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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Polymer in HyJet IV-A Plus and HyJet V

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment and Heritage.

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**Director
NICNAS**

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FULL PUBLIC REPORT**Polymer in HyJet IV-A Plus and HyJet V****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Mobil Oil Australia Pty Ltd (ABN: 88 004 052 984)

12 Riverside Quay

South Bank VIC 3006

NOTIFICATION CATEGORY

Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Manufacture/Import Volume, and concentration in end use products.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Not known

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

HyJet IV-A Plus

HyJet V

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10000

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa
Glass Transition Temp

Clear colourless gel-like material
 -127.2 °C (initial glass transition temperature from Differential Scanning Calorimetry heating curve)

Density
Water Solubility

960 kg/m³ at 25°C
 Negligible based on the polymer containing almost all hydrophobic groups.

Dissociation Constant
Reactivity

Not applicable.
 Expected to be stable under ambient conditions but contains functional groups which may undergo hydrolysis under extreme pH and temperature conditions.

Degradation Products

Under normal conditions of use in hydraulic system equipment (such as pumps, servovalves, actuators, etc) the notified polymer may degrade to simpler organic molecules over time.

5. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	< 4	< 4	< 4	< 4	< 4

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be imported as a component of aviation hydraulic fluids (finished products) at concentrations of <15%. It will be imported into Melbourne in sealed steel containers of the following sizes: 0.95L, 3.8L, 18.9L, and 208.2L. It will be transported by road and/or rail to a storage warehouse.

Reformulation/manufacture processes

No manufacture or reformulation will occur in Australia.

Use

The notified polymer will be used for industrial purposes only as a viscosity index improver in aviation hydraulic fluids.

During end use, the finished product containing the notified polymer will be transferred from the import containers to the aircraft hydraulic system reservoir. From 0.95L cans, oil may be withdrawn by piercing the can, or by using a special dispensing unit. From 3.8L cans, the cap would be opened and then the oil pumped through a hose to the fill connection of the aircraft hydraulic system reservoir. For some aircraft, oil may be poured into an auxiliary reservoir and then later transferred by a pump and hard piping to the main reservoir. Alternatively, 18.9L cans or drums may be transferred to a dispensing unit or hydraulic cart that will be used to fill the main reservoir through a hose connection.

Any oil drainage from the system will be through hosing into a dedicated waste container.

Maintenance operations such as repair or replacement of hydraulic parts would involve isolation of the part from the oil flow, and then drainage of the oil either locally or through a hose connection.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Transport workers may be exposed to the notified polymer in the unlikely event of a spill or leakage during transit.

Dermal, ocular and possibly inhalation exposure of workers to the notified polymer may occur due to residues, spills, and splashes when opening the import containers, transferring to the aircraft, connecting and disconnecting lines and hoses, and handling of aircraft hydraulic system parts that may contain small amounts of the notified polymer (for example, during maintenance operations). Exposure should be mitigated by performing all work involving the notified polymer in well ventilated areas, and the wearing of personal protective equipment, including gloves and eye protection.

PUBLIC EXPOSURE

The notified polymer is intended only for use in industry and as such, public exposure to the notified polymer is only expected in the unlikely event of an accidental spillage during transport.

6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

Although exposure to the notified polymer could occur during end use of the notified polymer in aircraft hydraulic systems and maintenance of aircraft hydraulic systems, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer.

PUBLIC HEALTH

The public will only be exposed to the notified polymer in the unlikely event of a transport accident. Where exposure occurs, the low hazard of the polymer translates to low risk. Therefore, the risk to the public from exposure to the notified polymer is considered to be negligible.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

No manufacture or reformulation will occur in Australia. The notified polymer will only be used by trained personnel in closed loop systems. It is expected that less than 3% (< 120 kg per annum) will remain in import containers. This will be sent to drum recyclers and is likely to be disposed of by incineration. Given the specialised use, all of the used hydraulic fluid is expected to be collected for proper disposal.

ENVIRONMENTAL FATE

Used hydraulic fluid may be re-refined, used as low grade burner oil, or disposed of by incineration. It is expected to be combusted to form oxides of carbon and water vapour or be re-refined and converted to simpler organic molecules.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

7.3. Environmental Risk Assessment

The polymer is a PLC without significant ionic functionality and is unlikely to be hazardous to the aquatic environment. It is also expected that all of the polymer will be properly disposed of with no release to the aquatic environment. The notified polymer is therefore unlikely to pose an unacceptable risk to the aquatic environment.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

8.2. Level of Concern for Public Health

There is Negligible Concern to public health when used in the proposed manner.

8.3. Level of Concern for the Environment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

9. MATERIAL SAFETY DATA SHEET

9.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

10. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

Disposal

- The notified polymer should be disposed of by authorised incineration.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical containment such as diking. Adsorb with inert material (diatomaceous earth, fire retardant treated saw dust, etc) and collect for disposal.

10.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under subsection 64(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

- (2) Under subsection 64(2) of the Act:
- if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.