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Perplexing Persistence of Poor Procedures

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I think I am one of a very small group of people who actually likes writing procedures. Most people see it as a chore and I guess procedures are often viewed as a necessary evil.

Perhaps I work for a lot of rogue companies but most of the operating procedures I see are pretty poor; and ‘proper’ maintenance procedures are almost non-existent.

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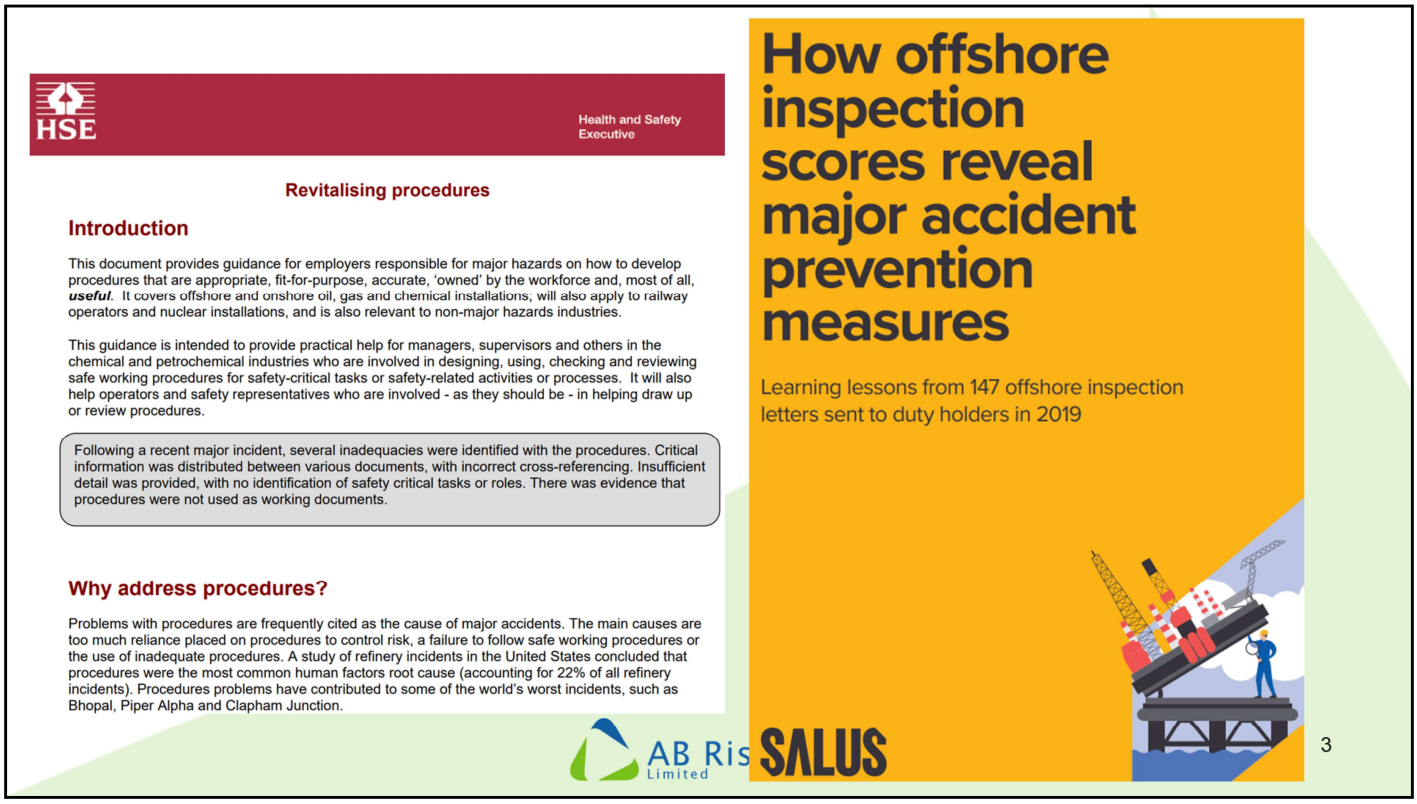
One of the paper reviewers commented that this was one of the best opening lines they have seen in a paper for a long time.

But I do wonder because I really do see some awful procedures. They are often wordy, ambiguous and difficult to follow. This even applies to procedures I have had a hand in writing in the past. I look at them and wonder what I was thinking.

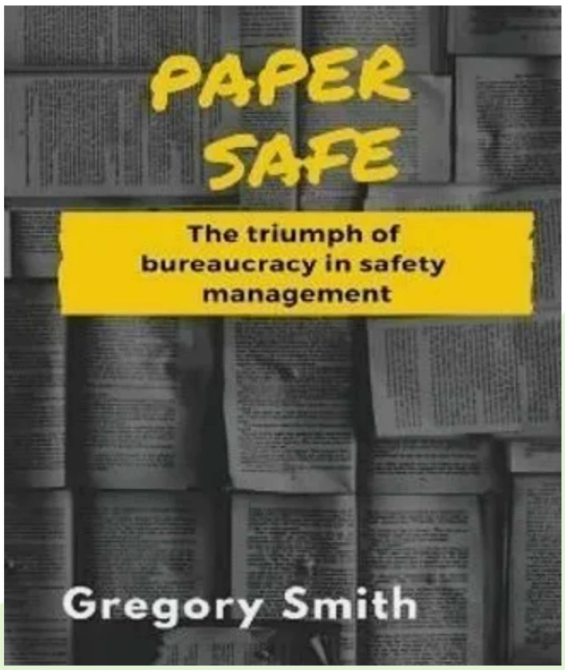


That is my experience since I started working as a consultant in 1996. But backed up by others.

HSE pointed out multiple issues in their Revitalising Procedures document published in 2004

The report published by Salus Technical based on HSE letters sent to companies in 2019 identified issues including

- Operating procedures lacking safety information
- Inaccurate reflection of how tasks performed
- Poor monitoring / auditing
- Not being updated



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An Australian lawyer Gregory Smith has captured issues in his book Paper Safe.

He observes that paperwork is largely disconnected from the primary purpose of managing risks

Use of procedures is often mandated to satisfy a KPI

Overall this gives and illusion of safety that workers and management accept because it has been normalised and there is significant resistance to change

Plenty of guidance

- How to write – format, presentation, document control
- Focus on compliance
- End users write poor procedures
  - No training or support
  - Don't want to be criticised for leaving out details
- Technical authors write poor procedures that look nice
- Process engineers insist on being involved but prioritise production over safety

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The perplexing thing is that we have quite a lot of guidance telling us how to write better procedures. Based on the evidence this simply has not worked.

My feeling is that the guidance starts from an assumption that we know what tasks need procedures and what they need to say. There is too much focus on simple aspects like format and issues about how to improve compliance.

The guidance often implores input from procedure end users, which often results in the job of writing procedures being dumped on operators and technicians, with very little support. Some of the worst procedures I have seen were written by the end users.

Technical authors may be brought in as experts. Their procedures may look nicer but the content is often poor.

And I am disappointed to point out that process

engineers are often the villain. They insist on being actively being involved in writing procedures and reviewing every modification. But it takes them months to do anything because they are too busy dealing with production issues, which for safety critical procedures this is really poor prioritisation.

Key objectives of a procedure

- Support competent people when performing a task
- .
- .
- .
- .
- .

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To decide if a procedure is any good we first have to understand what it is supposed to do. I would argue that the 1st objective is to support competent people when performing a task.

The key messages are that people have a defined level of knowledge and understanding. So the procedure is actually intended to reduce the likelihood of them making a mistake, and to get some consistency.

Actually, I really believe this is the only important objective. Part of the underlying problem is that we try to get procedures to do more than this.

An example procedure

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I have copied a few parts of a client's procedure. Names deleted to protect the guilty.

Contents

Here is the contents page. First thing to note is the procedure does not start until page 11. If we are lucky the competent person will skip over the first 10 pages. It is equally likely they will just put the procedure down and get on with the task.

It is fairly standard to include a purpose and scope. Why? If the procedure title is clear these sections are just unnecessary words.

Guidance often says to use ‘proper’ terminology and avoid abbreviations and acronyms. Why? If competent people are familiar with the terminology there is no problem with it being used. If a terminology section is really required put it at the back, or better in a different document. But I am confident that competent operators and technicians will know the terminology.

9 HSE Information

Electrical Equipment

The voltages present in both high voltage and low voltage electrical equipment can cause death or serious injury.

Except for essential fault-finding on low voltage equipment, work on any electrical equipment, where voltages exceeding 50V are normally present or where high electrical energies are involved, shall only be carried out if both of the following conditions are satisfied:

Chemicals

Chemicals must be handled in accordance with Control of Substances Hazardous to Health (COSHH) Regulations and the Chemical Management and Treatment Standard (TUK-11-B-010).

Noise

Excessive noise can cause permanent damage to hearing. Always comply with the directives on ear protection displayed on access doors and adjacent to excessively noisy plant.

Hazard	Source	Hazardous Events	Effect	Control
Liquid hydrocarbons under pressure	Throughout system	Injury through contact with hazardous fluids Loss of containment and release of flammable fluids	Potential for personnel injury Fire	Fire and gas detection
Hydrocarbon gas under pressure	Throughout system	Loss of containment and release of flammable fluids	Un-ignited gas release and potential for fire and explosion	Fire and gas detection
Hydraulic fluid under pressure	Throughout system	Chemical handling hazards	Potential for personnel injury	Refer to COSHH assessments.

9.1 Safety Rules

Rule	Description	Impacts Scope? (Y/N)	Comments
	Use Intelligent Safety	Y	Ensure 20-second scan is carried out
	Follow Control of Work System	Y	Complete Toolbox Talk prior to commencement of task and at the beginning of each shift when applicable
	Ensure energy is isolated prior to working on plant or equipment	N	Equipment will be in service during this operation
	Respect and do not cross barriers	Y	Erect barriers where required
	Obtain authorisation before entering a confined space	N	
	Protect yourself against a fall when working at height	N	
	Manage lifting operations in accordance with standards	N	
	Use the correct PPE for the task	Y	Check PPE available for chemical handling operations
	Implement the management of change procedure	N	

If we look at the HSE information we see largely generic information that is copied and pasted into every procedure. Every chemical handled at the site has to have a COSHH assessment. Why is this said in the procedure? The table showing hazard, source etc. could have some value but at this level it really is really of no value to a competent person.

The safety rules with pictograms looks quite nice. But again these are entirely generic and add not value.

Suggestions

- Specify when the procedure should be used
  - Print, follow & sign every time - if safe to do so
- Say what to do if the procedure cannot be followed
  - Pause if safe
- Number the task
  - Procedure may be one of several documents
- Limit the preamble
  - Support pre-task briefing
- Only use diagrams and photos where they add value
  - May be better as a separate job aid

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I will show an example of what may be a better procedure at the end but here are a few suggestions.

Say exactly how a procedure is supposed to be used. For planned, complex, critical tasks performed infrequently it is reasonable and correct to say the procedure is printed, followed and signed every time the task is performed. If that is what you want, say it. But also, be aware that blindly following a procedure is not safe. So also say what to do if the procedure cannot be followed.

Adopt a numbering system that assigns a number to a task. There may be other documents in addition to the procedure associated with that task. For example, if you have a process description of a procedure with more detail for use by trainees, they can be linked by the numbering system.

Minimise the preamble, but it may make sense to keep some to support pre-task briefings. I would argue this should be adopted as good practice for any planned, critical task so that people, even if fully competent, take a little time to reflect before diving into a task.

And contrary to a lot of guidance, diagrams and photos rarely add much value for competent people and are a real nightmare to handled in procedures. Link to source documents such as the P&ID or create job aids linked to the procedure.

Warnings in procedures cause problems

DANGER DANGER	**DANGER** indicated an **imminently** hazardous situation which, if not avoided, will result in death or serious injury. **This signal word should be limited to the most extreme situations.** It should not be used to indicate property damage hazards unless personal injury risk appropriate to this level is involved. Note: The colour **Red** will show as black or dark grey if printed in black and white.
WARNING WARNING	**WARNING** indicates a **potentially** hazardous situation which, if not avoided, could result in death or serious injury. This signal word should not be used to indicate property damage hazards unless personal injury risk appropriate to this level is involved. Note: The colour **Orange** will show as black or dark grey if printed in black and white.
CAUTION CAUTION	**CAUTION** indicates a **potentially** hazardous situation which, if not avoided, may result in minor or moderate injury. Also used to alert against unsafe practices that may cause property damage. Note: The colour **Yellow** will show as light grey and may be illegible if printed in black and white.

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This is one of my biggest bug bears. Guidance always says that warnings need to appear before the associated step. But it is very vague about when warnings should be used.

If a task is critical and we have gone to the trouble of writing a procedure we should be saying that every step should be carried out. Putting warnings in front of some implies that they are the mandatory steps and so are the other steps optional?

I have seen procedures with more warnings than steps. Very often warnings include information that should be in the step, and sometimes the information in the warning contradicts the step.

I would argue that warnings are rarely, if ever needed if a procedure is written properly.

Be ruthless with wording

- Consistent terminology
  - Inlet vs suction valve
- Make it a mission to minimise words and characters throughout
  - Ensure *that the* acid pump suction *valve* V101 is closed
  - Ensure acid pump suction V101 is closed
- Column for notes & another for ticks
  - No need to sign, date, time every step
- Structure helps
  - Maximum 10 sub-tasks / steps
  - Hierarchical numbering

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Having thought about this for some time I have concluded that the way to generate better procedures is to be ruthless with wording. Doing so makes you think about what you are writing and why.

Be consistent. I very frequently see the same valve described differently in different steps in the same procedure. In one case I found four different words used to refer to a fluid – all referring to the same fluid.

Minimise words and characters but where possible include two ways of describing an item. For example, every valve should be described and have a tag number.

In this example, V101 clearly refers to a valve so we don’t need to include the word ‘valve.

I find it really useful to have an extra column for notes and we only need ticks to record when a step is

performed – not signature, date time.

Structure really helps. A rule of thumb is to have up to 10 sub tasks, 10 sub sub tasks and 10 steps.

Example of something better??

- https://abrisk.co.uk/wp-content/uploads/2024/09/ABRISK-High-Criticality-Task-Procedure-Template-01.docx

Discharge tanker of XXX into YYY	Authorised by:	Revision: XXX
		Issue Date: XXX

Revision	Description of Change	Date Issued	Approved by	Date

Introduction

This procedure shall be printed, followed & signed every time a tanker is discharged – as long as it is safe.

If task cannot be completed as described:

- Stop task & a meeting to document an alternative method;
- If stopping task would create a hazard:
  - Discuss with team & continue to a safe hold;
  - Record actions that were taken.

Staffing for task:

- 1x fully competent Plant Operator (OP)
- 1x tanker driver inducted for site (Driver)

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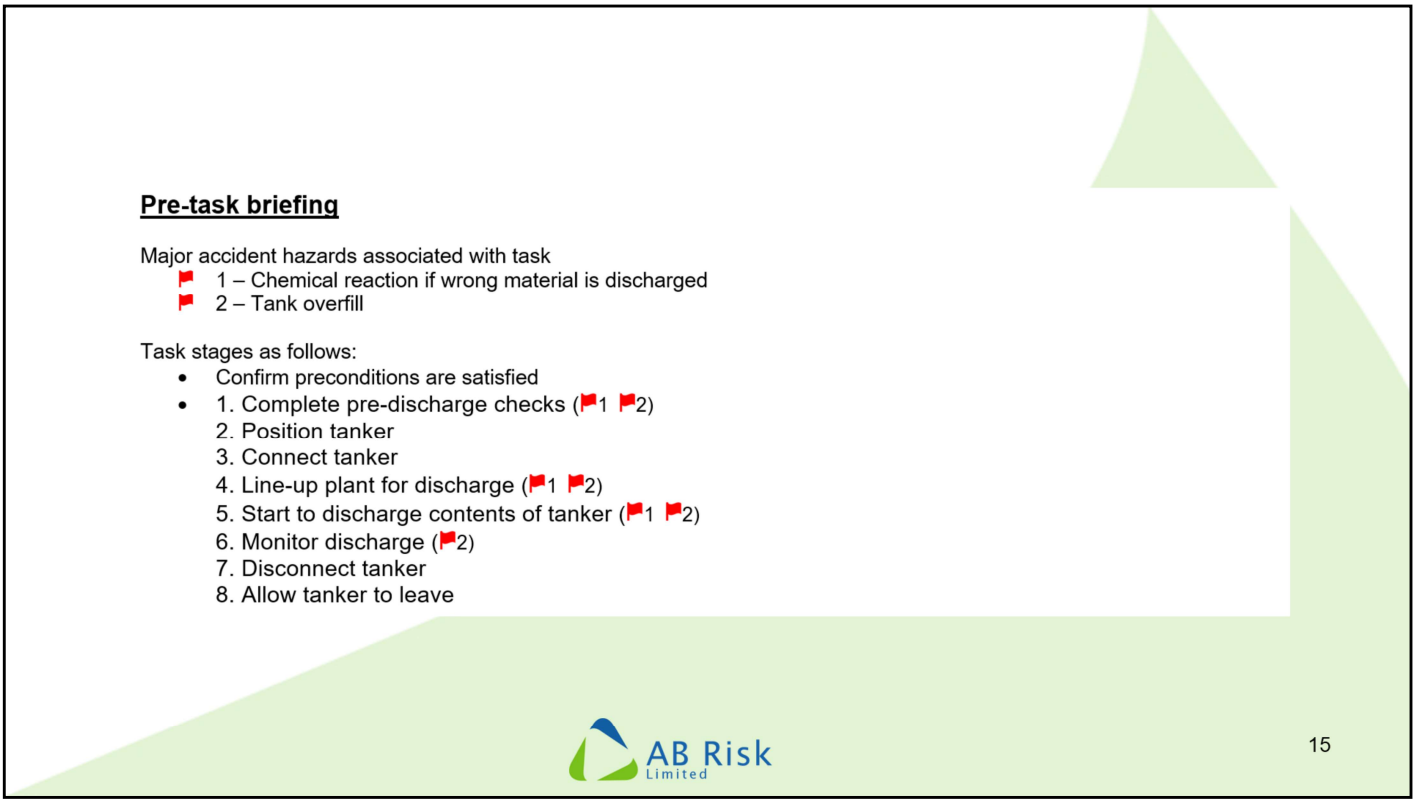
Top of page one

Say how the procedure should be used and what to do if it can't be

Say who is needed to do the task



Middle of page 1. Support a pre-task briefing.

List and number the the major accident hazards. Use a symbol such as a red flag to highlight them in the text.

List the stages of the task, with the red flags giving an idea of where the hazards will be encountered.

Preconditions

Precondition	Comments	✓
Driver has delivery paperwork		
Oxidiser is operational		
Batch sheet issued & started		

Preconditions have been satisfied & it is OK to continue with discharging tanker	
Name	Date
Signature	Time

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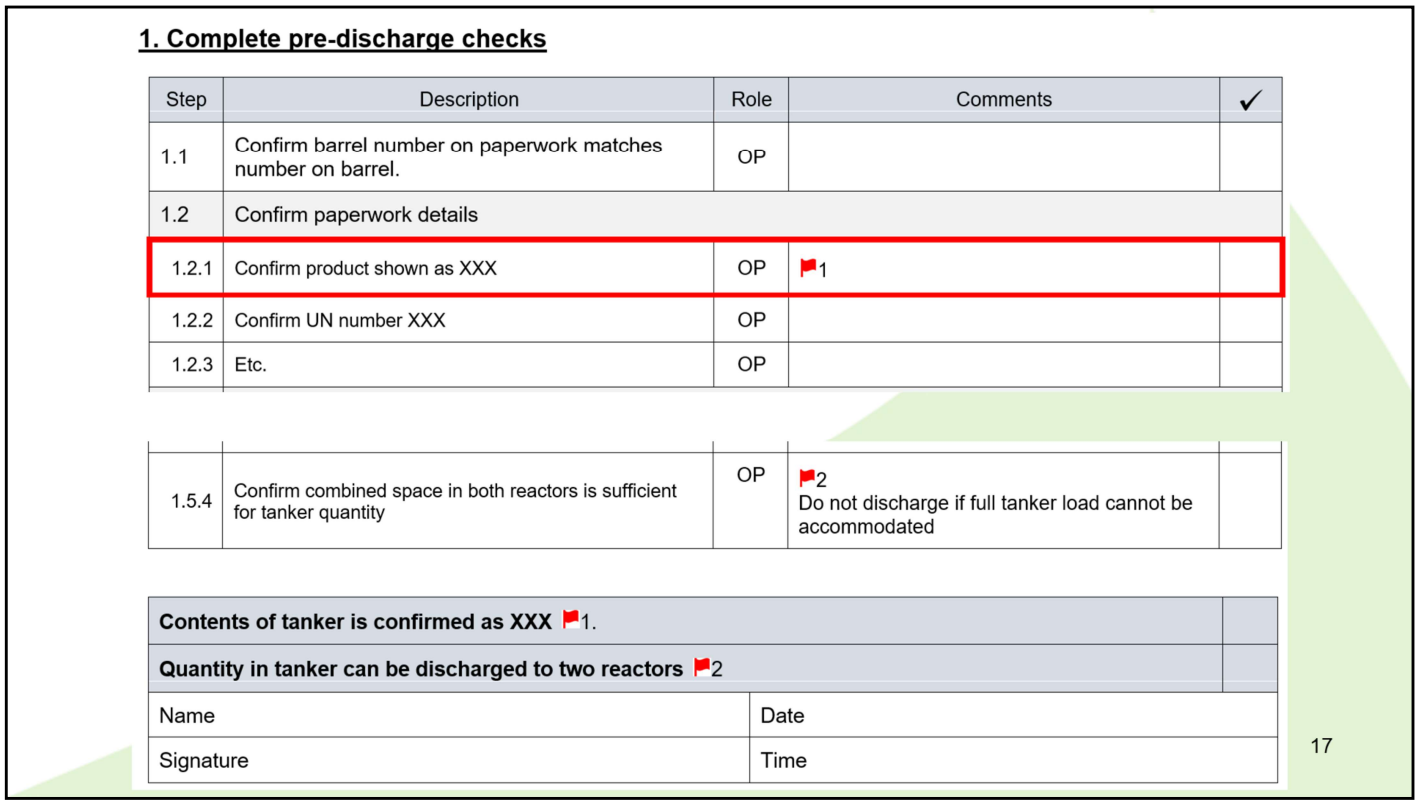
Bottom of page 1 or maybe top of page 2.

State what has to be in place to start the task.

Include a critical hold point to make people think – is it OK to start this task.



1. Complete pre-discharge checks

Step	Description	Role	Comments	✓
1.1	Confirm barrel number on paperwork matches number on barrel.	OP		
1.2	Confirm paperwork details			
1.2.1	Confirm product shown as XXX	OP	1	
1.2.2	Confirm UN number XXX	OP		
1.2.3	Etc.	OP		
1.5.4	Confirm combined space in both reactors is sufficient for tanker quantity	OP	2 Do not discharge if full tanker load cannot be accommodated	

Contents of tanker is confirmed as XXX 1.	
Quantity in tanker can be discharged to two reactors 2	
Name	Date
Signature	Time

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The main body of the task

Note the hierarchical numbering. This supports a structured approach and ensures every step in the procedure has a unique number. I agree it can be messy but I can't think of a better way.

Note step 1.2.1 has a red flag and number 1. This links to the front page where a hazard was identified with receiving the wrong material and possible chemical reaction.

In this case I have put it inside a red box. This is because it could be a single point of failure because there is no other risk control that could prevent the error.

Looking at step 1.5.4 there is a red flag with a number 2 because the hazard was overfill. But there is no red box because there are controls, in this case a high level

alarm.

We have another critical hold point here. The critical conditions are listed with the red flags. This is not just a sign to say the steps have been done but a confirmation that the underlying objectives have been achieved.

- If you would like any more information you can contact me as follows:
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I hope you have found this useful and thank you for your interest. If you have any questions do not hesitate to contact me.