



INTERVENTION RECORD			
Unique Document ID and Revision No:	ONR-TD-IR-21-006	Ref:	2021/44316
Location and purpose of Intervention:	Springfields Fuels Limited (SFL), Salwick Preston Lancashire, PR4 OXJ Control of Major Accident Hazards Inspection Sample point - Ammonium hydroxide bulk storage and delivery.		
Inspector(s) taking part in Intervention:	<div style="background-color: black; width: 150px; height: 15px; display: inline-block;"></div> (ONR – CHS Inspector, NIHSS) <div style="background-color: black; width: 100px; height: 15px; display: inline-block;"></div> (EA – Nuclear Regulator and COMAH Specialist) <div style="background-color: black; width: 150px; height: 15px; display: inline-block;"></div> (EA – Nuclear Regulator)		
Date(s) of Intervention:	18 and 19 May 2021		

PRINCIPAL STAFF SEEN

The roles of principal staff seen, including those from licensees or other government departments (for example, the Environment Agency) seen during the visit

Record Section	Organisation	Role	Name
2.3 - 2.6, 4	SFL	COMAH Liaison (Lead)	<div style="background-color: black; width: 100px; height: 15px;"></div>
2.3 - 2.6, 4	SFL	COMAH Liaison	<div style="background-color: black; width: 100px; height: 15px;"></div>
2.3 - 2.6, 4	SFL	Plant Manager	<div style="background-color: black; width: 150px; height: 15px;"></div>
2.3-2.4, 2.6, 4	NNL	Specialist	<div style="background-color: black; width: 150px; height: 15px;"></div>
2.3 - 2.6, 4	SFL	Environmental Manager	<div style="background-color: black; width: 150px; height: 15px;"></div>
2.3-2.4, 2.6	SFL	Site Safety Case Manager	<div style="background-color: black; width: 150px; height: 15px;"></div>
4	SFL	Chief Technical Officer	<div style="background-color: black; width: 100px; height: 15px;"></div>
2.5	SFL	EURRP Process Operator	<div style="background-color: black; width: 100px; height: 15px;"></div>
4	SFL	Prospect Union Safety Rep	<div style="background-color: black; width: 100px; height: 15px;"></div>
	SFL	Unite Union Convener	<div style="background-color: black; width: 150px; height: 15px;"></div>

(A) SYSTEM / STRUCTURES BASED INSPECTION RATINGS					
Complete this section only where a System / Structures Based Inspection takes place. If Licence Condition not applicable, enter "n/a"					
Record Section	System / Structures Based Inspection Details	Plan Name	Licence Condition (LC)	Rating	P/RUP*
	n/a				

(B) INTERVENTION RATINGS					
Complete this section only where applicable, e.g. for a compliance inspection or assessment where the duty holder's arrangements are being rated. If not applicable, enter "n/a". Complete Part A in respect of System / Structures Based Inspection					
Record Section	Intervention Details	Plan Name	LC / Series Code	Rating	P / RUP*
	n/a				

(C) INTERVENTION RATINGS - (FOR USE ONLY BY CNS & CROSS ONR PROGRAMMES)					
Complete this section only where applicable for a Security/Transport/Safeguards/Conventional Safety/Fire Inspection. If not applicable, enter "n/a". Complete Part A in respect of System / Structures Based Inspection, if applicable.					
Record Section	Intervention Details	Plan Name	Series Code	Rating	P / RUP*
Section 2	Compliance with Control of Major Accident Hazards Regulations 2015 (COMAH)	COMAH Intervention Plan Springfields Fuels Limited	502 / COMAH	Green	P

* P = planned, RUP = reactive unplanned

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	4
2	RECORD	6
3	ISSUES	12

1 EXECUTIVE SUMMARY

1.1 Purpose of Intervention

- 1.1.1 The purpose of this intervention was to confirm the adequacy of management of conventional health and safety hazards present at Springfields Fuels Limited (SFL); in particular adherence to the Control of Major Accident Hazards Regulations 2015 (COMAH).
- 1.1.2 The inspection visit was conducted together with the Environment Agency (EA) as part of the COMAH Competent Authority (CA), to assess adequacy of management system arrangements associated with the receipt and bulk storage of hazard substance ammonium hydroxide.

1.2 Interventions Carried Out by ONR

- 1.2.1 A remote interaction was followed by a site inspection, consistent with internal ONR and EA Covid-19 arrangements.
- 1.2.2 The key regulatory activities undertaken during the two-day inspection to provide regulatory confidence in the application of COMAH are summarised below:
- Review of COMAH managements system arrangements, in relation to ammonium hydroxide storage, offloading and bund drainage operations.
 - Walk-down through ammonium hydroxide offloading operations and emergency response with operational staff.
 - Provide the dutyholder with an update regarding the processing of hazardous substance consent applications.

1.3 Explanation of Judgement if Safety System Not Judged to be Adequate

N/A

1.4 Key Findings, Inspector's Opinions and Reasons for Judgements Made

- 1.4.1 SFL presented an overview of the Plant Safety Case (PSC) structure, production and relation to the COMAH Safety Report (SR). Extracts from the PSC were shared describing ammonium hydroxide loss of containment scenarios in detail, alongside the associated safety measures. In my opinion, SFL identified a representative set of reasonably foreseeable scenarios.
- 1.4.2 SFL described the software-based asset management system, currently utilised for the scheduling of maintenance and inspection activities. Entries relevant to ammonium hydroxide storage extracted from the electronic system were provided and referenced throughout the inspection. I was content that the inspection and maintenance of safety control measures captured within PSC were being managed systematically.
- 1.4.3 Trapped key interlock systems represent a significant control measure. SFL was able to demonstrate that the design intent to prevent discharge of chemicals into the wrong vessel and the [REDACTED] is being achieved.
- 1.4.4 I established that the control measures and operator emergency response sampled during the walk-down are largely in line with the documented arrangements reviewed

during the management inspection. In my opinion, the operator involved demonstrated sufficient knowledge and competence.

- 1.4.5 CA provided SFL with some minor recommendations and requested additional clarification related to the scope of plant inspections and for SFL to review some aspects of emergency response at a tank farm.

1.5 Conclusion of Intervention

- 1.5.1 The CA established that SFL has identified reasonably foreseeable loss of containment scenarios and implemented adequate control measures and is managing COMAH related safety adequately in the areas inspected. CA provided SFL with some recommendations to consider as areas for improvement and these will be followed-up by ONR through routine regulatory interactions.

2 RECORD

2.1 Purpose of the intervention:

- 2.1.1 To provide regulatory confidence, in management system arrangements associated with the receipt and bulk storage of COMAH hazard substance ammonium hydroxide. In addition, to provide SFL with information and guidance regarding timescales associated with the hazardous substance consent (HSC) application process.
- 2.1.2 The intervention consisted of discussion with company personnel, documentation review, site inspection and walk/talk through of the ammonium hydroxide tanker offloading task.

2.2 Key location visited:

Tank Storage - [REDACTED]

- 2.2.1 The inspection agenda prepared by ONR as part of the COMAH CA (CM9 2021/38843) identifies key topic areas and activities undertaken during the intervention. Supporting documentation provided by SFL and referenced within relevant sections of the report is saved in CM9 folder 4.3.759. This folder will also contain CA inspection report prepared by the EA and follow up correspondence with SFL in relation to the intervention.
- 2.2.2 A walk-down of the tank farm was undertaken to sample bulk storage and secondary containment conditions and to discuss ammonium tanker offloading and emergency containment provision with operations. The report is structured in terms of the main topic areas covered during the intervention.
- 2.2.3 My regulatory opinion was based on determining compliance with the Control of Major Accident Hazards Regulations 2015 (COMAH) and the Provision and Use of Work Equipment Regulations 1998 (PUWER).

2.3 COMAH Introduction and Update

- 2.3.1 SFL presented an overview of the plant safety case (PSC) structure, production and relation to the COMAH safety report (SR). Following discussion, it was agreed that in preparation for the next SR submission in 2023, a preliminary meeting between SFL and CA assessors to aid navigation, cross referencing and reduce duplication would be beneficial. As the COMAH CIM, I confirmed that the intervention plan would be updated to include this element as part of the pre-receipt process.

2.3.2 SFL described the application of CDOIF* methodology to environmental risk assessment. Subsequently [REDACTED] CA referred to the recent COMAH notification associated with an anticipated reduction in diesel storage. SFL confirmed plans to consume the remaining fuel within the operational tank, leaving a small layer or 'heal' in place within the vessel, until future decommissioning is sanctioned. SFL agreed to establish whether [REDACTED]

- 2.3.3 In response to CA queries, SFL responded that even with the heal in place, safety measures, tank monitoring, maintenance and environmental safety features such as interceptor oil in water detection would continue as normal until the vessel is emptied, cleaned, physically isolated and gas freed.

- 2.3.4 SFL wish to engage proactively with CA in preparation for the next SR submission. It was positive to note SFL commitment to the application of existing of diesel tank safety measures in the period between the end of operation and full decommissioning.

*CDOIF - Chemical and Downstream Oil Industries Forum

2.4 Ammonium Hydroxide Storage – Management System Arrangements

- 2.4.1 As requested, SFL described the application of ammonium hydroxide within the EURRP process. Engineering drawings of the tank farm were used as an aid to illustrate the layout, and equipment in detail, specifically stainless-steel tanks [REDACTED] [REDACTED] utilised for ammonium hydroxide and nitric acid storage respectively. The location of emergency containment tanks [REDACTED] and [REDACTED] was also highlighted.
- 2.4.2 SFL presented extracts from the PSC in tabular form, describing loss of containment scenarios in detail, alongside the associated safety measures. For reference, the table is included within the 'Plant Safety Cases and COMAH Safety Report' presentation dated 18 May 2021, stored on CM9. In my opinion, SFL have identified a representative set of reasonably foreseeable loss of containment.
- 2.4.3 In response to CA queries, SFL provided detailed description of the planning, timing, volume and frequency of ammonium hydroxide deliveries. CA learned that an order is triggered when tank content drops to approximately [REDACTED] cubic meters, triggering a low-level alarm. Subsequently, the maximum quantity supplied is only sufficient to fill the nominated tank to approximately [REDACTED] capacity. I noted that this reduced the likelihood of overfilling and was in line with the defined [REDACTED] capacity safe operating limit of the vessel, referenced within SFL 'Statutory Vessel Report No. B7408201', dated 22 May 2020.
- 2.4.4 CA explored SFL inspection and maintenance arrangements [REDACTED]. As determined by an internal written scheme of examination reference SS000563, the vessel is subject to annual inspection coupled with detailed internal / external examination at two yearly intervals. I reviewed 'Statutory Vessel Report No. B7408201' which captures a record of the parts examined, monitoring of known defects and stipulates ongoing periodicity of examination, based strictly on a maximum capacity [REDACTED].
- 2.4.5 SFL highlighted that the next internal examination is due in June 2022 and confirmed that statutory reports involved projection of vessel lifetime over the preceding 10 year as a form of ageing asset management. The independence of the internal pressure vessel inspection group (PVI) was probed by CA. SFL reiterated that maintaining independence was the intention and clearly described the separation of the nominated and inspection engineers from operational teams through the company's organisational structure.
- 2.4.6 SFL described the software-based asset management system [REDACTED], currently utilised for the scheduling of maintenance and inspection activities. Entries relevant to ammonium hydroxide storage extracted from the electronic system were provided and referenced throughout the management system inspection. I was content that the safety control measures captured within the tabular summary of the PSC were included within the [REDACTED] asset management system. Specifically, the tank, bund, pipework, pump, instrumentation and Castell key hardware.
- 2.4.7 As an example, the ammonium hydroxide tank is fitted with independent high [REDACTED] and high-high [REDACTED] level detectors designed to trip the off-loading pump when triggered. This safety instrumentation is subject to functional testing as defined within [REDACTED], dated 15 December 2017, which I was able

- to directly correlate to the Maximo asset management records. Furthermore, the functional testing instructions sampled were clear and well structured.
- 2.4.8 CA reviewed the 'Oxide Operations Instruction', document reference number [REDACTED] which describes ammonium hydroxide and nitric acid storage parameters, tanker offloading, emergency tank containment and bund drainage operations.
- 2.4.9 Trapped key interlock systems are a significant control measure and represented in detail within the document. CA asked the Plant Manager to explain the management and use of Castell keys in relation to the ammonium hydroxide delivery. [REDACTED] specific keys are utilised in sequence and trapped in place, subsequently only enabling the performance of specific operations within a prescribed order. Specifically, the opening of valves, control panel operation, vehicle barrier movement and access to a defined tanker offloading connection. The keys that initiate each separate interlocked controlled process are [REDACTED]. As documented within the 'Oxide Operations Instruction' and associated flow diagrams, SFL explained that when the initiating key for one process is removed, the remainder are locked in place. The design intent is to prevent discharge into the wrong vessel and incompatible mixing, consequently ammonium hydroxide and nitric acid deliveries cannot be received simultaneously.
- 2.4.10 Through discussion supported by document cross reference, CA established that ammonium hydroxide and nitric acid storage vessels are located within separate bunds and dissimilar tanker pipework connections are required for offloading. In addition, [REDACTED] during use of emergency containment vessels is [REDACTED]. CA agreed adequate control measures were in place to prevent incompatible mixing between chemicals during storage, offloading and containment operations.
- 2.4.11 **SFL were able to demonstrate and provide documentation to confirm that the trapped key interlock devices specific to [REDACTED] are subject to planned inspection, maintenance and functional testing every eleven months. To prevent [REDACTED], SFL explained that in the event that [REDACTED] on site and that a replacement would [REDACTED].**
- 2.4.12 CA reviewed operator job aid Sheet [REDACTED] 'Process Check Sheet for Ammonia Tanker Offloads' and explored training and competence. The job aid currently in use provides clear instruction in a structured format that is easy to follow. CA highlighted that section 8 could be improved slightly to help the operator track their own progress [REDACTED]. In my opinion the aid is an adequate form of information and instruction.
- 2.4.13 The SFL Plant Manager explained that ammonium hydroxide offloading is carried out by two SQEP EURRP operators, selected from specific shifts [REDACTED]. Training assessment records for nominated SQEPs were provided. In response to CA queries regarding tanker offloading being undertaken by less experienced staff, SFL confirmed that the period available in which to plan delivery, allows sufficient time to arrange for the task to be conducted during daylight hours by nominated staff within the selected shifts.
- 2.4.14 CA highlighted that whilst the task was limited to a small number of operators who repeatedly performed offloading, one operator had received training and assessment several years ago. In response, the company described the existing competence review arrangements. CA recommended periodic observation to check performance and provide assurance regarding compliance with current operating instructions. The broader relevance of this recommendation should also be considered by SFL.

Particularly in relation to operators undertaking hazardous substance tanker offloading elsewhere on site.

- 2.4.15 In relation to the process sampled, SLF had identified reasonably foreseeable loss of containment scenarios. SFL has demonstrated the provision of adequate control measures, particularly in relation to the prevention of overfilling, incompatible mixing and tanker offloading operations. The job aid documentation provided for operations could be slightly improved, however in my opinion it is adequate. In addition, I observed that for longstanding SQEP operators, arrangements to provide assurance regarding compliance with offloading instructions could be improved.

2.5 Site Observation - Offloading and Bund Draining

- 2.5.1 At the EURRP tank farm, CA conducted a detailed walk/talk through of the ammonium hydroxide offloading task with an experienced SQEP operator. The [REDACTED] task conducted by two SQEP operators utilising the job aid sheet [REDACTED] was confidently depicted and described. He demonstrated key aspects of the process including preparation activities, bund draining, application of the Castell key system, tanker driver supervision, ullage checks, tanker connection, vent connection and PPE.
- 2.5.2 In relation to overfilling, CA explored the operator's assessment of tank contents prior to delivery. A digital tank level in percentage is displayed on an adjacent control panel. Following discussion, I was content that the readings observed relate to the control arrangements as documented within the 'Oxide Operations Instruction'. It emerged that the contents were previously displayed in cubic meters, which may have been clearer for operatives to interpret. At the time of the intervention, the reason for the change was unclear, consequently CA recommended SFL investigate further, to verify the suitability of unit selection.
- 2.5.3 CA probed communication with and management of delivery drivers. The operator described good relations and the adoption of a SQEP supervisory approach, involving the monitoring of vehicle movement, coupling activity, equipment and adequacy of PPE provision. Given the receipt of ammonium hydroxide from a sole supplier, the operator reflected positively that the delivery driver is often the same individual. CA also asked the operator about competing priorities during tanker offloading. He confirmed that there was no expectation to conduct additional tasks simultaneously and that operators remain in situ to supervise and respond to issues during the entire offloading process.
- 2.5.4 As part of the walk/talk through process, CA discussed use of the job aid sheet [REDACTED] and instructions within. Whilst two SQEP operators conduct the task together, it emerged that the form is completed by one SQEP. To avoid steps being unintentionally missed, CA recommend that each SQEP signs the form as appropriate, relevant to elements of the task that they have personally completed. CA sought feedback regarding the structure of section 8 within the form and the operator noted the ability to place a tick against each valve would be beneficial in monitoring progress.
- 2.5.5 CA explored the operator's anticipated response to emergency scenarios including a loss of containment. He was able to promptly replicate the emergency shutdown and isolation required with ease, illustrating the benefit of siting the control panel nearby. Taking action to raise the alarm is another simulation that the operator was asked to perform. CA noted that the operator used an emergency phone very close by, but selected a route passing the rear of the tanker, in order to reach it. Whilst it is anticipated that the operator will be wearing a respirator and PPE, SFL should review and where necessary modify the way in which operators raise the alarm during ammonium hydroxide or nitric acid offloading activities. Specifically, reducing the need for the operator to approach areas where a loss of containment is anticipated, for example the rear of the delivery tanker.

- 2.5.6 SFL responded positively and it was noted that improvement could be achieved in a number of ways. SFL will be able to select the most appropriate means, following application of internal risk assessment and management of change processes.
- 2.5.7 I noted that the platform and associated handrails at the top of the vessels were no longer in use and SFL confirmed that scaffolding had been installed and was being inspected and maintained as an alternative means of access. CA requested that SFL confirm whether or not parts connecting the walkway to the tank vessels are included within the current inspection scheme and subject to maintenance to ensure deterioration will not compromise storage vessels.
- 2.5.8 In response to CA requests, the operator confirmed the provision of eyewash and demonstrated that the safety showers were operational. At the tank farm I observed tanker pipe connections were locked, clearly labelled and located above small bund to capture material released during coupling/uncoupling. Tank bunds appeared clean and free of liquid, debris and vegetation.
- 2.5.9 **I established that the control measures and operator emergency response sampled during the walk/talk are largely in line with the documented arrangements reviewed during the management inspection. In my opinion, the operator involved demonstrated sufficient knowledge and competence to conduct the task. During the inspection I did not identify significant performance influencing factors that would impact upon operators.**
- 2.5.10 CA provided SFL with recommendations regarding job aid sheet [REDACTED], operator performance assurance and tank level display units. SFL response to the following items was requested by CA:
- SFL confirm whether or not parts connecting the walkway to the tank vessels are included within the current inspection scheme and subject to maintenance.
 - SFL review of the way in which operators raise the alarm during ammonium hydroxide or nitric acid offloading activities.

These matters will be followed up by ONR and resolved with the dutyholder.

- 2.5.11 Based upon the sampling inspection undertaken, in my opinion, the risks associated with ammonium offloading at the [REDACTED] tank farm are adequately controlled.

2.6 The Planning (Hazardous Substances) Regulations 2015

- 2.6.1 ONR emphasised the anticipated time taken to process hazardous substance consent applications. Operators are being advised to allow at least 12 months for the completion of applications, given the time required to assess submissions and grant of consent. As agreed during the intervention, ONR provided SFL with links to relevant HSC guidance and information.

2.7 Covid 19

- 2.7.1 My site inspection did not involve specific focus on Covid 19 arrangements. However, throughout the visit, I observed consistent hand and equipment sanitising, wearing of face coverings and compliance with social distancing rules.

3 Conclusion of the Intervention

- 3.1 SFL engaged with CA and provided documentation as requested. Through discussion, inspection and documentation review in relation to the sample point, CA established

that the company had identified reasonably foreseeable incident scenarios and implemented adequate control measures. CA provided SFL with recommendations and actions, the latter will be followed up by ONR and resolved with the dutyholder through existing communication channels.

- 3.2 Based upon the sampling inspection undertaken, in my opinion, the risks associated with ammonium offloading at the [REDACTED] tank farm are adequately controlled.
- 3.3 The findings of this inspection also provide regulatory confidence in relation to the equivalent nitric acid bulk storage system and tanker offloading undertaken within the same [REDACTED] tank farm.
- 3.4 A summary of inspection findings and verbal advice was shared with SFL and a union representative at the close of the intervention and I rate this inspection green, no formal action.

4 ISSUES

4.1 Issues Raised

Where the intervention identifies a shortfall in regulatory compliance one or more issues should be raised to address the gap, and brought to the attention of the duty holder/licensee. The candidate issues should be given a provisional Issue Level in line with the Regulatory Issues Management Process and take account of the expectations in the ONR Inspection Rating Guide (2016/118606) Issues should be recorded on the ONR Issues Database after the intervention and subsequently tracked and managed.

No	Issue Title	Category	Issue Level	Licensee/Duty Holder Role	Owner (Inspector)	Completion / Review Date

4.2 Issues Closed

No	Issue Title	Category	Issue Level	Licensee/Duty Holder Role	Owner (Inspector)	Completion / Review Date

RECORD APPROVAL, SIGN-OFF AND ISSUE

RECORD APPROVAL AND SIGN-OFF

Note: Documents must be finalised on CM9 when signed-off / approved for issue.

Revision	Name	Responsibility	Executive Summary Approved	Date
0A		NIHSS Inspector		3 June 2021
0		DFW Sites SI		3 June 2021

VERSION CONTROL

Revision	Date	Description of Change
0A	03/06/2021	1 st draft
0	03/06/2021	1 st issue

CIRCULATION LIST

Electronic copy unless stated otherwise, e.g. if enforcement action is being considered hard copy records may be needed

Organisation	Name / Responsibility	Date
Office for Nuclear Regulation	[REDACTED] Superintending Inspector [REDACTED] - Superintending Inspector, DFW [REDACTED] NSI [REDACTED] Principal Inspector, NIHSS [REDACTED] Inspectors, NIHSS CM9 Folder 4.3.759.	June 2021
Environment Agency	[REDACTED] [REDACTED]	
Springfields Fuels Limited	[REDACTED] Regulatory Liaison [REDACTED] COMAH Liaison Lead [REDACTED] COMAH Liaison	