the very limited time given to players to make decisions and the use of game mechanisms and facilitation techniques to move quickly through the significant quantity of material that had to be produced was criticised by Grey Cell players and VCDS. [redacted]

The origins of the Grey Cell also impacted on the players invited to participate. As the design evolved, the Grey Cell chair become responsible for directing the Blue Cell, and deciding upon the recommendations the Blue Cell chair provided. Despite this, the most senior participant in the Grey Cell was a 1*, while the Blue Cell consisted of several 3*s. Although in practice the relationship between the Blue and Grey cells still worked well, a more senior Grey Cell chair would have helped the Blue Cell have more faith in the direction they received. Late in the design process, this disconnect became apparent to VCDS as game sponsor, but at this point it was too late to invite more senior Grey Cell players. [redacted]

Lesson 10: Engagement with stakeholders and the senior sponsor should make very clear the compromises inherent in wargame design, and ensure these are being made in the right areas. Over-abstraction should not be conducted in areas of major interest to game sponsors. [O]

Lesson 11: Engagement with the game sponsor should be from the outset, and in sufficient detail for specific aspects of the game mechanics to be exposed and reflected on. [O]

Insight 7: Identification of players' roles should be done early so that people with appropriate skills and seniority can be matched to them. [O]

[redacted]

[redacted]

5.10 **The Red Cell**

As outlined at 3.1, the Red Cell was originally designed to be semi-independent; that is, it would not play purely to win but would tailor its activities (in conjunction with the Control Cell and within the bounds of realism and plausibility) to best meet the game objectives and provide useful challenge to Blue. However, this intent was not clearly understood by, or communicated to, the Red Cell Facilitator and Chair. The Red Cell therefore in fact played to win, and were resistant to steering from the Control Cell. The Red Cell's play, in particular on the first day, focused on achieving their game objectives without escalating. This was in part responsible for the game escalating more slowly than anticipated[12] and leading to some frustration from the stakeholder group that the game was not progressing. [redacted]

At the direction of the game director, an inject was added between the first and second day's play that forced Red to escalate. As this was not done in consultation with the Red Cell, there was some disquiet amongst players that they had an action forced upon them which they would not have taken themselves. Red had worked up more escalatory actions, which they chose not to use in the context of the heightened tensions created by the inject; however they felt they could have played them earlier had they been made aware they were required to play in a more escalatory manner. [redacted]

Despite these observations, the Red Cell's play was generally well regarded by the other players, the stakeholders and the sponsor. The feedback provided by Red on the Blue and Grey moves provided a significant proportion of the valuable insights generated by the game, and VCDS singled the cell out for praise in his closing brief. [O]

The cell was large (14 players) and this made achieving consensus cumbersome at times. At the same time, the other cells, in particular Grey, felt they had been underserved with information on Red's attitude and motivations – there might have therefore been value in moving some of the Red Cell players into the other cells to serve as advisors on Red's perspective. [O]

Observation 9: Facilitators, cell leads, and players should clearly understand the roles they are to play, and the constraints under which they will be operating. [O]

Insight 8: Where possible, Game Control should maintain a dialogue throughout the game with Cell Facilitators and Leads, so that outcomes can be achieved without the need for unnecessarily contentious intervention. [O]

Observation 10: The Red Cell's role and input was generally well received. Players, stakeholders and sponsors clearly recognised the value of interactive, adversarial feedback on their actions. [O]

[12] Also responsible for this slow escalation was an inject that was supposed to be played into the end of Turn 1. However, failure to rehearse this with all of the key personnel at the playtests led to some confusion over how and when this inject would be played; it was therefore inadvertently left out of the Turn 1 gameplay

[redacted]

[redacted]

5.11 Additional cells

In general, it was intended that countries not represented by players[13] were to be represented, where required, by the Control Cell. However, clear rules for which third parties were represented by players and which by Control were not established. Consequently, there was some ambiguity about whether deciding upon NATO Allies' perspectives was the responsibility of the Grey Cell or Control, and no position was agreed on [redacted] A 'Green' cell, explicitly charged with representing third party perspectives, would have addressed this issue (but added more complexity). [redacted]

It was also clear, as described above, that the playing cells had been overburdened with requirements: the Blue Cell were asked to provide both strategic decision-making and aspects of operational planning, and the Grey Cell had to adopt numerous complex perspectives. Both of these could have been mitigated with additional cells: for example, a lower-ranked Planning Cell to translate the Blue Cell's strategic direction into a specific, resourced plan, or a cell whose sole focus was on representing the North Atlantic Council. [O]

It should however, be noted, that the overall game design was very complex, and the interaction between the existing cells difficult to manage. Adding additional cells would have increased complexity, possibly to the point where the game was no longer deliverable within the two days provided, or without significant periods of unallocated time for the players. [O]

Lesson 12: Adding extra player cells can add clarity and avoid overburdening what would otherwise be a single cell; however this can add to overall game complexity. [O]

5.12 Data capture

Data capture fell short of expectations and needs to be improved in the future. Each session in the player cells was carefully designed with a logical flow of conversation to help funnel players towards providing specific orders. Each session had an associated template, which was to be electronically populated by the main scribe in the room. The final session of each turn was intended to populate a table outlining specific aspects of the players' moves – activity, capabilities used, location they would be employed in and so on. It was intended that this table would be passed to Control to form the basis of adjudication (in the case of Blue, via the Grey Cell). In practice, it proved very difficult to get players to populate the templates, in particular in the Blue Cell. In part, this is because of the level of detail required to fill them in properly, as discussed at 5.8. A more substantial problem was that it proved very difficult to steer conversations in such a way as to populate the tables. Players tended to prefer a more wide-ranging discussion, and although the design intended that these broad conversations would take place at the beginning of each turn, players were reluctant to engage with the specific questions asked of them. The

[13] [redacted]

[redacted]

[redacted]

scribes therefore found that the templates with which they were provided didn't provide the right headings to capture the conversations that occurred. It should be noted that the Red Cell, comparatively more junior and relatively smaller than the Blue and Grey cells, did correctly populate their templates. [O]

In addition to the main scribes in each cell, tasked with using laptops to populate the templates, each cell also had a 'key points' scribe, whose role was to observe conversation and record what they considered to be the major insights emerging from discussion. The intent was that these scribes would contribute directly to an initial short report in the days immediately following the wargame. While this worked to an extent, senior report recipients (in particular CSA and PUS) asked for a more narrative report, which described not only major insights but what happened in the game. No scribes had been allocated to capturing the discussions that took place around the key decisions, making it difficult post-game to describe in detail the rationale that had led to certain actions. It therefore proved very difficult to write a narrative report which explained not just what happened, but why.. This would have been the case even if the templates had been fully and correctly populated. [redacted]

Insight 9: Ambition should be tempered regarding the level of structured detail senior players can be expected to provide. Mitigations, such as providing pre-populated options or asking senior players to choose between developed options, should be considered in the design. [O]

Observation 11: In the absence of more technical solutions, scribes dedicated to capturing the overall narrative of the game are required. [O]

5.13 Information flows and Trusted Agents

Section 4.5 describes the intended design for information transfer. In essence, the tables described above were to be transferred between each cell's laptops on USB sticks, and projected. These would be the primary reference for inter-cell briefings and adjudication, with the Trusted Agents supplementing these with additional detail, and making decisions on behalf of their cell when required. [O]

Although the system of transferring files between rooms on USB sticks worked mechanically, in practice, owing partially to the incomplete capturing of data in the tables, and partially to the overwhelming quantity of information to be discussed, the Trusted Agents became the primary means of transferring information between the cells. In the case of the dialogue between the Blue and Grey cells, DCDS(MSO), as the Blue Cell Chair, was the primary means of transferring direction from Grey to Blue and options from Blue to Grey. [O]

Relying on individuals to transfer information meant that reliance was placed on the memory and interpretation of those conducting the briefings. Rather than briefing actions exactly as described in the electronic templates, Trusted Agents and Cell Chairs gave the overall sense of what was discussed. Whilst this helped shorten briefings and adjudication, it meant that nuance and specific actions were lost. The Red Cell therefore felt that some of the strategic communications that had accompanied their actions was not included in adjudication or the final outbrief, which led to misunderstanding by Blue and Grey that could have had a significant bearing

[redacted]

[redacted]

on the game outcomes. This form of data transfer also made it more difficult to audit how decisions came to be made as in some cases records didn't exist. This was a particular issue when trying to understand how options offered by the Blue Cell became significantly different when executed in adjudication. [redacted]

Given the quantity of information they were expected to remember, and the comparative lack of supporting electronic data, it would be unreasonable to expect the Trusted Agents to provide very high quality, detailed inputs to adjudication. [O]

Insight 10: Reliance on people for data transfer introduces interpretation and lack of clarity. Such information transfer should be avoided where possible, or controls should be put into place to ensure actions are correctly documented when transferred in this way. [O]

5.14 **Adjudication**

The adjudication process produced outputs that were largely seen as credible by the players, which players generally felt reflected the actions they had taken, and which provided appropriate challenge and feedback to the players. However, the adjudication process was the weakest aspect of the design and it did not run as intended. [O]

As described at 5.5, adjudication was given comparatively little attention and a clear, detailed design was not produced until very close to the wargame, meaning it had not been stress-tested in the way that other elements of the design had. In part, this owed to a comparative under-resourcing of adjudication, as already described. However, there was also a tendency to place too great a trust in expertise and a reliance on adaptability, and this led to a degree of reluctance to produce a detailed plan. Further, for reasons already outlined, there was uncertainty regarding the precise nature of the orders that would be produced by the player cells, and therefore what would be required of adjudication. As a result, the plan that was eventually produced for adjudication was not followed as envisaged – time constraints, the limited quality and excessive quantity of information that was provided by the player cells meant that the plan as designed did not work. [O]

The Control Cell proved highly adaptable and were able to produce adjudicated outcomes despite the challenges outlined above; however much of the activity of the cell revolved around building a narrative around player actions rather than giving in-depth consideration to the viability and impact of those actions, or employing recognised adjudication methods. This was arguably more time-consuming than would have been the case had the adjudication been able to be more heavily process-driven, [O]

It should be recognised that adjudication of wargames that are so wide-ranging in scope is inherently difficult, especially in circumstances where players are not expected to submit very detailed, specific orders. Game designs need to take account of this complexity and ensure a sufficient, and realistic amount of time is given to the adjudication process. [O]

Observation 12: Adjudication should not be neglected or underestimated. [O]

[redacted]

[redacted]

Insight 11: A specific and detailed plan should be written for adjudication, as with all other aspects of game design. [O]

Lesson 13: An adjudication plan requires a good understanding of the nature of information that will be subject to adjudication. This needs to be clearly established early in the design, and rigorously tested with realistic inputs. [O]

Insight 12: Adjudication should be given time in the game design commensurate with its complexity. [O]

5.15 **Scenario**

The scenario was very well received by players. It provided all cells with the opportunity to be proactive, and while a crisis flashpoint was signposted, players were free to make other regions or triggers subject to confrontation if they had wished to. The cross-Government players felt that the scenario was not only plausible but raised a very believable contingency for which the UK should be prepared. [redacted]

The scenario was deliberately written to raise issues relating to deterrence of situations before overt conflict, and it was not anticipated that gameplay would culminate in a direct armed confrontation. Although the stakeholders had accepted this, at the end of Day 1, VCDS, as sponsor and game director, requested that the scenario be escalated to the point where armed conflict was likely. [redacted]

Observation 13: The game sponsor and stakeholders must be made aware of the nature of gameplay a scenario is likely to engender in advance of the wargame. [O]

5.16 **Cell Chairs**

The relationship between cell facilitators and the cell chairs varied significantly from cell to cell. The Red and Grey Cell facilitators had the opportunity to meet with and brief their cell chairs before the event but, due to a diary clash, this was not the case for the Blue Cell facilitator and chair. [O]

The Grey Cell chairs established a good rapport with their facilitator. Having been pre-briefed, they understood the outputs required and how the game mechanics were to deliver them. They were also able to utilise their expertise to improve the game design – for example suggesting the 'NSC-like' portion of the session was run using the real NSC agenda structure. [O]

In contrast, the Blue Cell facilitator was unable to discuss with the Blue Cell Chair the design of the event or how he saw the role of chair and facilitator interacting. The intent had been for the facilitator to run the conversation with the Chair acting as final arbiter – in practise the Chair largely ran the conversation himself. In some sessions, this worked really well, as the Chair was able to deploy his expertise to focus conversations on particularly pertinent issues in a way the facilitator could not. However, for the sessions where the specific templates were to be populated, the facilitator had to intervene, occasionally over the Chair, in an attempt to extract information from the cell of a nature that could become a specific order. The Chair

[redacted]

[redacted]

appeared to prefer to use the Blue Cell as an opportunity to canvass opinion before making up his own mind when delivering his brief to the Grey Cell. Whilst this led to good game outcomes, it made the game actions much harder to document, as previously described. [redacted]

Observation 14: It is essential to engage Cell Chairs prior to the wargame.

5.17 **Briefings**

The scenario briefings were generally well received – they were pitched at the right level and provided a good balance between brevity and detail. Participant feedback seemed to suggest that players preferred a more direct briefing read from a script than a more free-form briefing. However, given the unplanned nature of adjudication outcomes, a more unplanned style was necessary for later turns. Given that adjudication, for the reasons previously noted, did not provide detailed results, there was a strong requirement for scenario briefers to improvise and respond to questions on the fly. However, this risked creating inconsistencies between the briefings given to different cells. A further issue with the free-form briefings was the occasional tendency of the briefer to step outside the game and offer non-game explanations for adjudicated outcomes – for example explicitly stating an outcome had been adjudicated to help gameplay. This broke immersion and raised some players' concerns that their actions were not being faithfully considered in adjudication. A more rigid briefing format might have addressed this. However, much greater time (and suitable IT) would have been required in the adjudication process to have produced a written script for every turn. [O]

Insight 13: Where possible, briefings should be from an agreed script, and sufficient time should be allocated to producing one. [O]

Observation 15: Briefers should avoid improvising unless essential, and should try to retain players' immersion by only briefing gameplay and not mechanics. [O]

5.18 **Mechanics**

The game mechanics were partially successful. The materials were of a high quality and added to the look and feel of a wargame, as opposed to a seminar or Table Top Exercise. This arguably served as a subtle reminder of the distinction between a wargame and a TTX, and the different inputs required of the players. The maps in particular received considerable praise for their quality and utility in situating players. By contrast, the counters were of mixed utility. The Control Cell made extensive use of the counters to keep track of gameplay and determine the results of interactions. The counters were also used to support briefings to the players. Beyond this, the counters were otherwise largely unused by the players, who didn't understand their purpose or how they related to their discussion. Players' interaction with other game elements, such as the trackers, also varied between cells. A number of factors contributed to the variable success of the game mechanics:

1. There was uncertainty regarding how senior players would perceive and interact with counters. Stakeholders were concerned that the use of maps and

[redacted]

[redacted]

counters could appear to trivialise or over-abstract the issues considered by players; they also wished to avoid requiring players to engage with any complex mechanics for fear of alienating them.

2. The nature of the issues being discussed and the moves being undertaken did not lend themselves to the use of 'traditional' counters (i.e. military units represented with NATO standard symbols). In order to cover actions taken across the DIME spectrum, counters with a wide range of non-military symbols were used. To cover all possible actions players could take, a significant quantity of different counters were produced – they were approximately 80 variants of counter. The relatively generic nature of the counter symbology and their variety meant that a counter could always be found that appropriately represented the action or event in question. The precise meaning of each counter was not defined ahead of time in order to retain this flexibility. However, this made production of a key or legend impractical and instead placed a reliance on participants remembering what each counter represented in a particular context. [O]

3. Concerns about the difficulty of manually maintaining the consistency of maps in the different cells meant that players were asked not to manipulate the counters – they were therefore only to be used as a visual reference for the current state of the game and not to help shape future moves. [O]

4. The layout of the rooms and the size of the cells meant that only a small proportion of the players had a clear view of the maps and counters, and the facilitators (in particular in the Blue Cell) were not able to access the map to illustrate points. [O]

5. The design of the game did not require orders to be formulated in terms of counters on the map and, as previously discussed, conversation was infrequently at the level of specificity implied by the counters. Given the other challenges faced by the facilitators and their comparative lack of experience of working with maps and counters, they saw little value in forcing players to engage with the map or other mechanics. [O]

These issues might have been addressed to some extent through the use of electronic maps and counters hosted on IT and projected into the cells. The maps would have been easier to update, consistency would have been maintained, and they would have been visible to all, including the facilitator. Efforts would still have been required to simplify the range of counters and make them more central to the game design. [O]

Although the materials were of mixed utility at the wargame itself, this was not their sole value. The counters proved to be an extremely important part of the game design process – they were used as a means of helping focus thought on what actions the players might be expected to take, and how these and contextual issues from the scenario and adjudication might be represented on the map. The counters therefore provided a tangible and invaluable way of translating abstract concepts into specific aspects of the game design. [O]

[redacted]

[redacted]

Observation 16: High quality visuals are an important aspect of player immersion. [O]

Insight 14: Maps and counters are likely to continue to be subject to a degree of stakeholder hostility, until it can be shown that they are essential to delivery of the wargame, and can be used without distracting or over-burdening players. [O]

Observation 17: Game mechanics for use with very senior audiences should be as simple as possible. [O]

Insight 15: The use of IT to electronically replicate maps and counters is likely to increase their utility. [O]

Observation 18: Maps and counters have a value beyond the wargame itself, and can also be useful parts of the design and development process. [O]

5.19 **Location and infrastructure**

[redacted] The wargame needed to be held in Main Building (or nearby) in order to guarantee the attendance of the seniors, so appropriate options at a suitable classification were limited. [redacted] provide a comfortable atmosphere that is generally conducive to conversation. The rooms were large enough to host individual cells but no room was really big enough for the introductory or final plenary sessions – these were therefore very crowded and uncomfortable. The proximity of the rooms to each other made data and personnel movements straightforward, and the rooms were well laid out for all cell functions, including adjudication. [O]

[redacted]

The rooms were also limited by an inability to easily acquire and move supporting infrastructure into them – whiteboards and display boards in particular were more difficult to bring into the rooms than anticipated. [O]

A further complication was the inability to recce and rehearse in the rooms before the wargames. Only one room was available for the dress rehearsal – the teams only gained access to the full suite of rooms the evening before the wargame – which necessitated a late night setting up ahead of day 1. [O]

[14] [redacted]

[redacted]

[redacted]

Insight 16: [redacted]

Observation 19: Access to the venue in advance of the wargame is essential for recce and rehearsal. [O]

5.20 **Number of players**

Around 70 people attended the MDW, of which about 50 were players (the remainder being the DSTL and MOD wargame team). This number was near the limits of what was manageable for delivery. A smaller number of players would have made facilitation less challenging, limited the risk of conversations being diverted by observers, and increased the perception that the wargame was being conducted in a 'safe to fail' environment. Cell sizes of around 10 players would have struck a more appropriate balance. [O]

Insight 17: Growth in participant numbers, in particular of observers and advisors, should be limited. [O]

5.21 **Applying the Observations, Insights and Lessons Identified in Future Wargames**

Any observations that lead to a single specific course of action undertaken in a specific context should be comparatively easy to apply whilst designing and/or executing future wargames. [O]

These can be considered 'quick wins' for the wargame designers, especially in the case of observations relating to procedural issues, such as:

- Observation 11: Scribes dedicated to capturing the overall narrative of the game are likely to be required.
- Observation 19: Access to the venue in advance of the wargame is essential for recce and rehearsal. [O]

It is worth noting that an established 'best practice' set of guidelines covering wargaming at such a senior level do not currently exist, so the OILs which have been identified in this paper should be used to inform/become the basis of such a set of guidelines going forward. [O]

Whilst observations and insights relating to best practice may at times be difficult to implement/enforce, the experience of the wargaming team running MDW demonstrates the difficulties encountered in the execution of the wargame if designers do not follow best practice. Examples include:

- Observation 6: Regular engagement with the game sponsor is essential.

[redacted]

[redacted]

- Observation 9: Facilitators, cell leads, and players should clearly understand the roles they are to play, and the constraints under which they will be playing.

- Insight 4: Playtests are an invaluable part of the development of a wargame. Sufficient time should be allocated to playtesting for its benefits to be realised.

- Insight 12: Adjudication should be given time in the game design commensurate with its complexity. [O]

Despite the short form that lessons identified take in this report applying them may not be easy, and will often require a nuanced and complex understanding of the wargame design and execution process. Lessons are generally not related to specific actions, and may require game designers to adapt their approach to the wargame as a whole. Examples of complex lessons include:

- Lesson 1: Wargames should be designed against a limited number of specific and clear objectives.

- Lesson 10: Engagement with stakeholders and the senior sponsor should make very clear the compromises inherent in wargame design, and ensure these are being made in the right areas. Over-abstraction should not be conducted in areas of major interest to game sponsors. [O]

Future game designers should be wary of underestimating the impact that failing to apply these lessons will have on the design and execution of a wargame, as these lessons represent the most significant inferences to be drawn from MDW17. [O]

[redacted]

[redacted]

6 Conclusions and Recommendations

6.1 Conclusions

Despite a challenging design process and a complex wargame design MDW 17 was largely successful in achieving the objectives set for it. The design and execution process of MDW 17 highlighted a number of areas for improvement in future wargames, which were elucidated through the OILs identified in Section 5. These OILs, derived from extensive post-game research interviews with members of the wargame team as well as feedback from stakeholders and participants, represent a significant effort to draw on the experiences of all those involved in MDW 17 to provide useful and practical guidance for future Dstl wargame designs/designers. [O]

Given that wargaming strategic issues at such senior levels was a new experience for the Dstl wargaming team, and that due to the success of MDW17 strategic wargaming is likely to continue throughout VCDS' wargaming initiative, the OILs identified should prove to be an invaluable source of guidance for upcoming events. [O]

6.2 Recommendations

As stated in the DCDC Wargaming Handbook OILs identified only become OILs learned when they are applied. It is therefore important to promulgate these OILs so that they will actively inform the design and development of future wargames in the VCDS initiative and beyond. [O]

In order to promulgate these OILs the authors recommend that the list contained in the executive summary is placed in a central repository on the Dstl shared drive. This document would serve as reference source for future game designers, delivering OILs in a quick and easily digestible format. This would distil the knowledge into its key points and avoid the requirement for game designers to study extensive lessons learnt reports in their entirety. Furthermore, this document would be updated with new lessons from subsequent wargames as and when they are undertaken. It would then become an essential reference guide for Dstl wargame designers and help to ensure that OILs are applied and knowledge is transferred between events. [O]

[redacted]

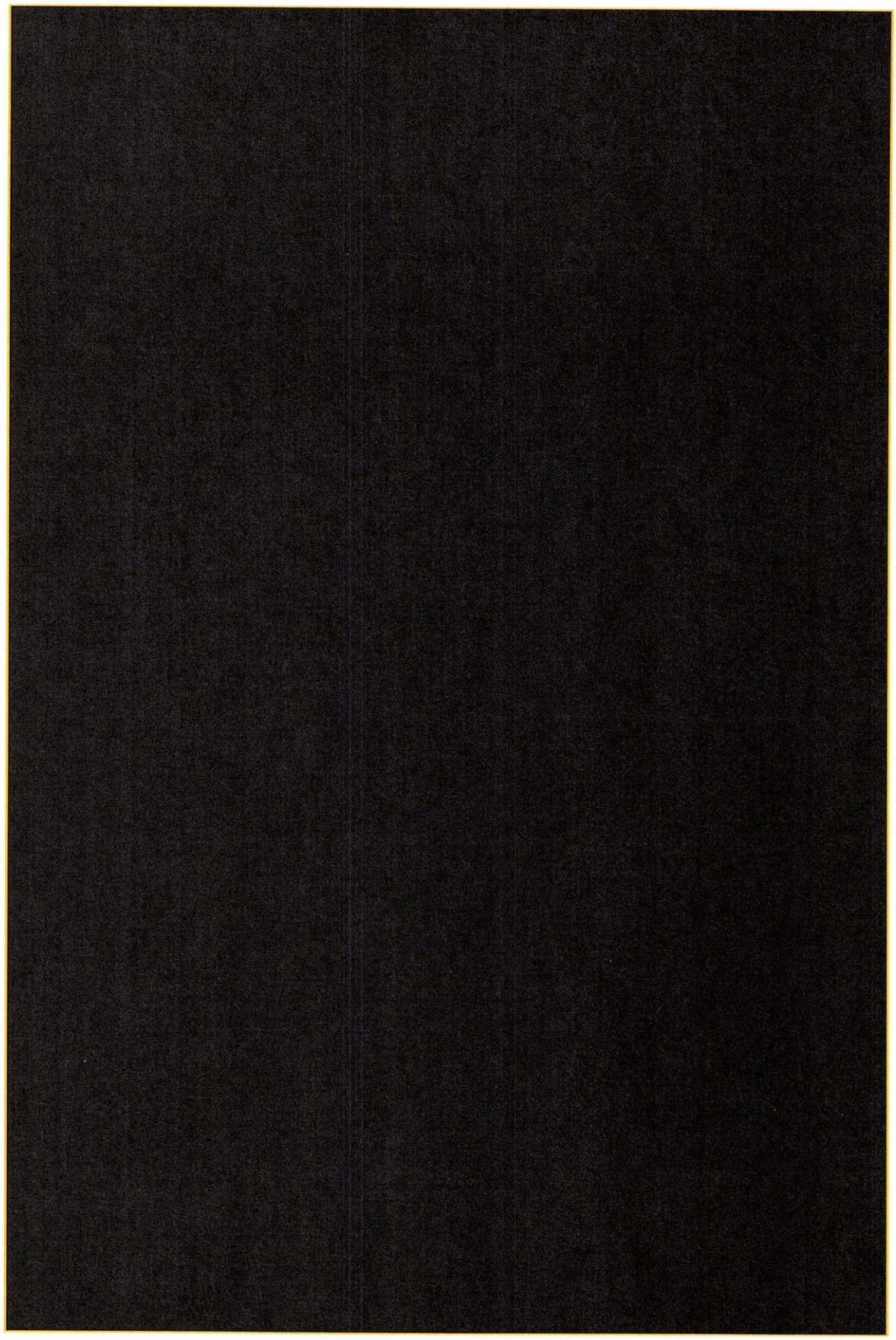
[redacted]

ANNEX A MDW Attendees

[redacted]

[redacted]

[redacted]



[redacted]

[redacted]

ANNEX B MDW Typical Turn Format

<table>
<tr><th>TIME</th><th>GREY CELL</th><th>BLUE CELL</th><th>RED CELL</th><th>CONTROL CELL</th></tr>
<tr><td>10</td><td colspan="2">Blue and Grey Cells receive joint scenario brief. UK players then move to the 'NSC' discussion in the Blue Cell room; US players move to the Grey Cell room</td><td>Red receives a separate, tailored scenario briefing</td><td>Control Cell delivers scenario briefs to Blue/Grey and Red Cells</td></tr>
<tr><td>20</td><td>US POL/MIL DIRECTION

[redacted]Blue and Grey cells convene in the Grey Cell room in order to agree overarching pol/mil direction for US participants for this turn

- Modify provided US starting conditions (aims and objectives) in light of the exercise scenario</td><td>UK POL/MIL DIRECTION ('NSC' Discussion)

[redacted]the Blue and Grey Cells convene in the Blue Cell room for an NSC discussion

- Generate UK aim, objectives and approach, based on HMG Strategy</td><td rowspan="4">POLITICAL AND MILITARY OBJECTIVES
- Modify provided Red starting conditions (aims and objectives) in light of the exercise scenario
- Develop overall Diplomatic, Informational, Military and Economic approaches</td><td rowspan="5">Control Cell disperses to other cells to observe conversations, and record assumptions and observations made by participants. These are passed back to individuals remaining in the Control Cell room who update trackers accordingly.

The Control Cell is also on hand to answer RFIs on the scenario, or the actions of 3rd parties not represented by a playing cell (Rest of World countries, NGOs, the public, the media, etc.)</td></tr>
<tr><td colspan="3">Players split into Blue and Grey Cells proper: US military players move into Blue and UK political players move into Grey.</td></tr>
<tr><td>30</td><td>ALLIANCE CONTEXT

Players are briefed on the outcomes of previous UK and US discussions

- Agree NATO's overall perspective and political approach</td><td>UK PREFERRED MILITARY APPROACH

Players are briefed on the outcomes of previous UK and US discussions

- Agree overall UK military approach for recommendation to the UK NSC</td></tr>
<tr><td>15</td><td colspan="2">BLUE/GREY Cross-brief: Senior Blue representatives (Cell Lead and 'Trusted Agent') meet with Grey Cell. Blue reps brief on overarching military approach developed so far in Blue. Grey brief on attitudes of Allies, NATO's overall approach, and any changes to the UK/US objectives.</td></tr>
<tr><td>40</td><td>CROSS-GOVERNMENT PLANNING</td><td>MILITARY PLANNING</td><td>RED BRIEFS CONTROL ON</td></tr>
</table>

[redacted]

[redacted]

TIME	GREY CELL	BLUE CELL	RED CELL	CONTROL CELL
	- Specific **diplomatic, informational, and economic** activity to be conducted by: o UK o US o Other Allies o NATO collectively	*Blue Lead briefs outcome of cross-brief* - Develop specific **UK** recommendations (for political approval -by **UK NSC, then NATO**) on **military** actions to be conducted by the UK (alone or with Allies)	**OVERALL STRATEGY**	
15	***BLUE/GREY Cross-brief:*** *Blue Lead and Blue Trusted Agent briefs MOD's detailed recommendations (on UK, US and NATO military actions) to Grey for political approval.*		**RED PLANNING** - Develop specific diplomatic, informational, military and economic activities to be conducted by Red, and Red proxies	
10	**UK DECISION** - UK NSC discussion to decide combined UK DIME plan, reconciling D, I, and E (Grey Cell) and Military (Blue Cell) planning above	Remainder of Blue Cell consider the ways in which the crisis might evolve (Red and Grey actions), and possible changes in military approach or actions that might need to occur in the next turns as a result.		
15	**ALLIED INTER-DEPENDENCIES** - Consideration of the UK DIME plan from a US and NATO perspective.			
15	***ADJUDICATION PHASE 1****: Initial move briefs*		*Unscheduled time*	Control Cell runs Adjudication Phase 1
30	**LUNCH / SEMINAR DISCUSSION (depending on turn)** - Blue and Grey cells convene to discuss major issues arising from the turn, or a series of prepared questions.		**ADAPT RED PLAN** - In response to Blue/Grey actions	**ADJUDICATION PHASE 2** - Draft Adjudication
30	***ADJUDICATION PHASE 3:*** *Finalise Adjudication*			
15	**END OF TURN** Participants engage in seminar discussion or depart at the end of the day		**END OF TURN** Participants break for lunch or depart at the end of the day	**ADJUDICATION PHASE 4** - Admin

[redacted]

[redacted]

ANNEX C MDW Scenario

[redacted]

[redacted]

[redacted]

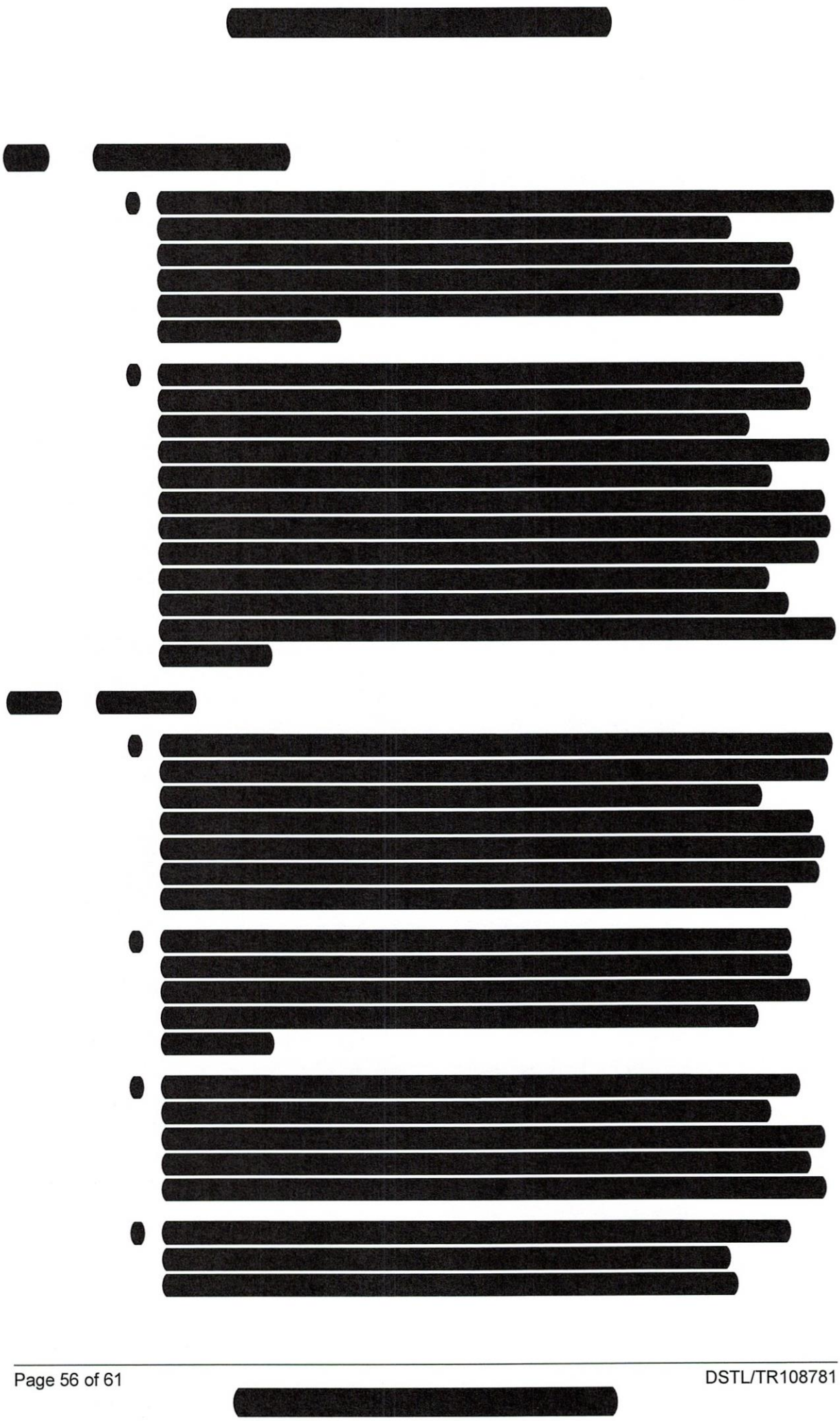
[redacted]

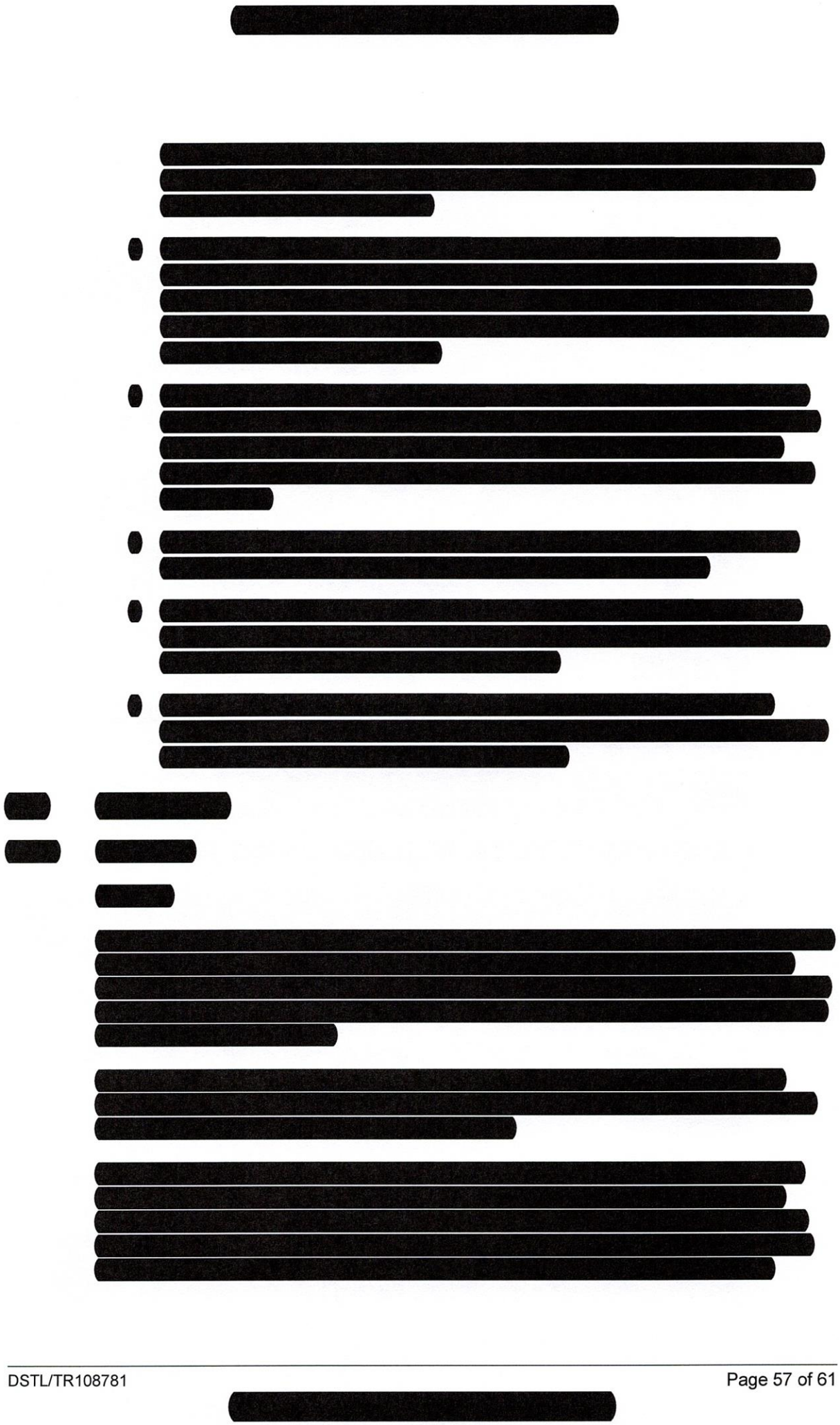
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

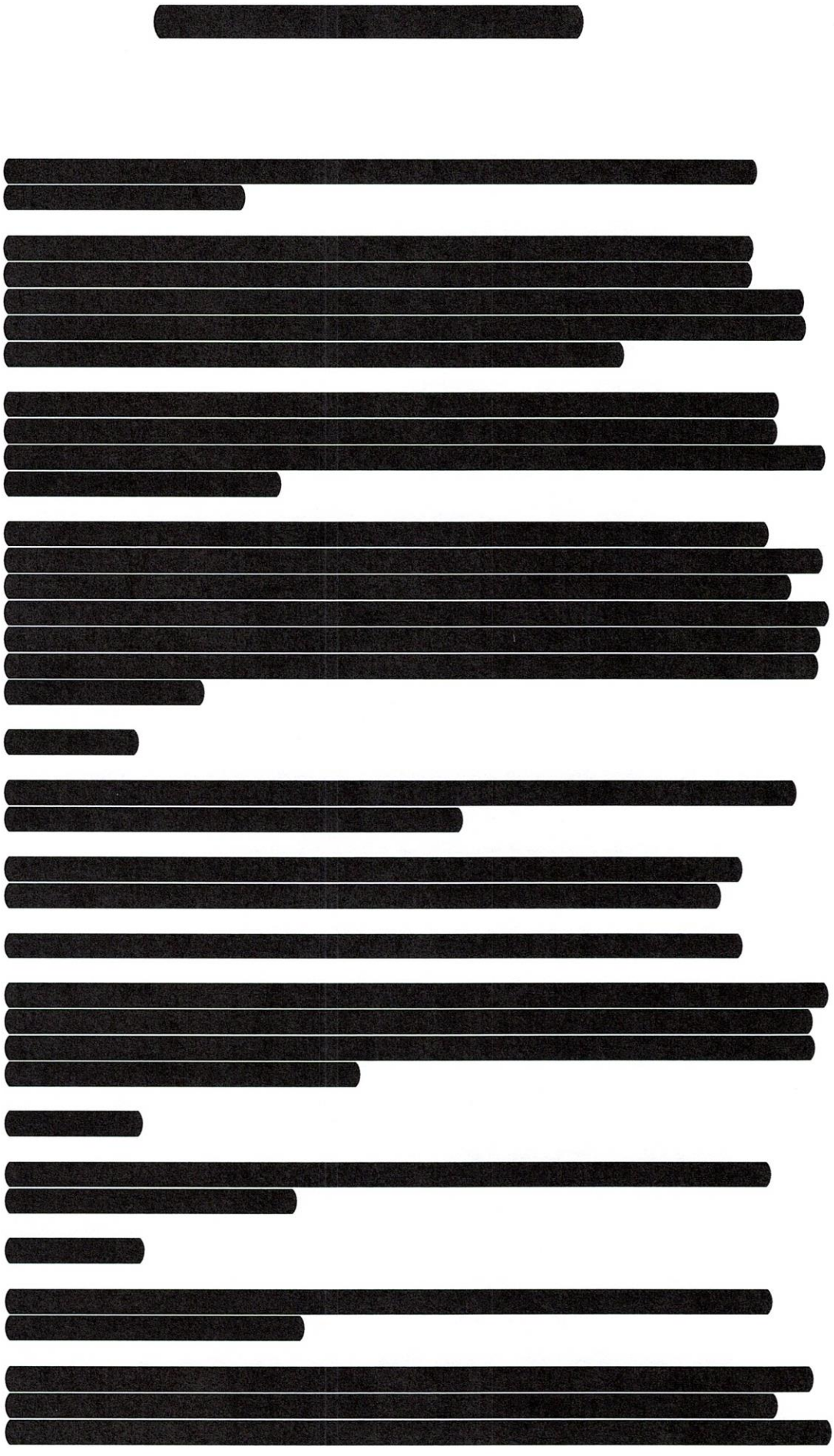
[redacted]

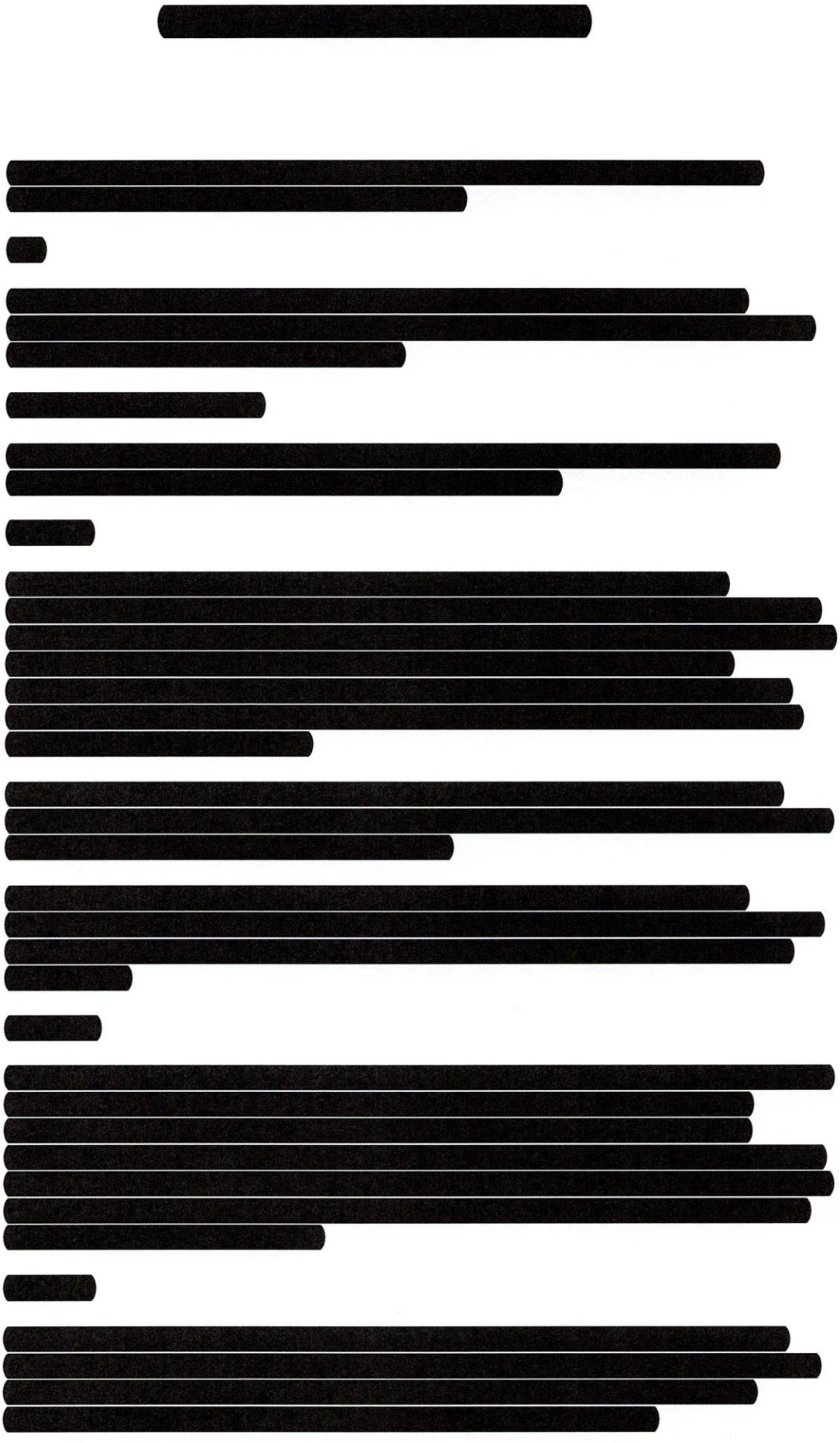
[redacted]

[redacted]









[redacted]

[redacted]

Initial distribution

1. KIS [redacted]

Dstl [redacted]

electronic [redacted]

[redacted]

[redacted]

Report documentation page

v5.0

* Denotes a mandatory field

1a.	**Report number: ***	**1b.**	**Version number:**
2	**Date of publication: ***	**3.**	**Number of pages:** vii + 62
4a.	**Report UK protective marking: ***	[redacted]	
4b.	**Report national caveats: ***	NONE	
4c.	**Report descriptor: ***	NONE	
5a.	**Title: *** Modern Deterrence Wargame 2017: Methodology and Observations, Lessons and Insights		
5b.	**Title UK protective marking: ***	UK OFFICIAL	
5c.	**Title national caveats: ***	NONE	
5d.	**Title descriptor: ***	NONE	
6.	**Authors: *** [redacted]		
7a.	**Abstract: *** On 19-20 September 2017, VCDS chaired the "Modern Deterrence Wargame 2017" (MDW 17), the first in a series of events designed, in large part, to reinvigorate the art of wargaming in UK Defence. It was a collaborative project between MOD SecPolOps and FMC, and Dstl, with Dstl undertaking the majority of the design and development work. This report outlines the wargame requirements, design process and final design, design and the requirements and design process it stemmed from, and identifies a number of Observations, Insights and Lessons (OILs) to be applied to future wargaming at very senior levels		
7b.	**Abstract UK protective marking: ***	OFFICIAL	
7c.	**Abstract national caveats: ***	NONE	
7d.	**Abstract descriptor: ***	NONE	
8.	**Keywords:**		

Please note: Unclassified, Restricted and Confidential markings can only be used where the report is prepared on behalf of an international defence organisation and the appropriate prefix (e.g. NATO) included in the marking.

[redacted]

[redacted]

* Denotes a mandatory field

9.	**Name and address of publisher: *** Dstl Defence and Security Analysis Portsdown West Portsdown Hill Road Fareham PO17 6AD	**10.**	**Name and address of funding source:**
11.	**Funding source contract:**		
12.	**Dstl project number:**		
13.	**Programme:**		
14.	**Other report numbers:**		
15a.	**Contract start date:**	**15b.**	**Contract end date:**
16.	**IP conditions for report: *** MOD Funded Dstl authored report		
17a.	**Patents:** NO		
17b.	**Application number:**		
18.	**Release authority role:**		

Guidance on completing the report documentation page can be found on the Gov.UK website.

[redacted]

THIS PAGE INTENTIONALLY LEFT BLANK

[redacted]

Ministry
of Defence

[redacted]