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Iranian Oil Refineries: Damage Assessment

An Intelligence Assessment

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*ER 80-10570
October 1980*

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Iranian Oil Refineries: Damage Assessment (U)

An Intelligence Assessment

*Information available as of 15 October 1980 has been used
in the preparation of this report.*

This assessment was prepared jointly by the Offices
of Economic Research and Imagery Analysis.
Comments and queries are welcome and should be



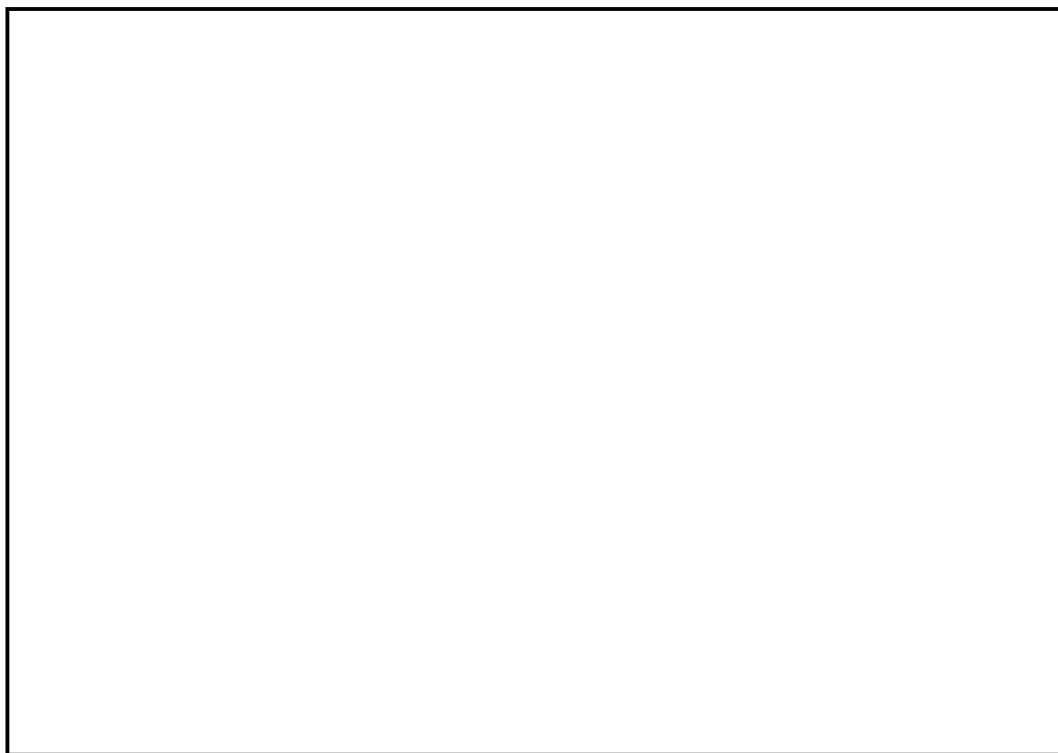
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**Iranian Oil Refineries:
Damage Assessment (U)**

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Key Judgments



It is not clear whether Iran is still supplying limited volumes of crude from the oilfields to its remaining refineries or is operating these refineries exclusively on crude stocks. The major oilfields that normally supply the Tehran and Esfahan refineries—Ahwaz and Marun—are apparently shut in. Three of the five gas-oil separation plants (GOSPs) at Ahwaz and four of the five GOSPs at Marun were photographed in recent days; none were operating, even though no damage to the facilities was apparent. Iran probably has shut down the GOSPs as a precaution because damage to a drained and depressurized GOSP would probably be considerably less than would be inflicted on an operating unit.

Iran has only limited supplies of crude remaining at the refineries. At Esfahan, for example, an estimated [redacted] crude oil were on hand on 15 October, and crude storage was being drawn down at a rate of 100,000 b/d. Given minimum crude inventory working levels, the refinery probably could continue operations for less than two weeks. [redacted]

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The hydrocracking units at the Rey refinery in Tehran and the Esfahan refinery are not operational because of technical factors unrelated to the war. These secondary processing units enable the refineries to produce a higher proportion of light products such as kerosene, diesel, and gasoline. Without these facilities, as much as 40 percent of the product yield at Rey and Esfahan may be residual (heavy) fuel oil, a high proportion inconsistent with Iran's current product requirements.

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Iranian Oil Refineries: Damage Assessment (U)

The Refining Network

Iran's largest refinery is Abadan. The refinery had a prewar capacity of 610,000 b/d—52 percent of Iran's total refining capacity. In late summer, of total Iranian production of 960,000 b/d, Abadan was refining almost 600,000 b/d. The refinery's light product output (gasoline, kerosene, and distillate fuel oil) are domestically consumed, while most of its heavy products (200,000 b/d to 240,000 b/d) are exported. Refined products are distributed to Tehran and other northern cities through the Trans-Iranian Pipeline system,¹ while product for export is mainly delivered to the port at Bandar Mahshahr.

The Tehran refinery, with a capacity of 225,000 b/d, is Iran's second largest. The refinery is located at Rey, 15 kilometers south of downtown Tehran. The Rey refinery can be supplied with crude from the oilfields in southwestern Iran through either of two pipeline systems—the Trans-Iranian Pipeline through Ahvaz and Dezful, or a relatively new line through Esfahan originating at the Marun oilfield.

The Esfahan refinery was commissioned earlier this year with an initial refining capacity of 100,000 b/d, which Tehran claims to have increased to 200,000 b/d by starting up a second processing train in late September. The refinery was built by a Fluor-Thyssen joint venture, which has turned the refinery over to the Iranians. A new pipeline with a capacity of 550,000 b/d was built from the Marun oilfield to supply crude to Esfahan. A 24-inch crude line and an 18-inch product line run from Esfahan to Tehran. If the pipeline from Marun were shut down, the crude line could be reversed to deliver crude or products from Tehran to Esfahan. Both the Rey and Esfahan refineries have the capability to produce jet fuel, although the volume is partially dependent upon the performance of the refineries' hydrocracking units, which have not been operating recently.

¹ The Trans-Iranian pipeline system includes both crude and product pipelines that run from Ahvaz to Tehran.

Iran has three smaller refineries—at Tabriz, Shiraz, and Kermanshah—which serve largely localized needs. The Tabriz refinery, with a capacity of 80,000 b/d, is located in strategic Azarbaijan Province in extreme northwestern Iran. Some of the refinery's output normally is used to support overland transportation through the province from Turkey and the USSR. The Tabriz refinery is supplied by a crude pipeline from Tehran, which formerly served as a product pipeline.

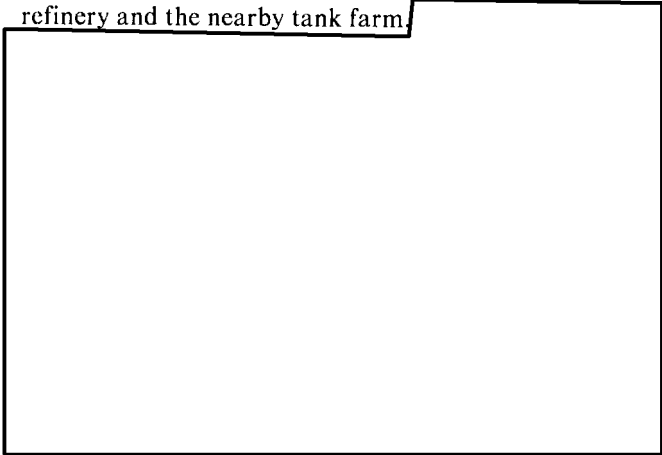
The Shiraz refinery has a capacity of only 40,000 b/d. It is served by a crude pipeline from the Gachsaran oilfield. The small Kermanshah refinery (capacity 20,000 b/d) is located north of Abadan, 50 kilometers from the Iraqi border. It is fed by pipeline from a small oilfield, Naft-e-Shah, that straddles the Iraqi border and has been overrun by the Iraqis.

In the past, Iran has imported small quantities of refined products through Abadan and Bandar Mahshahr to supplement its domestic production. The import system, however, is not designed to accommodate large quantities of refined products.

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Damage Assessment

Abadan. Repeated Iraqi artillery shellings and possibly some airstrikes have resulted in numerous oil spills and fires at storage tanks and pipelines at the Abadan refinery and the nearby tank farm.



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The Iraqis claim to have inflicted some damage at Esfahan on 14 October.

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Repairs to pipelines and some support equipment will be required and preliminary tests would have to be conducted before processing equipment can be brought back into operation. Also, the immediate postwar throughput of the refinery would be significantly limited because of the number of storage tanks that have been damaged or destroyed.

Iran claims to be processing up to 215,000 b/d at the Esfahan refinery

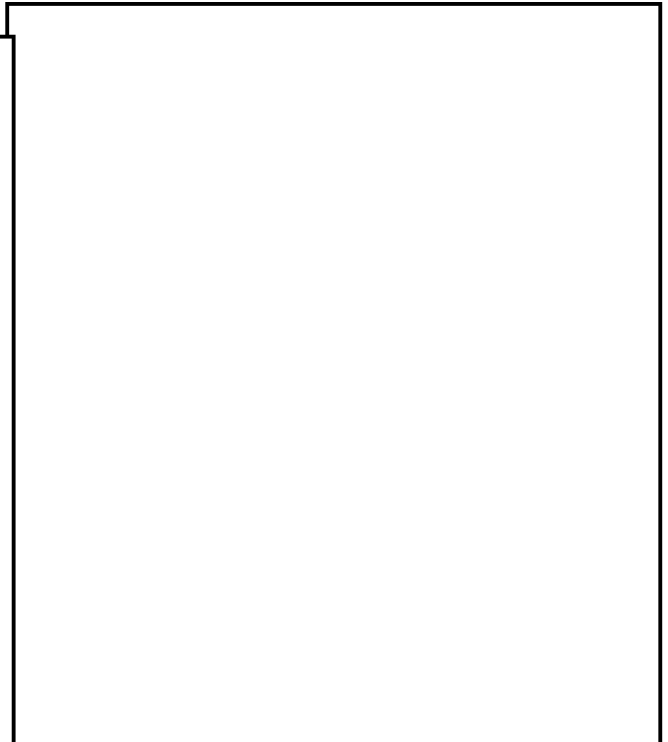


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The Abadan refining complex and the nearby Bawarda product tank farm are the largest product storage areas in Iran. The combined capacity of 35 million barrels at the two facilities accounts for about 45 percent of the country's total storage capacity.

The processing at Esfahan reportedly is confined to primary crude distillation, which would yield a higher than desired proportion of heavy fuel oil. As of late September, Esfahan was producing some jet fuel.

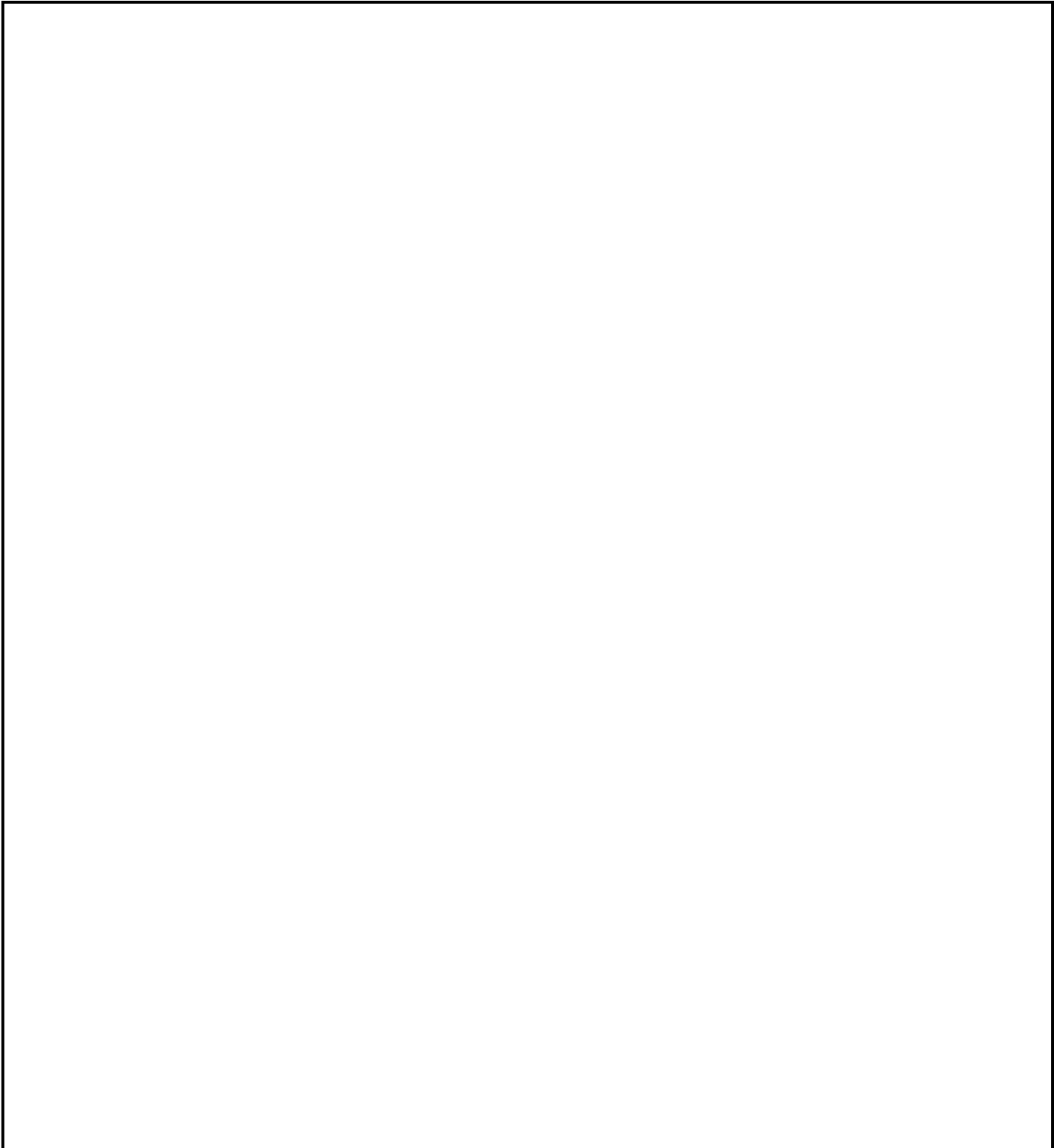
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Appendix

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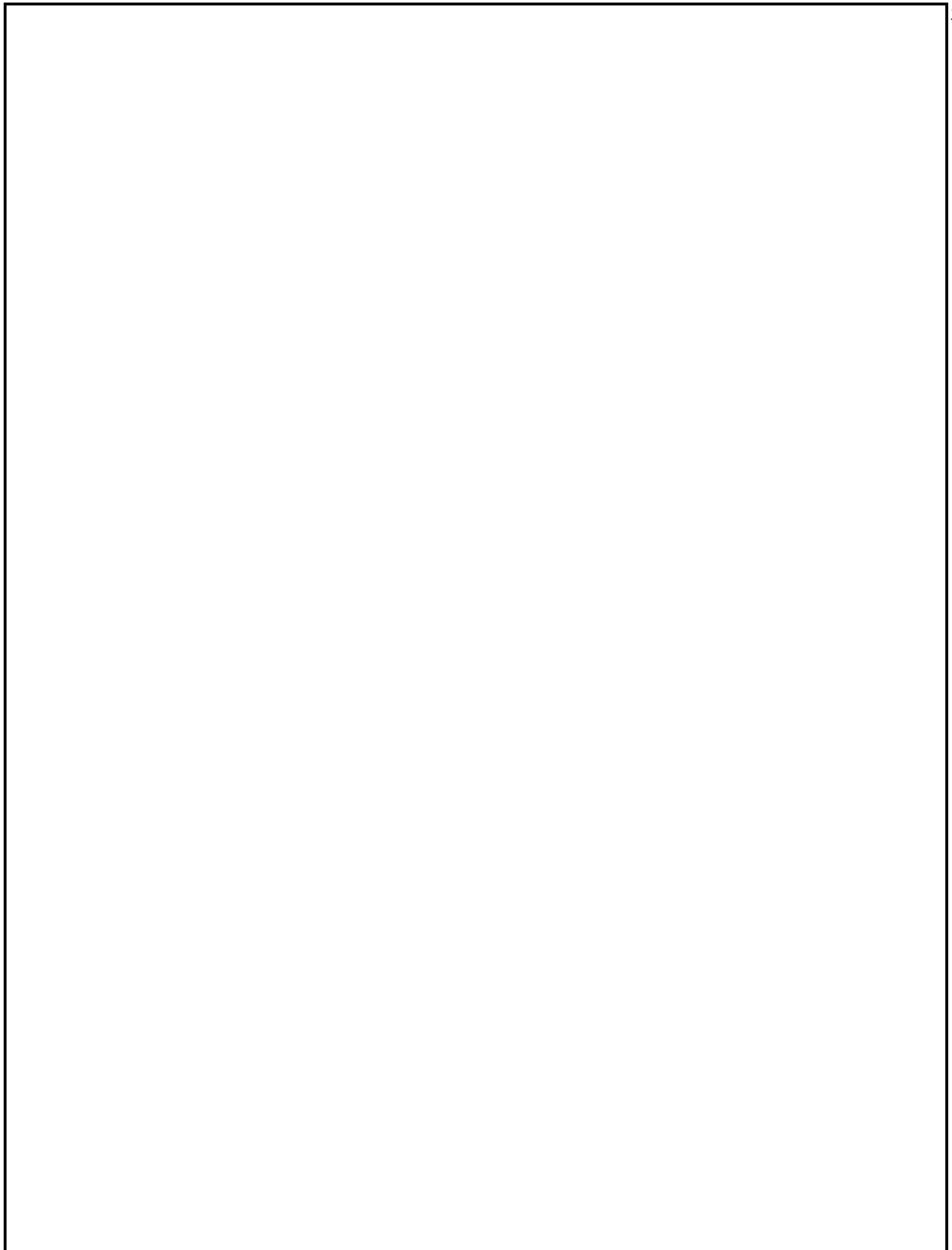


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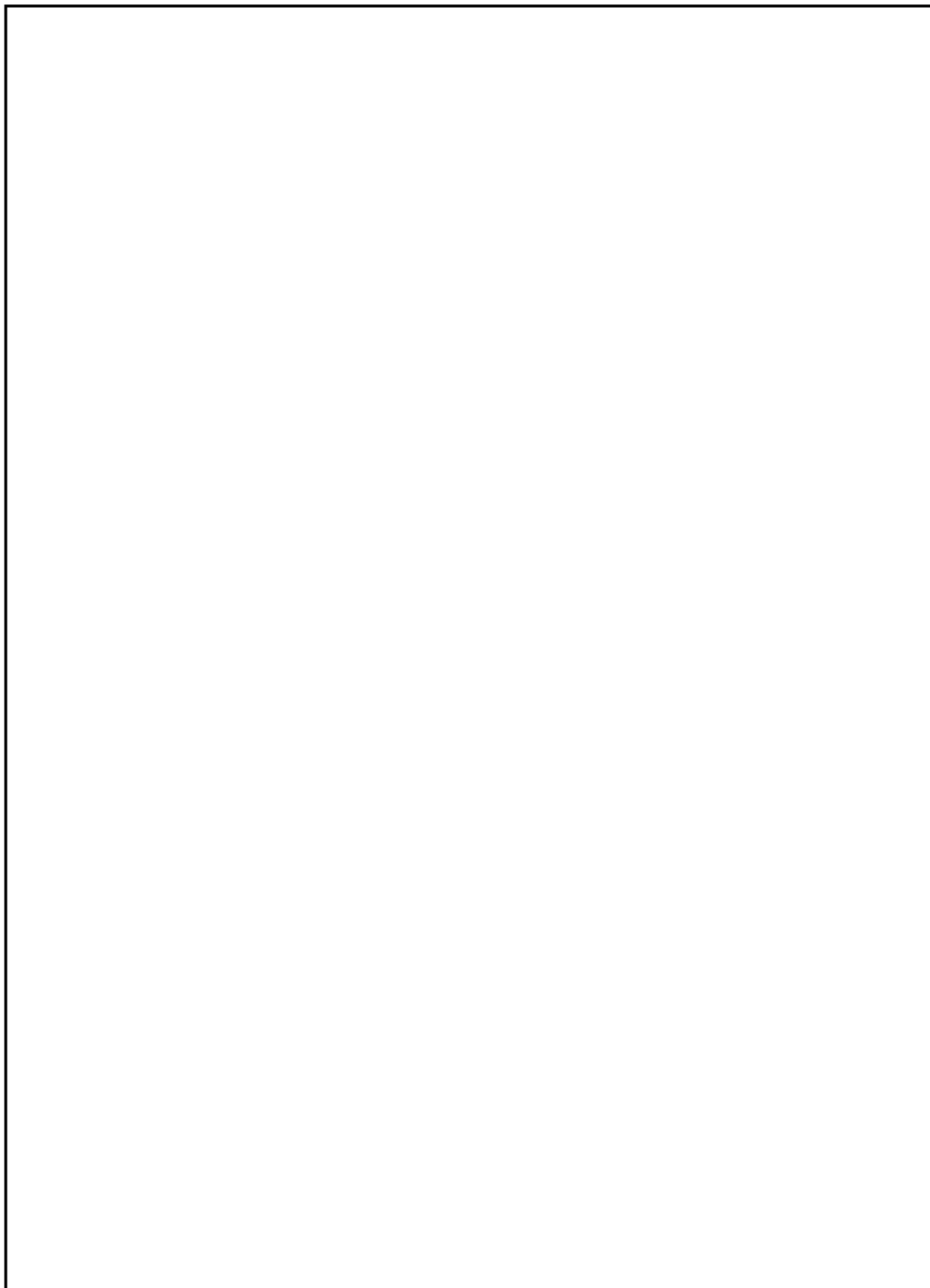
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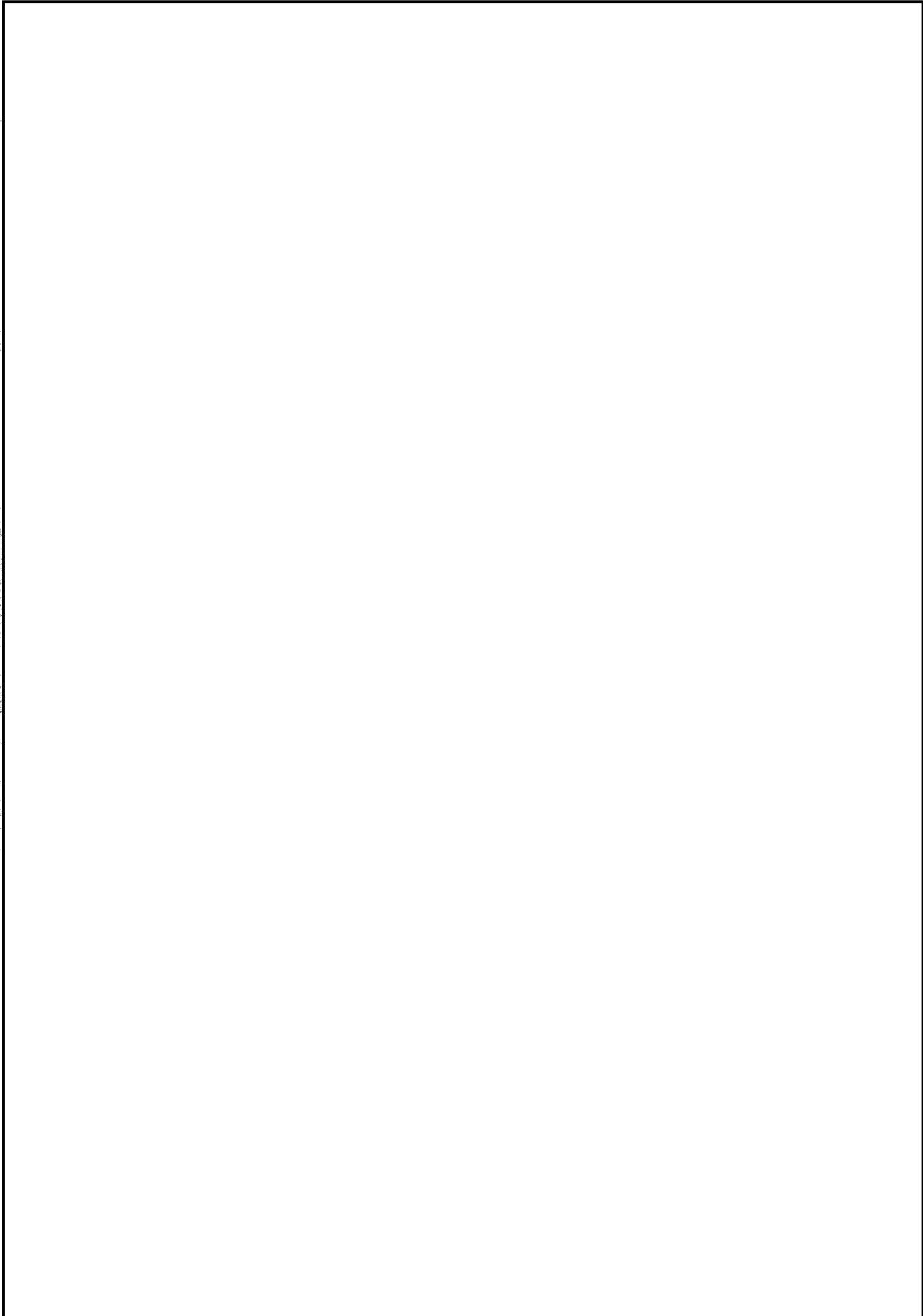


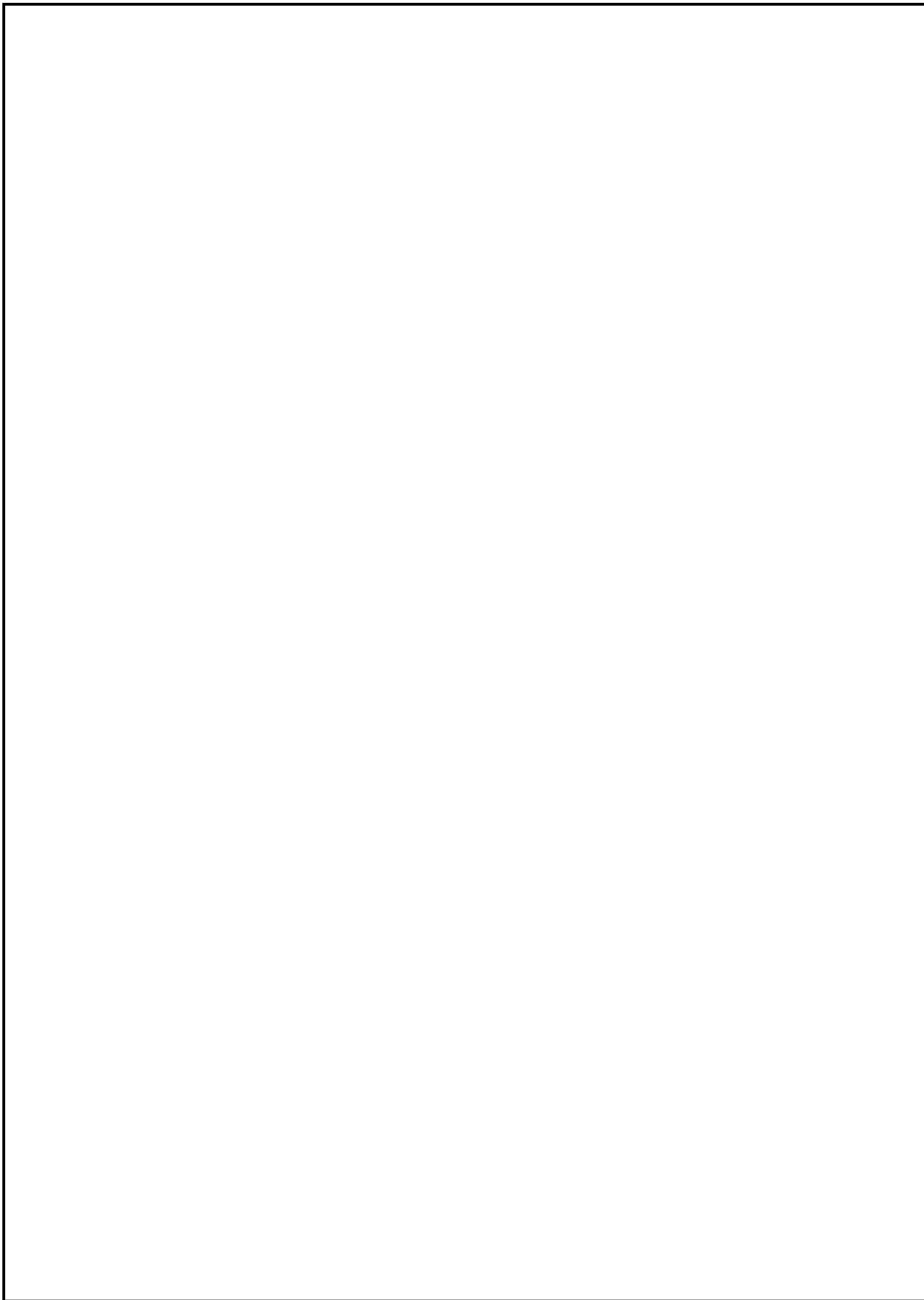
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