

INPEX Ichthys Project Offshore Facility (Operations) – Inspection Background Review

The inspection (RMS ID: 2109) is proposed to be conducted on 29 March 2021 (onshore only). The following provides context for the inspection scope and prompts.

General Description

The Ichthys Field is located in the northern Browse Basin (production licence area WA-50-L), approximately 210 km north-west of the coast of mainland Western Australia and 820 km south-west of Darwin. Gas from the Ichthys Field will undergo preliminary processing on an offshore central processing facility (CPF) to remove water and raw liquids, including the greater part of the condensate. This condensate will be pumped to a nearby floating production, storage and offtake (FPSO) facility from where it will be transferred to tankers for export to overseas markets. The gas will be transferred from the CPF via an 889 km gas export pipeline (GEP), covered by pipeline licences WA-22-PL and NT-PL/4 in Commonwealth waters, to an onshore processing plant at Bladin Point in Darwin.

This EP covers the commissioning, start-up and operation of the CPF (Ichthys Explorer), the FPSO (Ichthys Venturer) and associated subsea equipment to the gas export riser base (GERB). It also covers tie-in and commissioning of subsea components that are not required at start up.

Infrastructure

- The CPF (Ichthys Explorer) which is used to separate the reservoir fluid received from the gathering systems into liquid and gaseous phases, and export gas onshore for further processing.
- The FPSO (Ichthys Venturer) which supports hydrocarbon processing systems and utilities by processing liquid hydrocarbons received from the CPF to produce a stabilised hydrocarbon condensate, which is then temporarily stored within the FPSO hull prior to periodic offloading to tankers for export to market. The FPSO has been designed with inlet and discharge moonpools to enable seawater intake and liquid effluent discharge via flexible hoses.
- Subsea production system (SPS) infrastructure, including xmas trees, manifolds, subsea control systems and umbilicals, risers and flowlines (URF), and the gas export riser base (GERB), which connect the wells to the CPF and FPSO.
- Reservoir fluids transfer from the CPF to the FPSO via two condensate and rich monoethylene glycol (MEG) lines (known as CRM lines) which consist of rigid flowlines on the seabed and flexible risers connected to the CPF and FPSO topsides.
- Two flexible flash-fuel gas (FFG) transfer lines are also connected for the transfer of flash gas and/or fuel gas between the CPF and the FPSO.

Vessels

- Platform supply vessels, accommodation support vessels, tugs and heavy-lift vessels (HLVs) which are required to support the operation and maintenance of the CPF, FPSO and subsea infrastructure within the operational area.



Activities

Commissioning:

- Preparing the CPF, FPSO and subsea infrastructure for the introduction of reservoir hydrocarbons. Commissioning is a series of tests and checks to ensure the integrity of the production and utility systems on the CPF and FPSO can operate as per their design and functional intent.
- The only emissions and discharges from the facility during this period are from the utility systems (i.e. cooling and potable water systems, power generation, lighting and inert gas systems).
- There are no production discharges or flaring from the production system until after start-up. Some non-production critical equipment may be commissioned after start-up.

Start-up and operations:

- Starting-up the SPS, CPF and FPSO to allow the reservoir fluids and processing equipment to reach operational pressures and temperatures, as well as obtaining sufficient and stable equipment inlet flow to enable the equipment to perform to design criteria.
- Conveyance of fluids, comprising gas, hydrocarbon condensate, MEG and produced water (PW) from the reservoirs by means of the subsea infrastructure to the CPF and FPSO.
- Regeneration of MEG by the FPSO used during processing so that it can be recycled back to the SPS and wells.
- Processing and storage of gas and condensate via the CPF and FPSO, including transfer of condensate via an offtake hose to an offloading tanker; and gas export up to the GEP.
- Inspection, maintenance and repair (IMR) activities on the CPF, FPSO and subsea infrastructure (excluding well intervention or well workover activities).

Inspection, maintenance and repair (IMR):

- IMR activities generally involve the use of a support vessel and remotely operated underwater vehicles (ROVs).
- Activities may include, though are not limited to, inspection of the CPF and FPSO hulls and subsea infrastructure.
- In addition, marine acoustic surveys, pigging of GEP and SPS, seabed intervention activities, marine growth / lime scale removal activities, riser replacement and flowline replacement may also be undertaken.

Environmental Values and Sensitivities

In the event of a spill, the environment that may be affected (EMBA) covers a considerably larger area than the area of planned operational activities. Values and sensitivities identified within the EMBA include:

- 9 key ecological features
- 9 Commonwealth Marine Reserves
- 17 State Marine Reserves



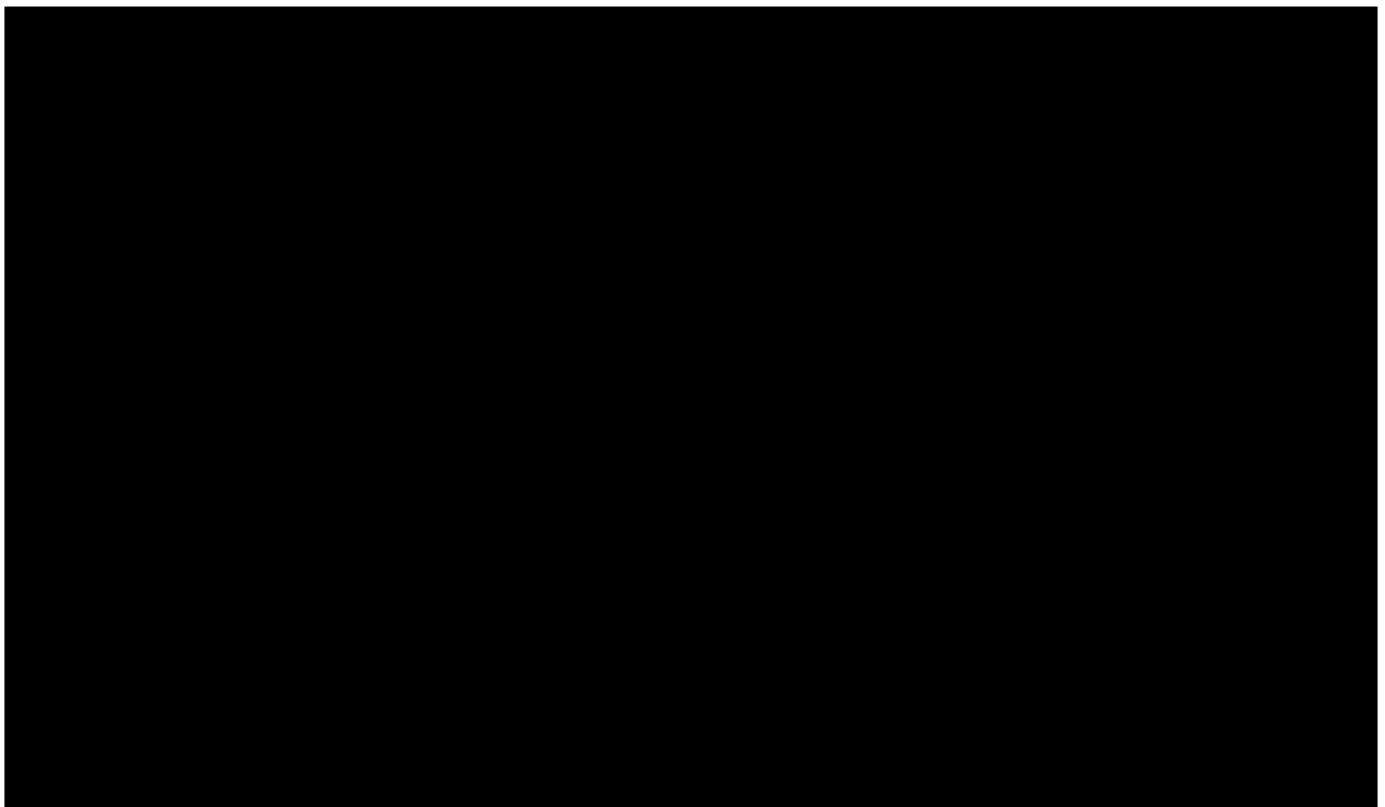
- 11 banks and shoals
- 7 coral reefs
- Seagrass meadows
- 49 listed threatened species
- 75 listed migratory species that potentially use or pass through the EMBA
- 135 listed marine species (which includes 30 whales and other cetaceans)
- Biologically important areas (BIA) for cetaceans, dugongs, dolphins, whale shark, sawfish, avifauna and turtles
- 3 Commonwealth and 3 State managed fisheries

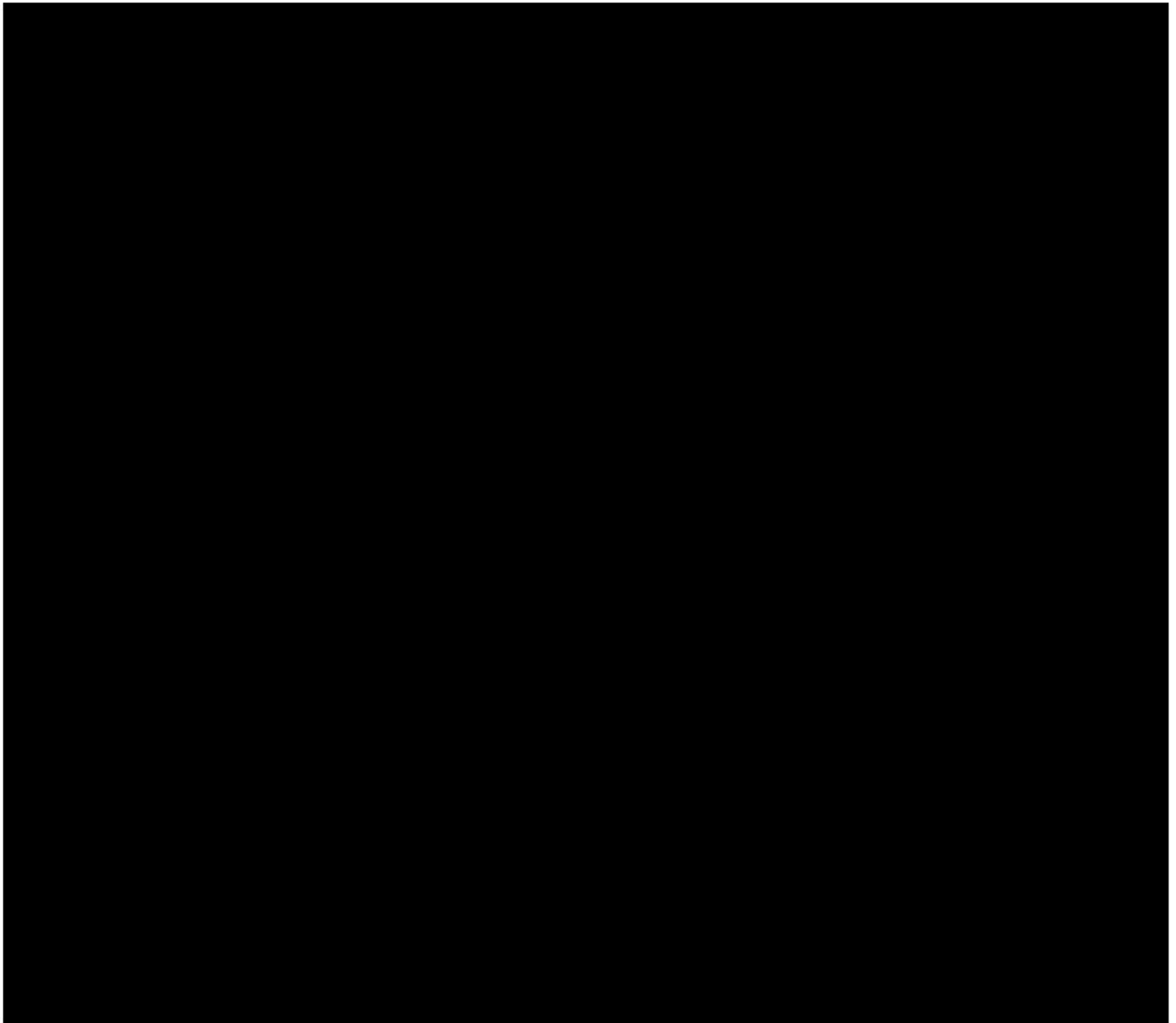
Values and sensitivities identified within the immediate operational area include:

- 3 Commonwealth and 3 State managed fisheries
- A number of threatened species or migratory species, including marine mammals, marine turtles, fish and sharks and marine avifauna (also identified as occurring within the spill EMBA).

Compliance History

Previous assessments, inspections, environmental performance reports or active issues for the INPEX Ichthys Project Offshore Facility (Operations) activity include:

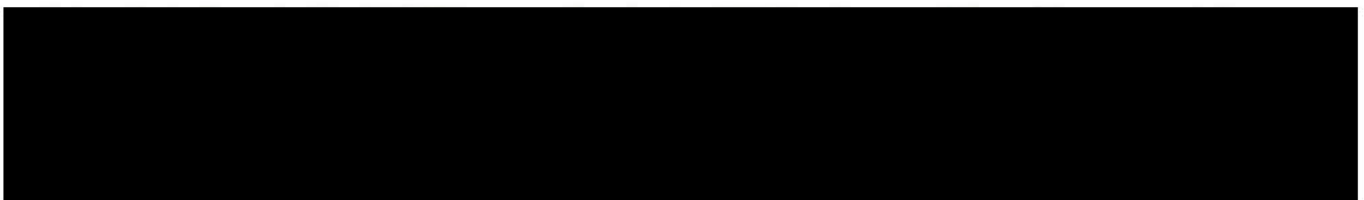




- Monitoring of emissions and discharges - Flaring Emissions – 2 x Recommendations issued.



INPEX's responses/actions to recommendations issued for Inspection 1960 have been received by NOPSEMA. The actions are currently being reviewed. Several recommendation actions from previous topic scopes are required to be closed. This is considered to be a priority given the strategy imposed by NOPSEMA-ELT for conducting biannual inspections of the INPEX facility over a 2-year cycle.



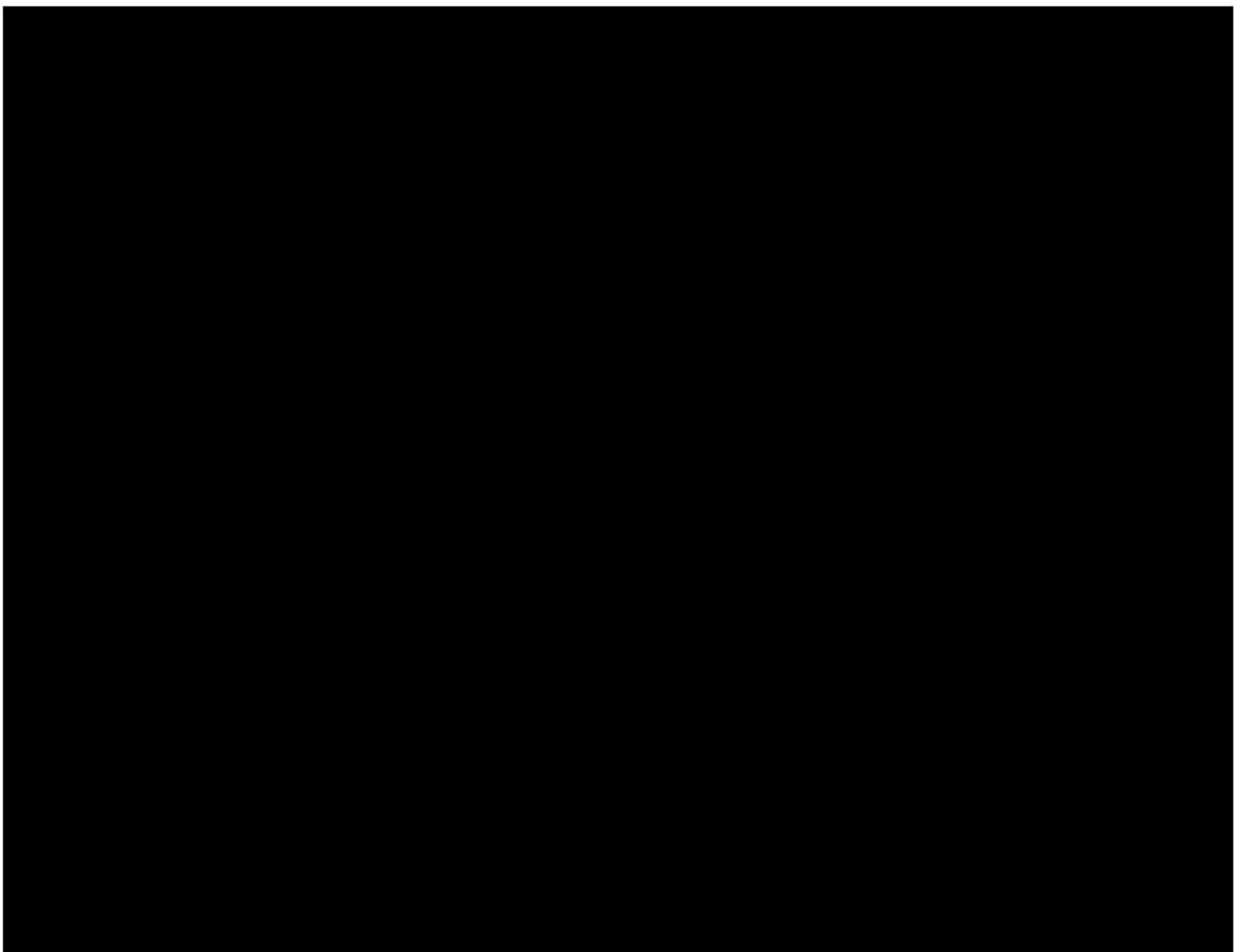


Major Investigations - No major 'environmental' investigations have been previously undertaken.

Notifications

Notification ID: 5997 - Information provided to NOPSEMA: Light Pollution Map.

A discussion was held with [REDACTED] (18 June 2019) regarding the potential for light emissions to impact on marine fauna such as turtles and seabirds from flaring emissions noticeable from the FPSO and CPF. The information provided to NOPSEMA was intended to promote the availability of monitoring tools such as the 'Light Pollution Map'. The conclusion recommended ongoing inspections on a biannual basis to ensure all systems, practices and procedures associated with flaring are being implemented as required by the accepted EP.



Justification for inspection scope:

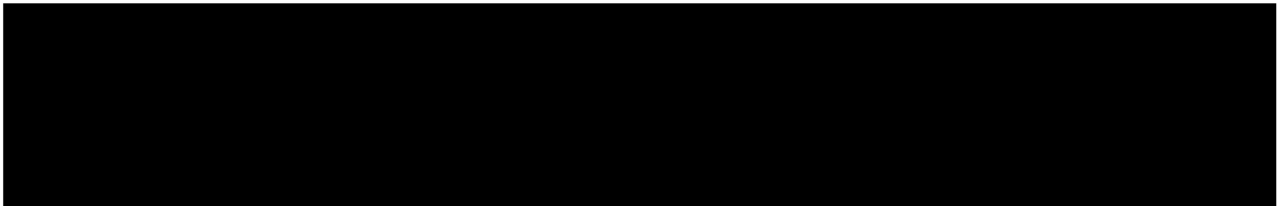
Based on the information above, the following topics are proposed for the inspection:



1. Verification of commitments regarding the recommendations from previous inspections and audits.

Noting several recommendations are presently being actioned in accordance with a multi-phased management plan, the following scopes will be inspected to both secure compliance against the accepted environment plan, and facilitate intelligence gathering for future inspection programming:

- Flaring emissions and emission reduction technology commissioning (FPSO and CPF) – progress tracking;



The present inspection will aim to address all outstanding recommendations and actions to complete the 2-year 'focal' cycle endorsed by NOPSEMA-ELT. Based on this inspection, advice and a recommendation will be provided to the RoN (and subsequently to the inspection programming team) for a revised frequency of inspection.

Timing and location:

- The inspection is proposed to be conducted onshore at the INPEX Perth based office on 29-30 March 2021).
- INPEX have advised that documents and personnel relevant to the inspection will be available at both locations.
- Two (2) inspectors [REDACTED] will resource the inspection.

IMPORTANT NOTE: REVISED INSPECTION BRIEF No. 1 (MOC location 25-26 March 2020)

Variation to timing and location (as of 9 March 2020)

NOPSEMA recently contacted INPEX (along with all other titleholders) regarding operator preparedness for the management of 'offshore' risks associated with novel Coronavirus (COVID-19). As a risk-based regulator, NOPSEMA is increasing its inspection focus on operator preparedness for COVID-19. In light of concerns regarding the spread of COVID-19, NOPSEMA inspectors will be undertaking offshore inspections only where necessary, e.g. major accident, near miss or spill risk/incident.

The scope for this planned inspection of the 'Ichthys Project Offshore Facility (Operation) – FPSO' does not meet the criteria, and hence the offshore component will not be proceeding. The inspection brief has been revised to include an onshore component only between 25-26 March 2020.

An additional scope has been included in the absence of an offshore component. In keeping with the Minister's expectations requiring NOPSEMA to give heightened focus to oversight of titleholder compliance with obligations under section 572 of the OPGGS Act, intelligence gathering regarding the current status for decommissioning of the long-term activity will be undertaken, as follows:



Item 2: Decommissioning - Systems in place to ensure property in the title area is maintained in good condition and repair, and plans are made for the removal of property that is not in use, in accordance with OPGGSA s572.

IMPORTANT NOTE: REVISED INSPECTION BRIEF No. 2 (MOC timing to 29-30 March 2021)

Deferral of inspection timing due to ongoing Level 2 Investigation: Following receipt of an event notification from INPEX [NTF10237, 2 December 2020], an investigation was commenced by [REDACTED]

[REDACTED]

The investigation continued on 9 December 2020 at the regulated business premises of INPEX by NOPSEMA Inspectors [REDACTED] and [REDACTED]. Representatives for INPEX included [REDACTED], [REDACTED], [REDACTED] and [REDACTED].

[REDACTED]

Under clause 13(5) of Schedule 2A of the OPGGS Act 2006, INPEX Operations Australia Pty Ltd is requested to provide NOPSEMA with details of a remedial action plan with respect to the findings and 2 conclusions from the investigation report (A771666, issued on 26/02/2021).

[REDACTED]



INPEX are required to provide details of the proposed remedial action plan to NOPSEMA by 15 March 2021. As such, follow up of the remedial actions is considered to be of higher priority than the previously intended 'Decommissioning' topic scope.

Item 2: Follow up on remedial actions as specified in the Letter of Warning (RMS ID: 816; dated 26 February 2021). Relevant documents include:

Proposed Inspection – Q1, 2020

The inspection program has been finalised to reinstate the previously planned inspection (i.e. 29-30 March, 2021).

For final inspection brief, please refer to: https://rms/inspections/2109/scope_items