Inspection Record – Dutyholder Report			
Ionising Radiations Regulations 2017 Direct Shine and Other Pathways Compliance Inspection – Springfields Fuels Limited			
Inspection ID	IR-53467	**Inspection Date(s)**	22/10/2024 For 1 Days
Dutyholder	Westinghouse Springfields	**Site**	Springfields Works
Inspection Type	Announced Planned	**Site Area / Group**	
ONR Purpose	Conventional Health and Safety	**Inspection Source**	ONR Strategy 2020-2025, Task sheet CM9 2024/16930

Subject (s) of Inspection

Activity	RAG Rating
IRR17	GREEN

System (s) – where applicable

Inspector(s) taking part in Inspection

Lead Inspector
[redacted]

Attending
[redacted] [redacted]

This report is an automated extract of data from the ONR WIReD Inspection database.

1. Scope

1.1 Aim of Inspection

All Licensees have a duty to comply with the Ionising Radiations Regulations 2017 (IRR17). The purpose of this inspection is to gain assurance that the arrangements within Springfields Fuels Limited are compliant with the Ionising Radiations Regulations 2017 (IRR17).
Regulation 12(3) introduces a new duty on employers to estimate doses to members of the public, in addition to the duty to restrict exposures under Regulation 9.

1.2 Inspection Scope

The scope of the intervention will be compliance with IRR17 and specifically:
Inspect the arrangements made by Licensees for measuring radiation dose and controlling radiation doses to the public so far as is reasonably practicable. – Regulation 9 of the Ionising Radiations Regulations 2017.

Discuss ways of reducing radiation doses to the public SFAIRP with duty holders if required.

1.3 Relevant Regulatory Guidance

The following regulatory guidance corresponds with this inspection

Name

2. Summary Statement

ONR undertook this inspection to examine Springfields Fuels Limited physical arrangements for controlling exposure to ionising radiations from the Springfields Fuels Limited Licensed site to members of the public.

This was one of two planned direct shine and other pathways inspections during 2024-25 in support of the Office for Nuclear Regulation Technical (Decommissioning Fuel and Waste) sub-division strategy.

The inspection was conducted via discussions with key licensee personnel, the sampling of licensee documentation and a site perimeter fence walk-down.

The site has a number of linear earthworks which provides an adequate as low as reasonably practicable measure to reduce off-site doses. The exposures do not exceed the Basic Safety Limit annual dose to members of the public of 0.3 mSv/y.

The conclusion of the inspection was that I was content that Springfields Fuels Limited had taken adequate steps to reduce doses to the public from the site operations in the areas inspected.

3. Record & Judgement

3.1 Staff seen as part of Inspection

The following principal staff were seen as part of this inspection

Name	Role	Company
[redacted]	[redacted]	SFL
[redacted]	[redacted]	SFL
[redacted]	[redacted]	SFL
[redacted]	[redacted]	SFL

3.2 Record

Evidence

The Springfields Fuels Limited (SFL) nuclear licensed site was selected for inspection for the following reasons:-

• SFL is one of four licensed sites which has a radiation dose rate to the most exposed member of the public above the ONR Safety Assessment Principle (SAP) Target 3 Basic Safety Objective (BSO) of 0.020 mSv .

• UKHSA undertook a SFL direct radiation public dose assessment on ONR’s behalf in 2020 (CM9 2022/26152). This will be the first SFL public exposure inspection by ONR’s Radiological Protection and Criticality specialism in recent times.

• From 2021 to 2023 there has been an upward increase in radiation dose rate to the most exposed member of the public.

The Springfields Fuels Limited (SFL) Radiation Protection Advisor & Head of Radiation Protection (HRP) provided a site map detailing the locations of the site boundary and perimeter thermoluminescent dosimeter (TLD) locations (CM9 2024/46647). An agenda (CM9 2024/47166) was provided for the public exposure inspection by the ONR Regulatory Liaison & Principal Assessor (RLPA). A number of public exposure questions were provided to SFL prior to the meeting (CM9 2024/45276).

This intervention comprised an inspection of the perimeter fence to assess the arrangements for measuring dose rates, interviews with staff and a review of documentation provided as evidence of compliance with IRR17 regulation 9 and 12.

I met with the HRP, RLPA, Deputy Environmental Manager (DEM) and Deputy Regulatory Liaison Officer.

I was informed that the 674 building ‘Ore Store’ is a shielded building (containing a number of drums, powders and uranium bearing residues) and is the main source of direct radiation for off-site public exposure for the site. Linear earth works are located between the 674 building and the site perimeter fence and provide a degree of shielding for direct radiation off-site exposures.

I visited the internal site area to the site perimeter fence and viewed all of the perimeter boundary TLD locations (ten in total, one TLD at each location). The TLDs are held within a weather resistance container and are replaced on a quarterly basis.

The TLD location 1 was adjacent the 674 building and records the highest site perimeter dose rate out of all site boundary TLDs. The TLD location 10 is approximately 1000m from location 1 on the north side of the perimeter fence and is one of the lowest perimeter TLD dose rate positions. At TLD location 9 there are linear earthworks approximately 3 metres high located between the site and the site perimeter fence to provide a degree of shielding fordirect radiation off-site exposures.

At the TLD location 8 an external carpark was present on the off-site area of the site

perimeter fence. At the TLD location 7 linear earthworks (approximately 2.5 metres high) were located between the site and the site perimeter fence which would provide a degree of shielding for direct radiation off-site exposures.

I viewed a number of other linear earthworks at locations close to the site perimeter to reduce direct radiation off-site exposures.

The distance between locations TLD location 4 and TLD location 5 is approximately 500 metres. I discussed to option of introducing an extra TLD to monitor the perimeter dose rate between these locations with the HRP and DEM. I was informed that between these TLD locations there was an off-site solar farm with no inhabited abode.

I confirmed the presence of the solar farm via sampling satellite imagery of the site boundary and surrounding area. The UKHSA report (CM9 2022/26152) shows the gamma count rate at these locations along the perimeter fence to be at the lower range of radiation readings for the site perimeter. I am content that there is no extra monitoring location between TLD location 4 and TLD location 5.

At TLD location 4, Wind Mill farm (the location of the representative person for public exposure) was located approximately 15 meters from the TLD site perimeter fence. In my opinion the location of TLD 4 is appropriate for obtaining perimeter dose rates for assessing the dose for the representative person located at the Wind Mill farm.I was content with the locations selected on the perimeter fence to assess the perimeter dose rate.

In my opinion the sampled linear earthworks are at an appropriate height and location to provide an adequate as low as reasonably practicable (ALARP) measure for reducing directradiation exposures of-site.

SFL obtain the background dose rate for the site's 'SFL annual direct shine and other pathways return' (henceforth referred to as 'annual return') from five TLDs (held within weather resistant containers are stored within a roller shutter cabinet) within the admin building (building 643). The DEM commented that the site plans to explore other locations to place these TLDs (including off-site locations) to obtain a more representative background radiation dose for the 'annual return'. In my opinion SFL should explore the feasibility of placing TLDs for background assessment off-site.I have raised a regulatory issue for this matter (RI-12328).

The UK Health Security Agency (UKHSA) visited SFL to undertake an independent public dose assessment of the site in May 2021 on behalf of ONR (CM9 2022/26152). UKHSA

monitored 15 locations on the site perimeter fence, at five locations UKHSA reported a small neutron component to the perimeter dose rate and recommended for SFL to consider subsequent dose assessments to include a neutron component. At the time of the inspection perimeter neutron dose rates were absent from the perimeter monitoring assessment and represents a shortfall in perimeter dose rate monitoring. I requested that perimeter monitoring of neutron dose rates to be undertaken using the UKHSA report to identify appropriate monitoring locations (CM9 2024/49394). I have raised a regulatory issue for this matter (RI-12328).

The DEM confirmed that the ‘annual return’ no longer records radiation doses rates to the most exposed member of the public from other pathways to house boat dwellers because they have moved away from the SFL area. I requested that in future annual returns that a short statement to be included in section five or six of the ‘annual return’ explaining any change in representative members of the public from the previous annual return.

I commented that the SFL site annual returns for 2021 (0.17 mSv) to 2023 (0.40 mSv) had recorded an upward increase in radiation dose rate to the most exposed member of the public. The DEM explained that the return for the representative person in the 2021 dose rate was incorrect due to the wrong TLD result (position 5 rather than position 4) being used to calculated the annual dose. I have raised a regulatory issue for the for the correct dose for the representative person to be recalculated for 2021 and supplied to ONR (RI-12328).

I was inform by the DEM that the Environment Agency calculate the dose to the representative person from other pathways from the information provided to them by SFL.

I inquired if SFL had considered options of reducing the dose rate from the 674 building. The SFL meeting members commented that the option of repositioning packages within building could be undertaken to see if this would reduce off-site doses to members of the public. I have raised a regulatory issue for SFL to undertake an ALARP justification restricting public doses from the 674 building (RI-12328).

Judgement

In my opinion SFL should carry out an assessment to confirm and refine the current arrangements for placing TLDs to measure the sites background radiation for the SFL annual direct shine and other pathways return.

To obtain a more comprehensive perimeter dose rate assessment, SFL to place neutron

dosimeters at appropriate perimeter fence locations to determine the combined gamma/neutron dose rate.

SFL to explore ALARP options for the building 674 ‘ore store’ to reduce off-site public exposure.

In my opinion the sampled linear earthworks provide an adequate ALARP measure for reducing direct radiation exposures off-site.

I was content with the locations selected on the perimeter fence to assess the perimeter dose rate.

Overall I am satisfied that public exposure due to direct radiation exposure from the site is ALARP.

I judged SFL implementation of IRR17 regulation 12 (3) arrangements to be adequate to reduce doses to the public from the site operations in the areas inspected and I assign a rating of GREEN.

Observations / Advice

I advised:

If the ‘other pathway’ dose to a representative member of the public has been calculated as less than 10 mSv per annum, then this calculated value is to be reported in the sites annual return for completeness of information.

That due to the distance between TLD locations 1 and 10 there should be an additional perimeter monitoring location to obtain a more balanced background radiation record of the area.

3.3 Regulatory Issues

The following regulatory issues were raised, reviewed or closed as a result of this inspection.

Issue	Title
RI-12328	Regulatory actions pertaining to IRR 2017 Direct Shine and Other Pathways Compliance Inspection