A Development Study to Evaluate a Full-Face Mask for the Treatment of Obstructive Sleep Apnea

NCT03726346

DATE: 12 October 2018

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Fisher & Paykel HEALTHCARE

Clinical Investigation Plan

Document No.	Rev	Document Title (must be the same as Database/ hardcopy)	Category-Folder	...lder No.	Folder Tab ...section (S)
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Review and Approval

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1. Revision History

Revision	[redacted]	Date	[redacted]
A		12 October 2018	

1.1. List of Abbreviations

AE	Adverse Event
AHI	Apnea Hypopnea Index
APAP	Automatic Positive Airway Pressure
Bi-level PAP	Bi-level Positive Airway Pressure
CIA	Clinical Investigation Administration
CIP	Clinical Investigation Plan
CPAP	Continuous Positive Airway Pressure
CRF	Case Report Form
FPH	Fisher & Paykel Healthcare
GCP	Good Clinical Practice
HA	Hazard Analysis
IB	Investigators Brochure
ICF	Informed Consent Form
ICH	International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use
OSA	Obstructive Sleep Apnea
PAP	Positive Airway Pressure
PDS	Pulmonary Disease Specialists
SAE	Serious Adverse Event
UI	User Instructions

2. Document Information

2.1. Purpose and Scope

The purpose of the trial is to evaluate the performance, comfort and ease of use of the F&P full face mask in the home environment.

[redacted]

2.2. Confidentiality Statement

This document contains confidential information belonging to Fisher & Paykel Healthcare and is provided for the sole purpose of enabling an evaluation of a possible collaboration with Fisher & Paykel Healthcare to undertake the proposed clinical research. This document must be maintained in a confidential manner at all times and any disclosure, distribution or reproduction of this document outside the intended purpose is prohibited.

[redacted]

2.4. Monitoring Arrangements

FPH will be conducting the study, and as such the investigators or their nominees will monitor the progress of the investigation. The Principal Investigator will have access to all source documents needed to verify the entries to the Case Report Form (CRF) and other protocol related documents; provided that participant confidentiality is maintained in agreement with local regulations it will be the principal investigator's responsibility to inspect the CRF at regular intervals throughout the investigation, to verify the adherence to protocol and the completeness, consistency and accuracy of the data being entered on them.

The investigator's file will contain the protocol/amendments, financial agreement, CRFs and data clarification and query forms, independent Review Board (IRB) approval with correspondence, informed consent, staff curriculum vitae and authorization forms, screening and enrolment logs, and other appropriate documents/correspondence as per International Conference on Harmonization (ICH) and Good Clinical Practice (GCP) and local regulations.

2.5. Data Management

Data obtained for this investigation will be stored in the controlled document system and electronically on secure servers, which are only accessible by Clinical Research staff and those persons identified on the delegation of authority. Any data which is not kept in this secure manner will be de-identified in accordance with HIPPA protocols. Data obtained for this investigation will be recorded in source documents and attached to the CRF for both the administration of the study and collection of participant data.

Original CRFs will be stored for 15 years by FPH. Copies of the CRF will be stored on site Pulmonary Disease Specialists (PDS) for 15 years.

3. Investigator Information

3.1. Primary Investigator

Name: Thomas O'Brien

Address: 1121 North Central Ave, Suite B. Kissimmee, Fl. 34741

Email: pi@PDS-CFSC.Com

Phone: (407) 933-1221

Professional Position: Medical Director

3.2. Coordinating Investigators

Name: Corné Brink

[redacted]

[redacted]

Professional Position: Clinical Research Associate

Name: Catherine Goodwin

Address: 1121 North Central Ave, Suite B. Kissimmee, Fl. 34741

Email: CGoodwin@PDS-CFSC.com

Phone: 407 624 4831

Professional Position: Research Site Director

[redacted]

3.3. Institution

Name: Pulmonary Disease Specialists (PDS)

Address: 1121 North Central Ave, Suite B. Kissimmee, Fl. 34741

Email: CGoodwin@PDS-CFSC.com

Phone: (407) 933-1221

Country of residence: United States

4. Sponsor Information

4.1. Primary Sponsor Details

Name of Business: Fisher & Paykel Healthcare Limited

Address: 15 Maurice Paykel Place, East Tamaki, Auckland, New Zealand.

Name of Sponsor contact person: Hanie Yee

Phone: +64 9 5740123 Ext 7909

Email: Hanie.Yee@fphcare.co.nz

Profession: Clinical Research Manager

Country of residence : New Zealand

[redacted]

4.2. Overseas Representative

[redacted]

5. Device Information

5.1. Identification of the Medical Device

The F&P Full face toffee mask is a Full face mask primarily used in sleep laboratories and in home use for the treatment of OSA using CPAP device.

5.2. Device Risk Analysis and Management

Positive airway pressure (PAP) therapy via a nasal or oro-nasal mask is standard clinical practice for participants with OSA. The risks associated with this treatment are limited to the potential for slight discomfort associated with the use of a oro-nasal mask during sleep.

[redacted]

6. Justification for a Clinical Trial

6.1. Synopsis

The investigation is a prospective, non-randomized, non-blinded, study. The investigation is designed to evaluate the performance, comfort and ease of use of the F&P Toffee Full Face mask amongst OSA participants. Up to 45 OSA participants who currently use a full face CPAP mask will be recruited.

The Institution will recruit all participants within two weeks of the beginning of the study .This study will involve a baseline visit (Visit 1) where the investigator will obtain participants informed consent for the [redacted] and the Anthropometric 3D Scanning study [redacted] Participant's demographics and prescribed PAP therapy treatment settings and mask details will be gathered using the participants questionnaire (Appendix B). [redacted] device will be issued to the participant during this visit (if required) Visit 2 will take place 7 ± 4 days after Visit 1. At this visit participants will be fitted with the [redacted] mask as well as being asked questions in the form of a structured questionnaire. Participants initial impressions, comments and photographs will be captured via recorded audio and video (both with their consent).

[redacted]

Visit 3 will take place 14 ± 4 days after Visit 2. The participants will come in for a final visit to return the trial mask and provide their feedback in the form of verbal comments and a structured questionnaire. Photographs will be captured as well as audio and video recorded during this visit.

The mask and CPAP (if from the research pool) will be returned to the Institution at the conclusion of the trial and the participant will return to their previous mask and mode of device treatment.

This study will be conducted in accordance with ICH/GCP guidelines. No deviation from the protocol will be implanted without prior review and approval of the sponsor except where it may be necessary to eliminate an immediate hazard to a research participant. In such case, the deviation will be reported to the sponsor as soon as possible. In this trial the sponsor and the investigator are the same company however the sponsor will not be the investigator. To ensure roles are clearly defined and kept independent there will be a delegation of authority log to clearly delineate each individuals tasks.

6.2. Literature Review

Obstructive Sleep Apnea (OSA) is a common sleep breathing disorder effecting around 3-7% of men and 2-5% of women in the general population[1] and is characterized by periodic collapse of the upper airway during sleep. The standard treatment for obstructive sleep apnea is nasal continuous positive airway pressure (CPAP), which consists of pressurized air applied to the nose via an interface. Despite the effectiveness of CPAP in abolishing upper airway obstruction, acceptance of and adherence with therapy has been sub-optimal[2]. Reasons for the low adherence include nocturnal awakenings, incorrect therapeutic pressure and primarily discomfort due to mask poor interface fit. Poor interface fit can result in facial abrasion, leak causing fluctuations in therapeutic pressure and irritation of the eyes [3,4].

6.3. Preclinical Testing

[redacted]

6.4. Previous Clinical Experience

[redacted]

6.5. Justification for Administration

Participants will remain on their prescribed PAP pressure throughout the duration of the trial. Participants will not be randomised to use the investigational mask in home for 14 ± 4 days.

Participants are required to use the investigational mask to provide subjective feedback in terms of comfort and acceptance to ensure advances in interfaces can be made.

[redacted]

7. Objectives of the Clinical Investigation

7.1. Hypothesis

[redacted]

7.2. Objectives

Primary objectives:

The purpose of this clinical investigation is to evaluate the performance, comfort and ease of use of the F&P Toffee full face mask in a home environment.

7.3. Population

Up to 45 participants will be recruited for the trial. These participants will be current full face mask users.

Participants will consist of male and female adults diagnosed with OSA who are using either APAP, CPAP or Bi-level with the following recruitment goals:

[redacted]

After identification, the co-ordinating investigator or contact persons from the institution (or those identified by delegation log) will contact potential participants and obtain informed consent from those participants to be enrolled.

7.4. Risks

[redacted]

[redacted]

7.5. Essential Requirements of the Relevant Directive

Essential requirements are not applicable since this study is being conducted in the USA only.

8. Clinical Investigation Design

8.1. Type of Investigation

This is an open-label (investigators and participants are un-blinded and informed of intended treatment device) single arm study. The F&P Toffee full face mask will provide effective treatment similar to the participant's usual CPAP mask. The intended treatment F&P Toffee full face mask will not be randomized- as the intention is not to compare between therapies.

8.2. Controls

No control group will be used in this study, as it is designed to test the performance and satisfaction of the F&P Toffee full face mask and inform product development.

8.3. Bias

The F&P mask is non-blinded and distinguishable. Since the trial mask is the same for the entire population, this study is not blinded.

8.4. End Points

8.4.1. Primary Endpoints

- The F&P mask is comfortable to use for the participant as measured by the custom questionnaires and recorded during the interviews.
- The F&P mask is easy to use, accepted by the participant and provides adequate treatment for OSA during in-home use, measured via participant feedback and PAP data download.
- The acceptability of the F&P mask through interview feedback/ questionnaires.

8.4.2. Secondary Endpoints

- To obtain 3D face scanning and head measurements to assist with future product development

8.5. Variables

Variable	Justification	Measurement
Ease of use/ Acceptability	To assess the ease of using the mask in the home and overall mask acceptability.	[redacted]
Mask performance	To assess the masks performance in relation to leak	

[redacted]

Mask Comfort	To assess the comfort (or lack of) of the mask as experienced by the participant while using it in-home.
General Demographics	To gather participants general demographics
Preference	To assess which mask the participants prefers to use going forward.
Anthropometric Scans	To assist with future product development

8.6. Measurements

[redacted]

[redacted]

[redacted]

8.8. Inclusion / Exclusion criteria

Inclusion Criteria:

- Adult (22+ years of age)
- Able to give informed consent
- AHI ≥5 on diagnostic night
- Either prescribed APAP, CPAP or Bi-level PAP for OSA
- Fluent in spoken and written English
- Existing Full Face mask user

Exclusion Criteria:

- Inability to give informed consent
- Participant intolerant to PAP
- Anatomical or physiological conditions making PAP therapy inappropriate
- Current diagnosis of respiratory disease or CO_2 retention
- Pregnant or may think they are pregnant.

8.9. Point of Enrolment

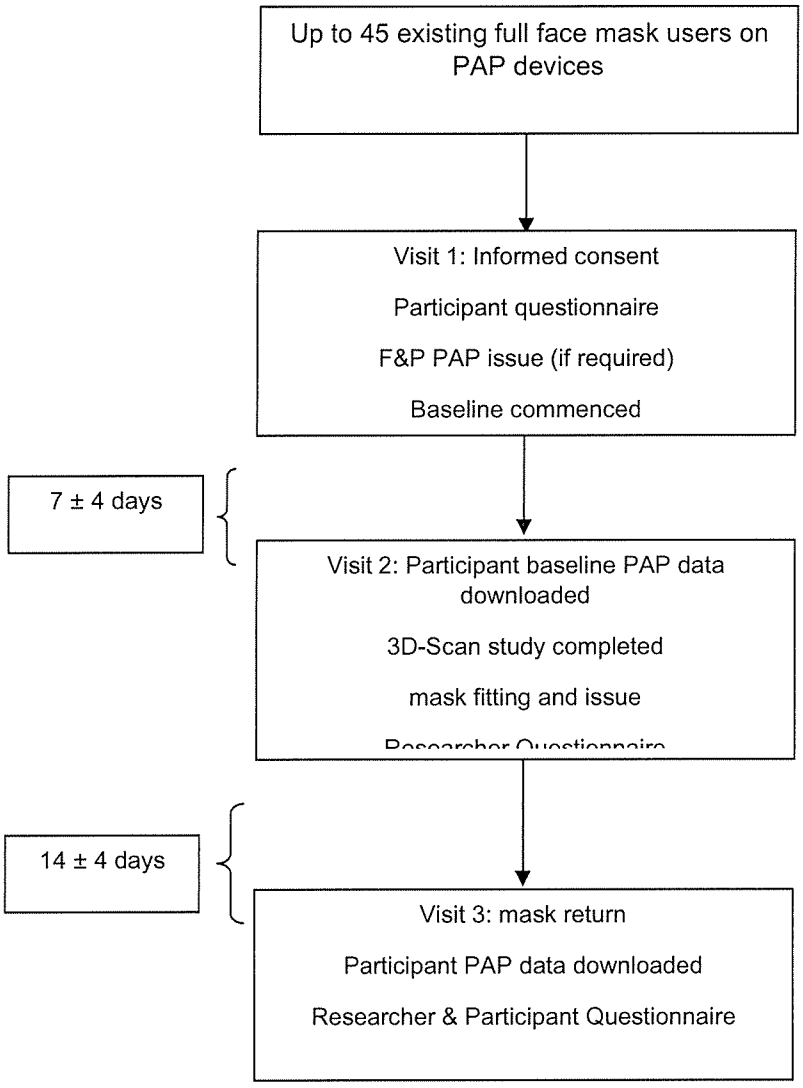
Participants will be recruited; who are prescribed either APAP, CPAP or Bi-level PAP for OSA at Pulmonary Disease Specialists (PDS). The principal investigator (or those identified in the delegation log) will ask the participants whether they are interested to take part in the trial. The participants who meet the inclusion/exclusion criteria and provide informed consent and will then be enrolled in to the trial. A recruitment script will be used when recruiting participants to the trial.

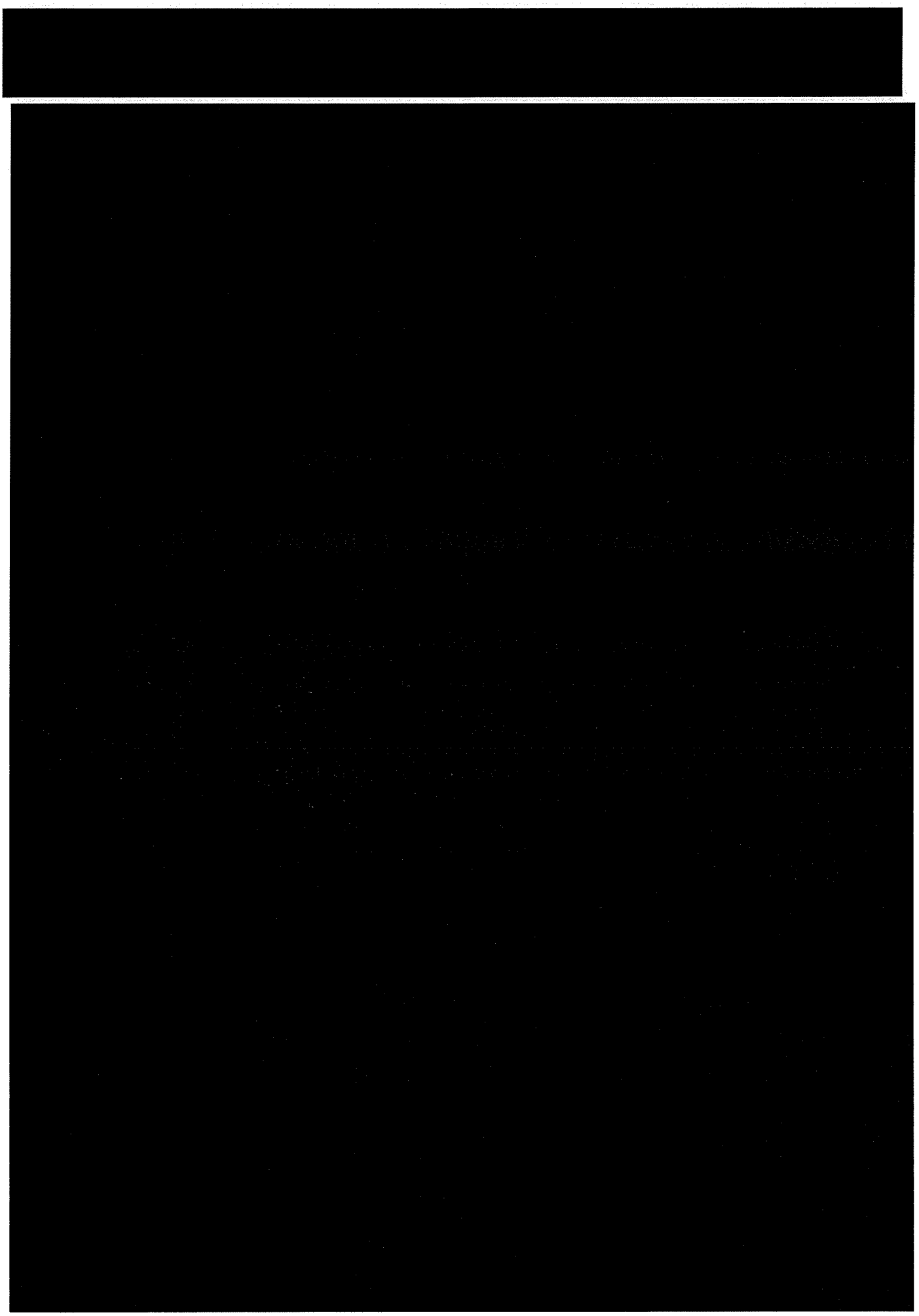
8.10. Patient Procedure

[redacted]

[redacted]

The study coordinator will ask the participants whether they are interested to take part in the trial. Only eligible participants, that provide written informed consent, will be enrolled into the investigation.





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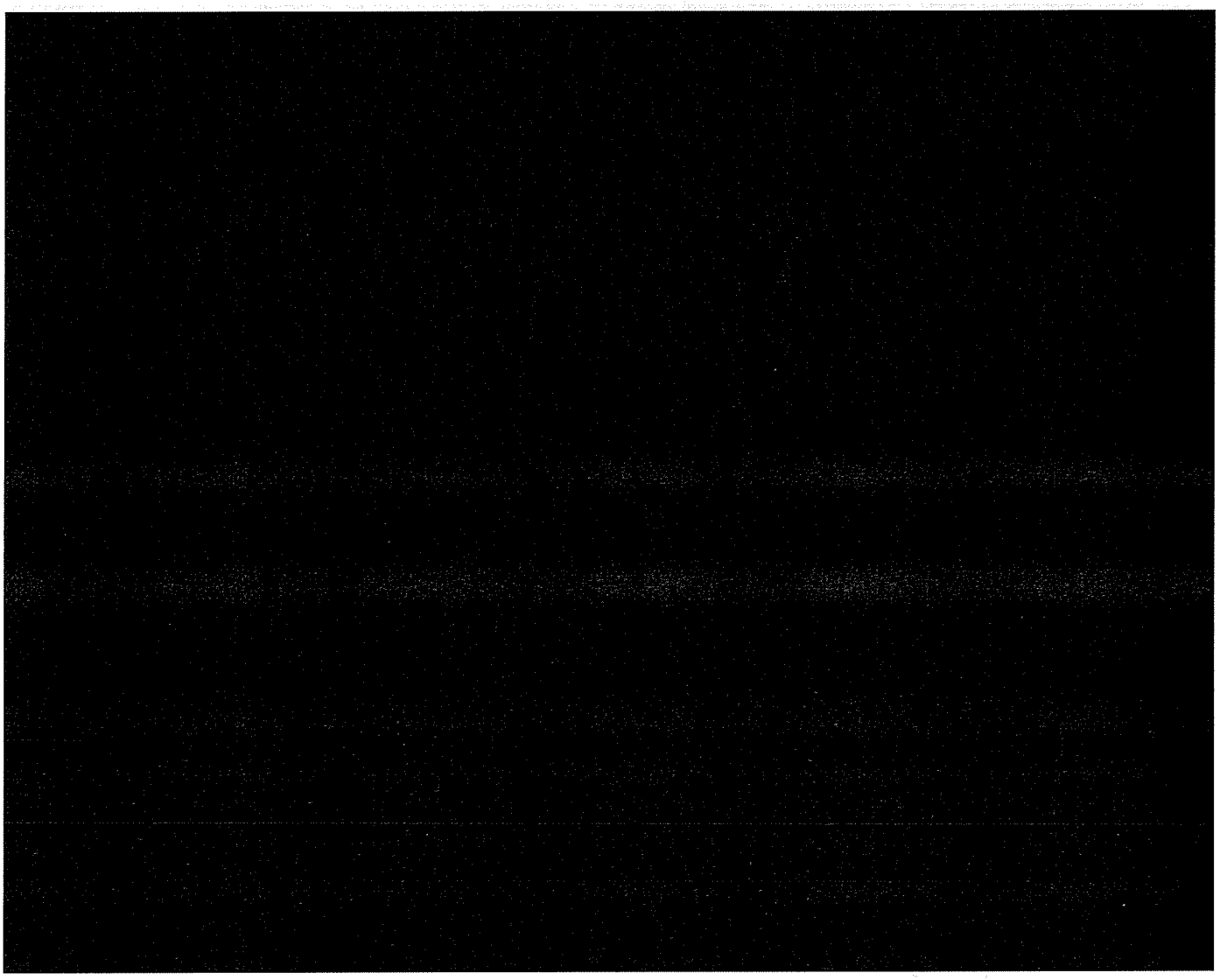

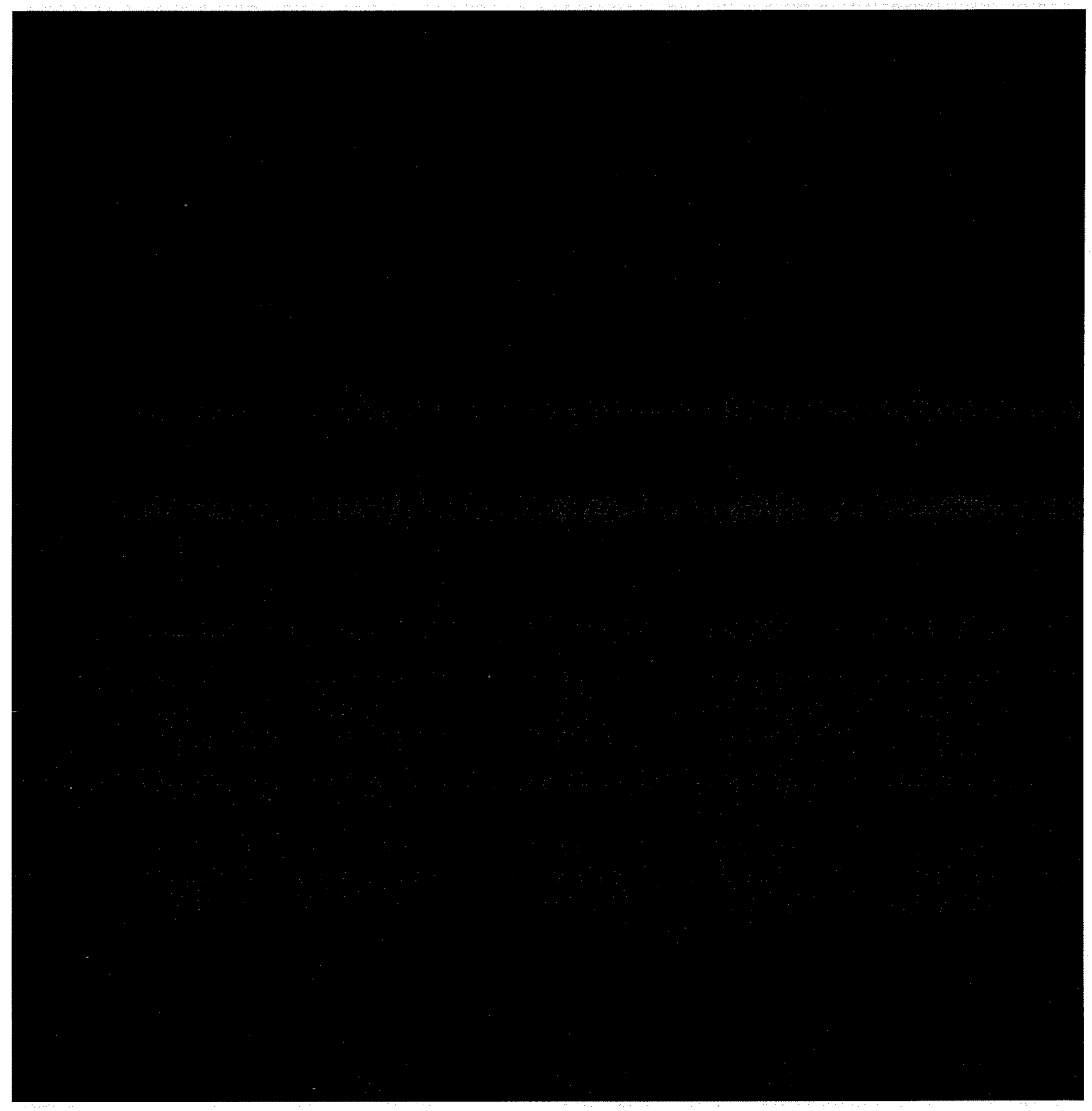

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8.11. Withdrawal Criteria

Participants will be informed that they have the right to withdraw from the study at any time, without prejudice to their medical care, and are not obliged to state their reasons. The participants is informed that they can revert back to their usual therapy during the clinical investigation if they have reason to do so. Additionally the investigator may withdraw a participant at any time for the following reasons:

- Protocol Violation
- Safety concerns
- Serious illness
- Adverse event

The reason for participant discontinuation in the study is to be recorded in the CRF and source document.

8.12. Number of Trial Participants

Up to 45 full face mask users for OSA therapy will be recruited in to this study.

8.13. Follow up Plan

Participants will receive standard care from their health care provider throughout and following the study.

[redacted]

9. Clinical Trial Documentation

[redacted]

[redacted]

[redacted]

STATISTICAL CONSIDERATIONS

9.5. Description of the Statistical Design

Since the trial is to inform product development, no statistical design is required.

9.6. Sample Size

From the 'Guidance for Industry and Food and Drug Administration Staff – Applying Human Factors and Usability Engineering to Optimize Medical Device Design' document issued on 3 February 2016, a number of 30 users will be sufficient to find a minimum of 97% of problems and on average can find 99% of all problems[6]. Additionally from previous experiences, a number of 30 users was not quite achieved when taking into account drop outs and no shows hence the recruitment drive for up to 45 participants has been set.

[redacted]

9.8. Statistical Termination

No interim analysis will be conducted as statistical outcomes will not change the conduct of the study.

9.9. Statistical Procedure Deviations

Statistical procedure deviations will be reported to the principal investigator and the sponsor. Deviations from the original statistical plan will be explained in the final study report.

9.10. Selection Criteria

All participants who consent, and are fitted with a mask that they attempt to sleep on will be included in the analysis. Please see section 8.10 for information on participant flow throughout the trial.

[redacted]

9.11. Statistical Data Management

Fisher and Paykel Healthcare may consult an external statistician to assist with the analysis of the data.

10. Adverse Events and Termination

An Adverse Event (AE) is any adverse change from the participant's baseline condition, i.e., any unfavorable and unintended sign or symptom or disease that occurs during the course of the study, whether or not considered related to the PAP treatment. All clinically significant AEs occurring during the study that were not present prior to the commencement of PAP treatment, will be recorded in the CRF and source document and followed by the Investigator until resolution or stabilization occurs in accordance with GCP.

Serious AE's are considered to be AE's that result in any of the following outcomes, regardless of their relationship to the PAP treatment:

- Death
- A life-threatening AE
- In-patient hospitalization or prolongation of existing hospitalization
- A persistent or significant disability/incapacity
- A congenital abnormality/birth defect

10.1. Emergency Contact Details

[redacted]

Name: Bhavi Ogra

Address: Fisher & Paykel Healthcare Ltd, 15 Maurice Paykel Place, East Tamaki, Auckland

Phone: +64 9 574 0123 Ext 7882

Mobile: +6421 0488581

Email: Bhavi.Ogra@fphcare.co.nz

Position: Senior Clinical Research Scientist

10.2. Foreseeable Adverse Events

The participants may experience a poor night's sleep with the F&P Toffee full face mask as it will be different to the participants usual mask.

Participants may experience the following:

- Pressure sores which may resolve in cuts, rashes and skin abrasions and skin breakdown
- Air leaks into the eye which may cause discomfort, dryness and irritation
- Abrasions to the skin from the headgear
- Eyelid injury and scratches while removing the mask
- Allergies to the mask material
- Collapsing or passing out possibly due to lack of oxygen which can lead to suffocation in some circumstances
- Pressure discomfort in, around, on the sides and under the nose as their usual mask seal and frame may be configured differently

10.3. Reporting Adverse Events

Any serious AE, due to any cause, that occurs during the study period, must be reported immediately (within the next business day) by telephone to the sponsor. In addition to the initial telephone report, a Serious Adverse Event form must be completed and sent via facsimile to the sponsor. All serious AE's must also be recorded on the AE page of the CRF. Additionally, all serious AE's must be reported to the Independent Review Board (IRB) as per the IRB's requirements.

10.4. Early Termination

The study may be discontinued at any time on the advice of the responsible investigator on the basis of new information regarding safety or efficacy. Additionally, the study may be terminated if progress is unsatisfactory. The following documentation is required if the appropriate party terminates a clinical trial.

10.5. Investigator

If the investigator terminates or suspends a trial without prior agreement of the sponsor, the investigator should inform the institution, where required by the applicable regulatory requirements and the investigator/institution should promptly inform the sponsor and the IRB, and should provide the sponsor and the IRB a detailed written explanation of the termination or suspension.

10.6. Sponsor

If the sponsor terminates or suspends a trial, the investigator should promptly inform the institution, where required by the applicable regulatory requirements, and the investigator/institution should promptly inform the IRB and provide the IRB a detailed written explanation of the termination or suspension.

10.7. Institutional Review Board (IRB)

If the IRB terminates or suspends its approval/favorable opinion of a trial the investigator should inform the institution, where required by the applicable regulatory requirements, and the

[redacted]

investigator/institution should promptly notify the sponsor and provide the sponsor with a detailed written explanation of the termination or suspension.

11. Publication Policy

This study is intended for internal use on the development of the product. However the results of this study may be used for marketing purposes or in regulatory documentation to support the clinical efficacy of the devices.

12. Approval

All the required signatories for the approval of this document (Clinical Investigation Plan) by the sponsor are listed on the front page of this document with their relevant positions. Signing the below approval indicates that the primary investigator (PI) agrees to this version of CIP.

[redacted]

13. References

1. Al Lawati N et al. Epidemiology, Risk Factors, and Consequences of Obstructive Sleep Apnea and Short Sleep Duration. Prog Cardiovasc Dis 2009; 51(4): 285-93.
2. Dungan G et al. Randomized Crossover Trial of the Effect of a Novel Method of Pressure Control (SensAwake) in Automatic Continuous Positive Airway Pressure Therapy to Treat Sleep Disordered Breathing. Journal of Clinical Sleep Medicine 2011; 7(3): 261-267.
3. Kribbs NB et al. Objective measurement of patterns of nasal CPAP use by patients with obstructive sleep apnea. Am Rev Respir Dis 1993; 147(4): 887-95.
4. Weaver T, Grunstein T (2008) Adherence to continuous positive airway pressure: the challenge to effective treatment. Proc Am Thorac Soc 15(5):173–178
5. Wolkove N, Baltzan M, Kamel H, Dabrusin R, Palayew M (2008) Long-term compliance with continuous positive airway pressure in patients with obstructive sleep apnea. Can Respir J 15(7):365–369
6. Massie CA and Hart RW. Clinical Outcomes related to Interface type in patients with Obstructive Sleep Apnea/Hypopnea Syndrome who are using Continuous Positive Airway Pressure. Chest 2003; 123:1112-1118.
7. Guidance for Industry and FDA Staff document. Applying Human Factors and Usability Engineering to Medical Devices. February 3,2016.

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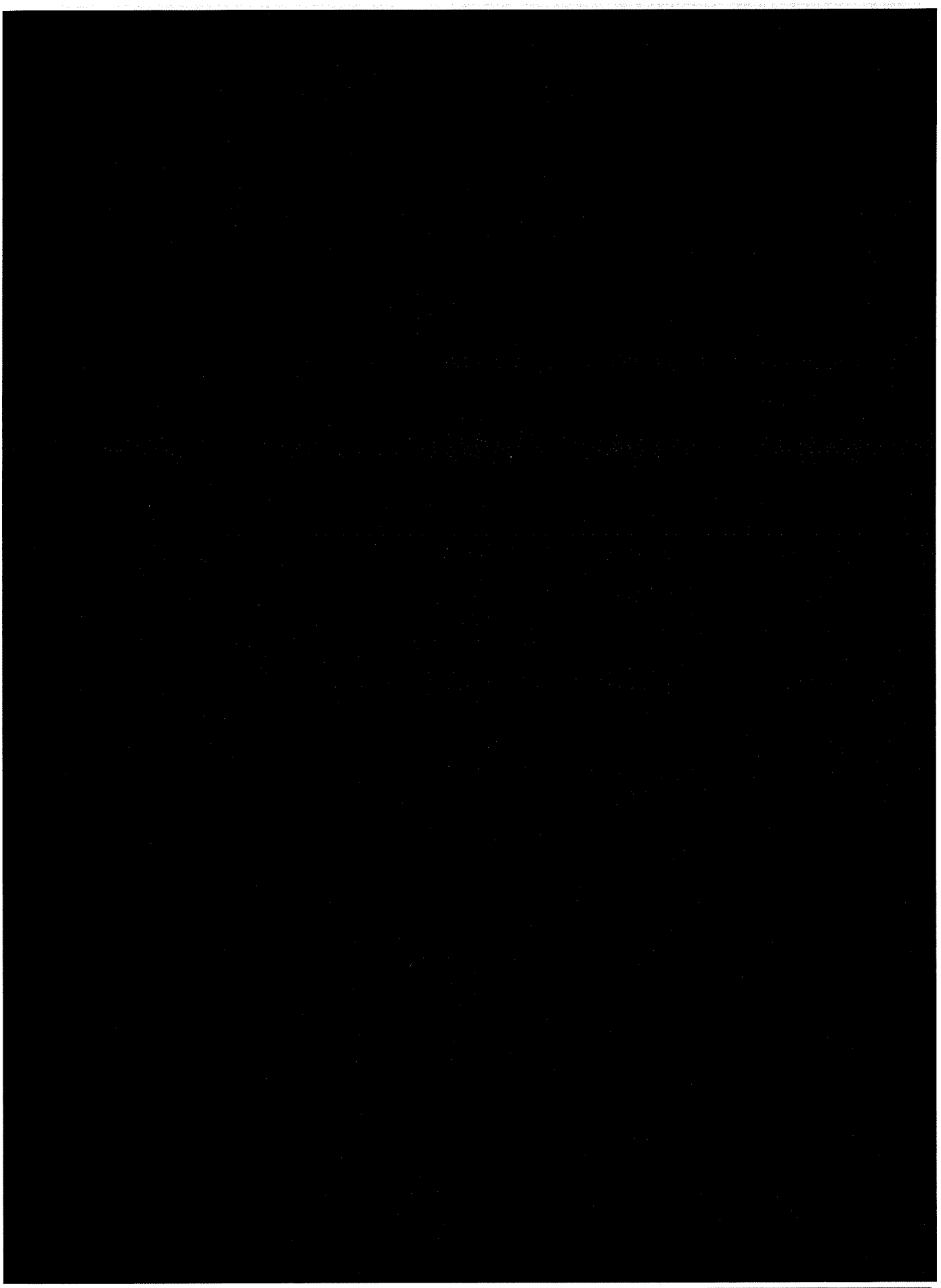
14. Appendix A:



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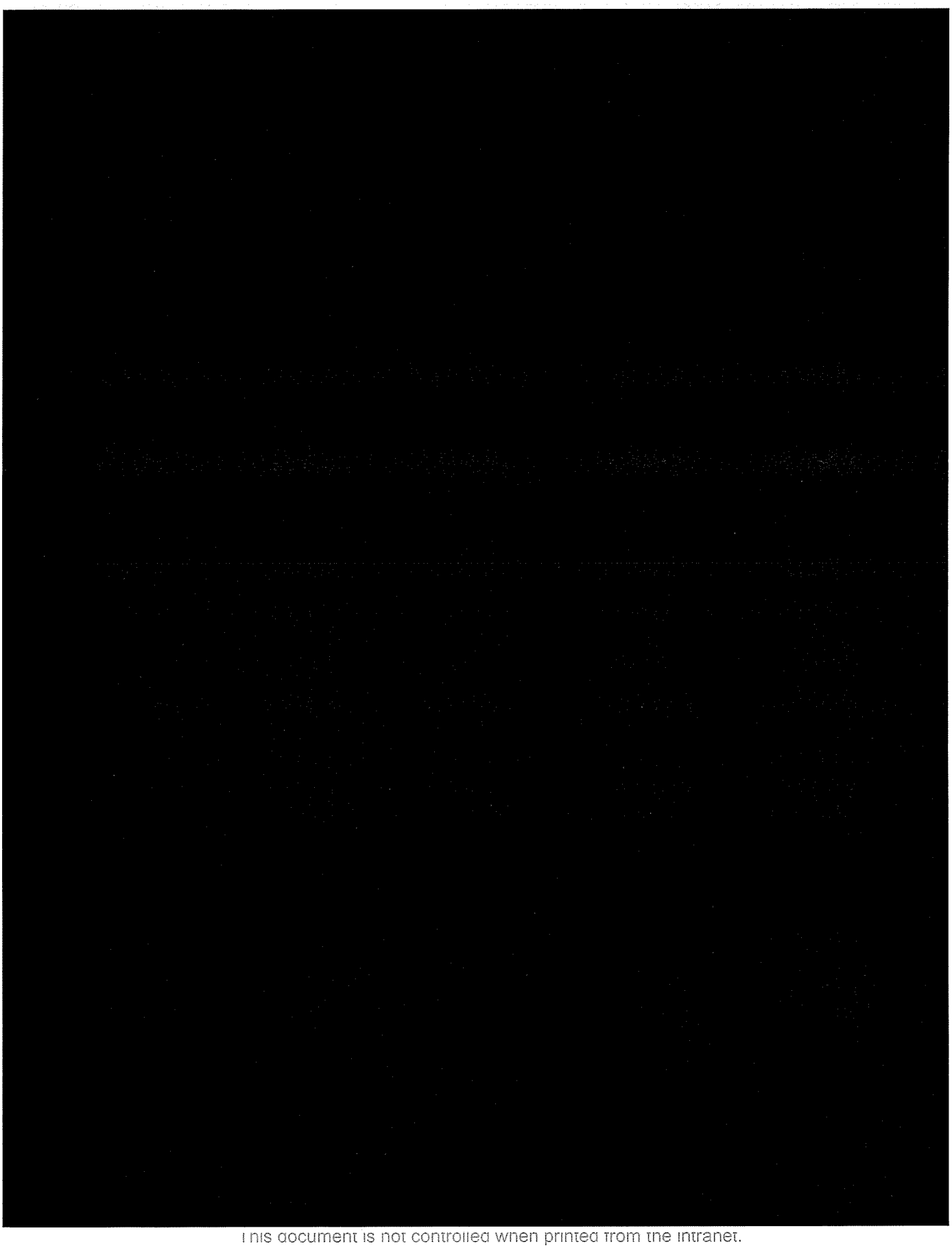
15. Appendix B: Participant Questionnaire



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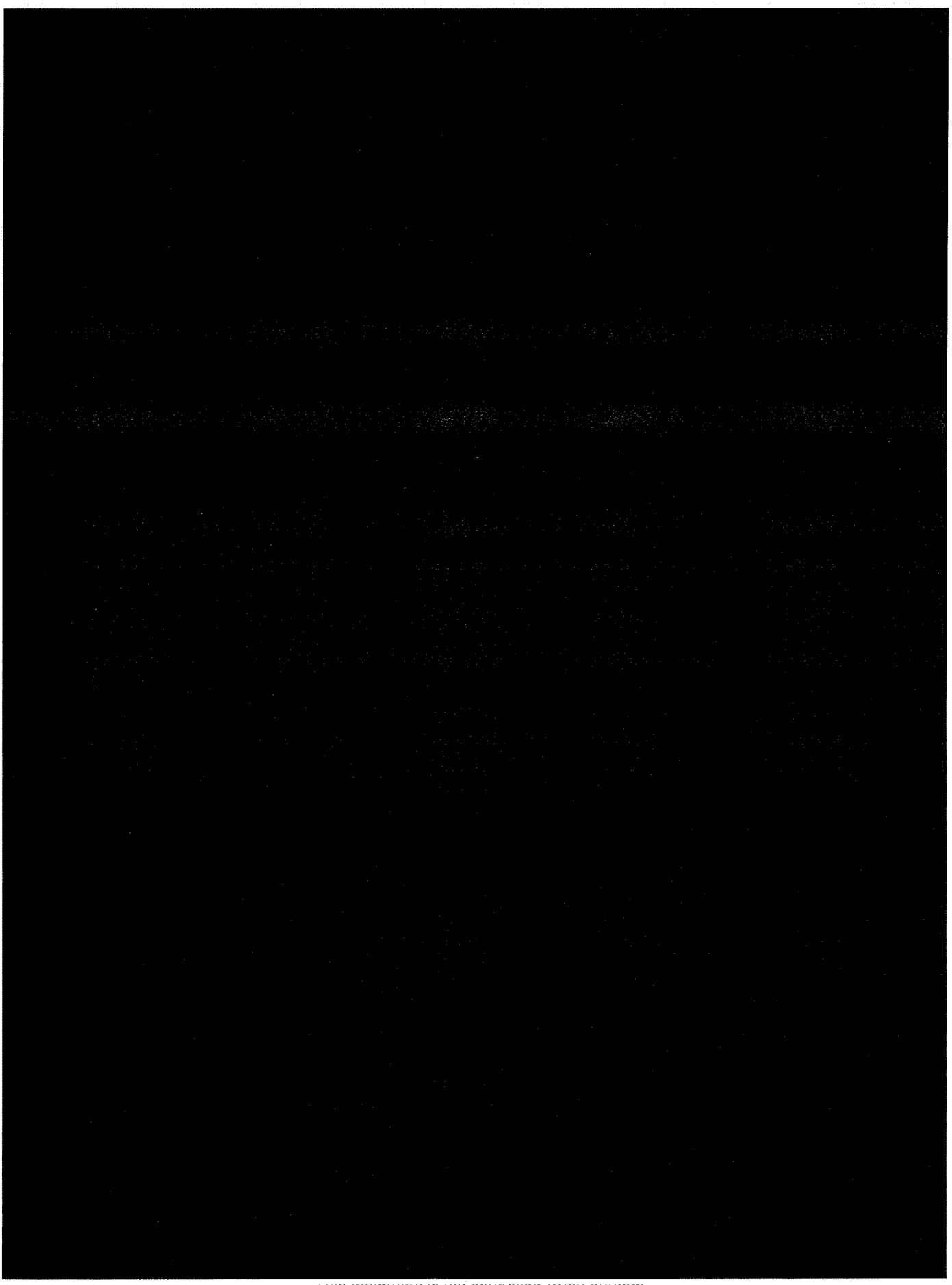

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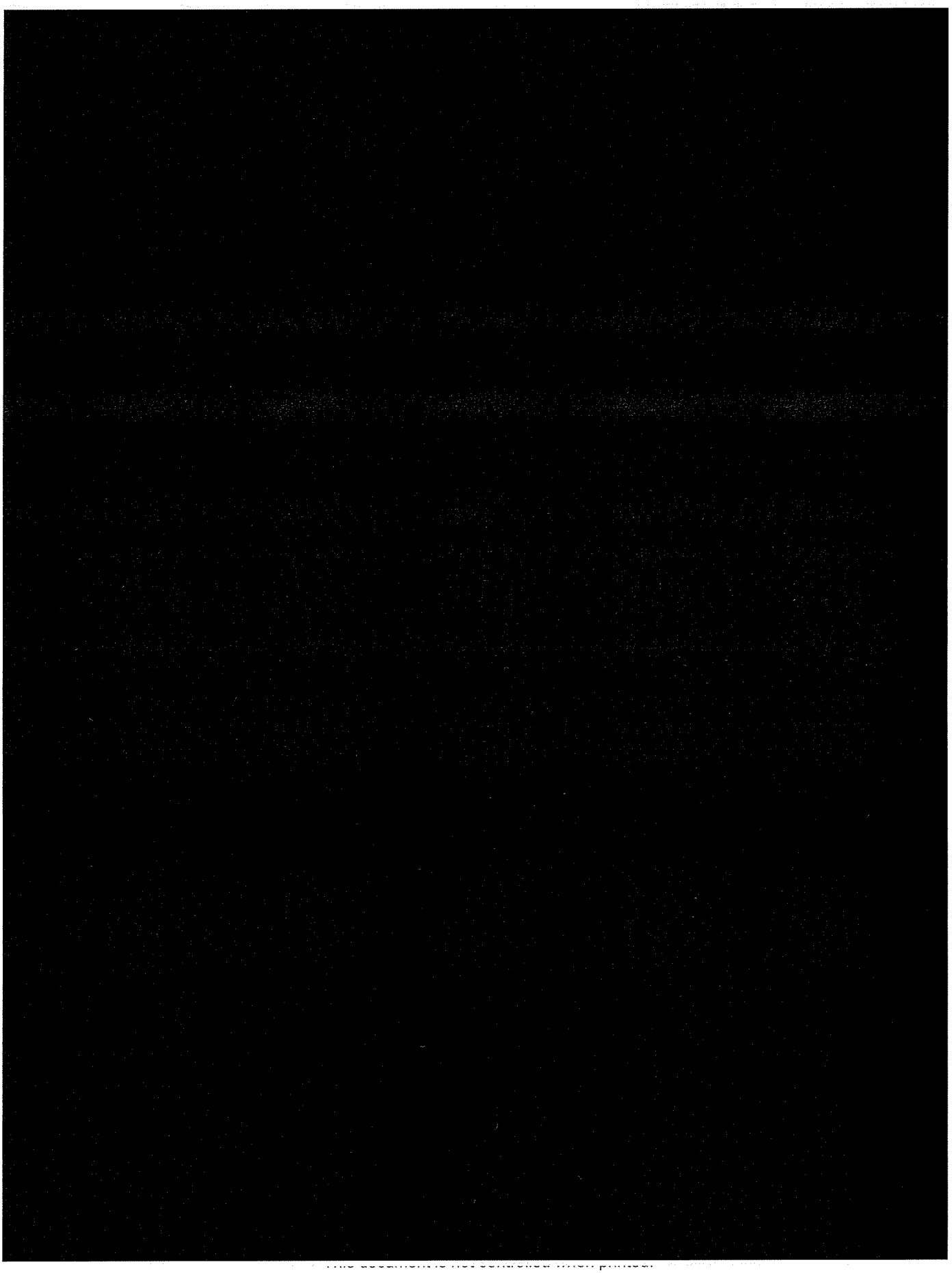

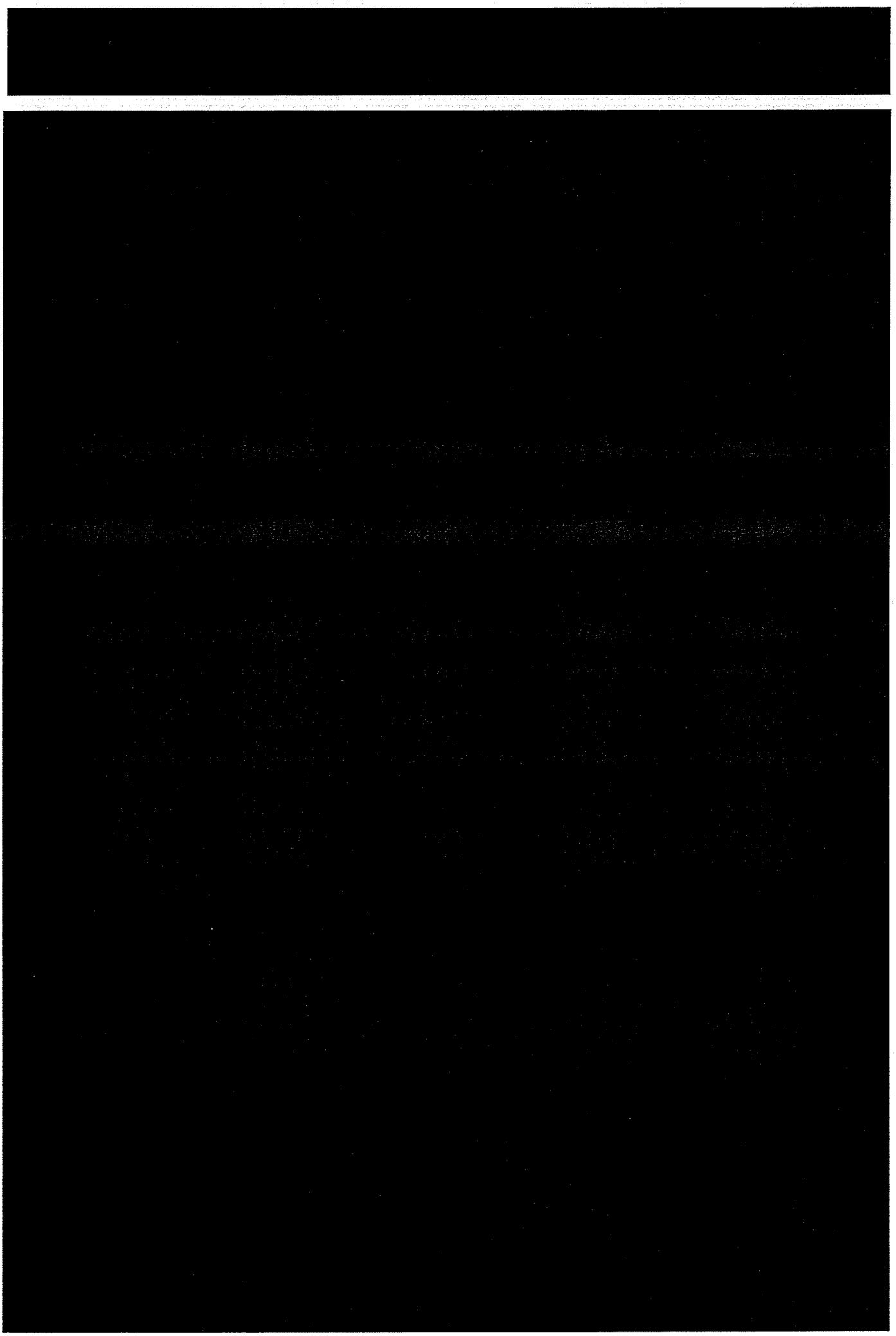

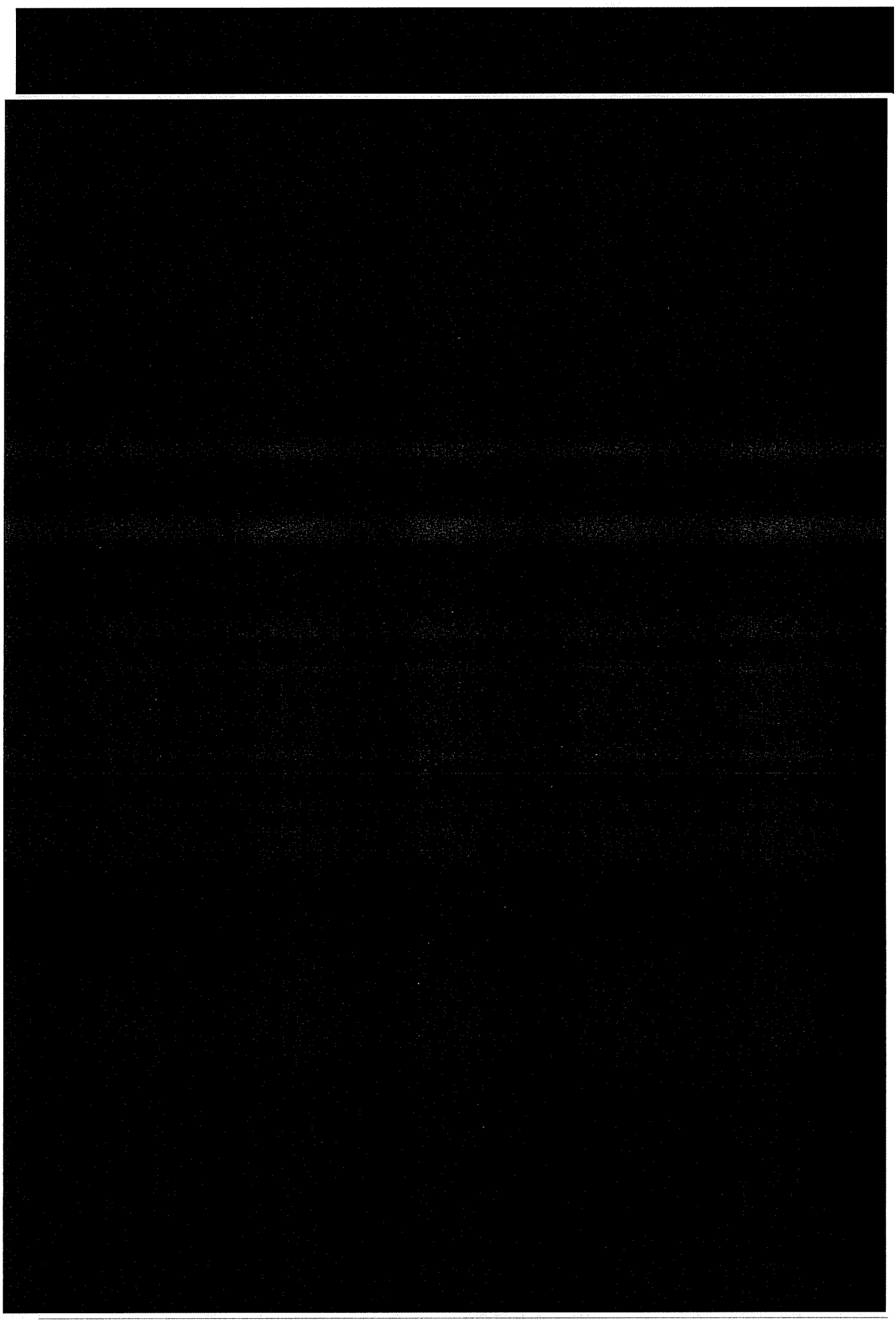

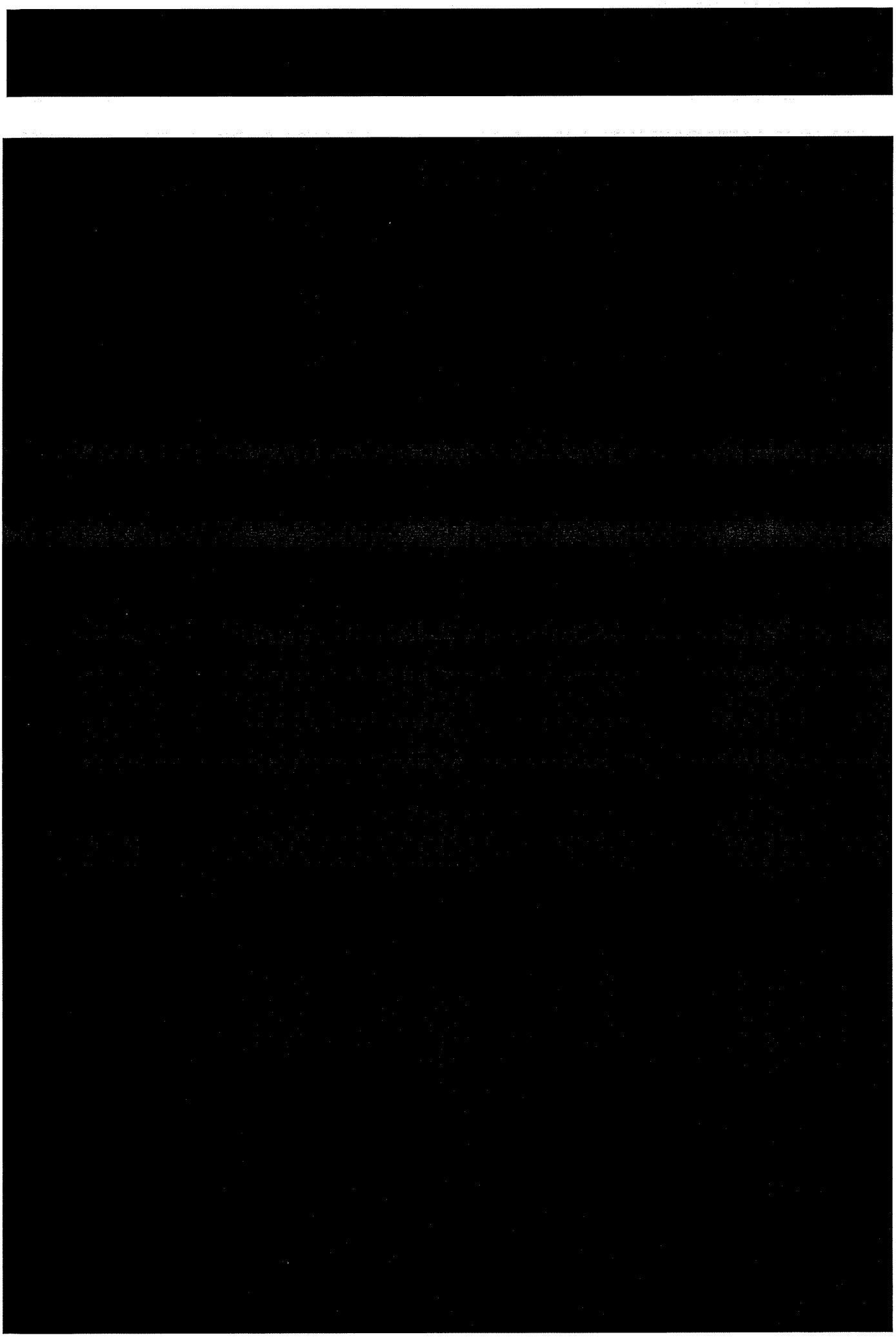

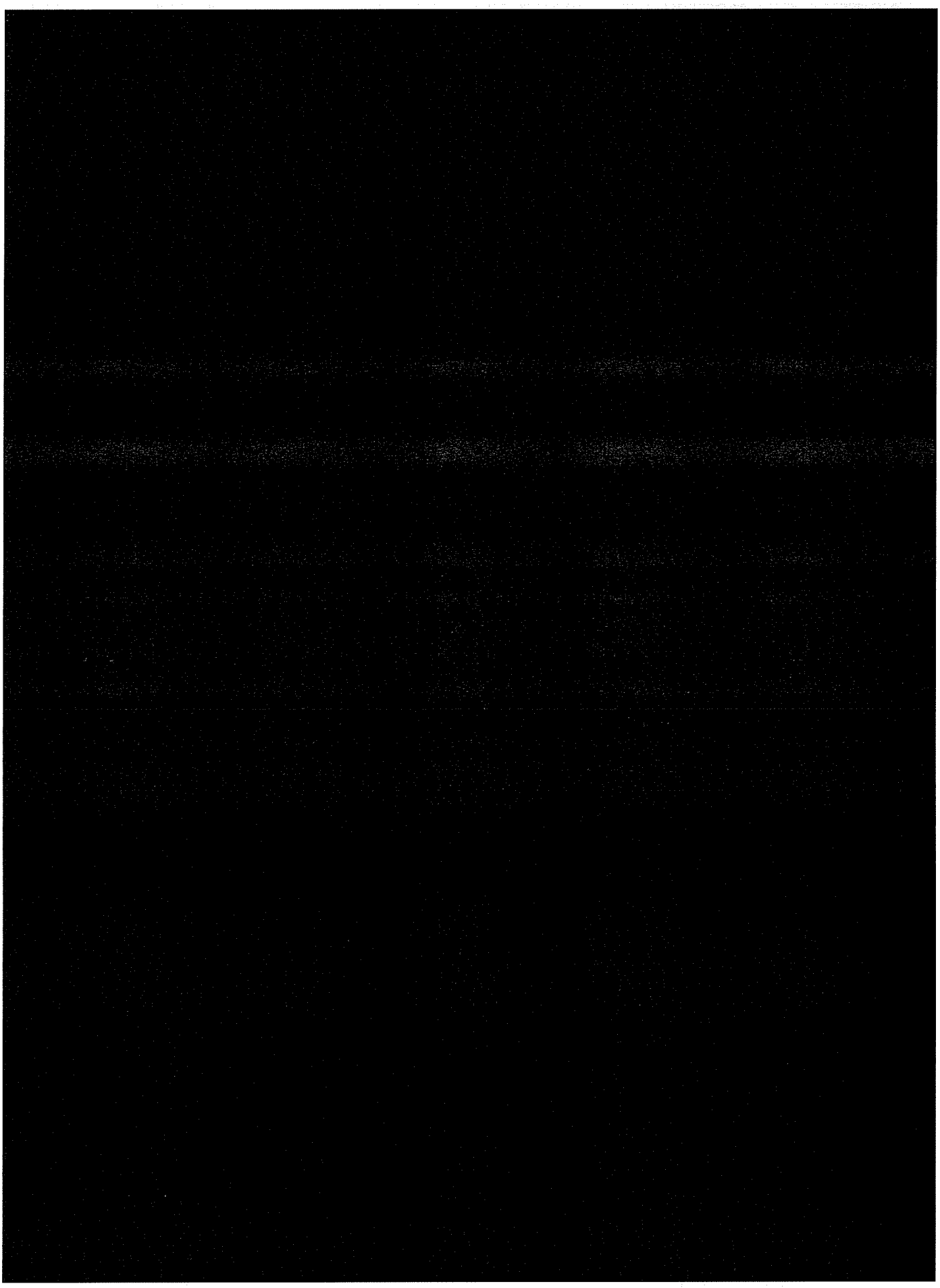

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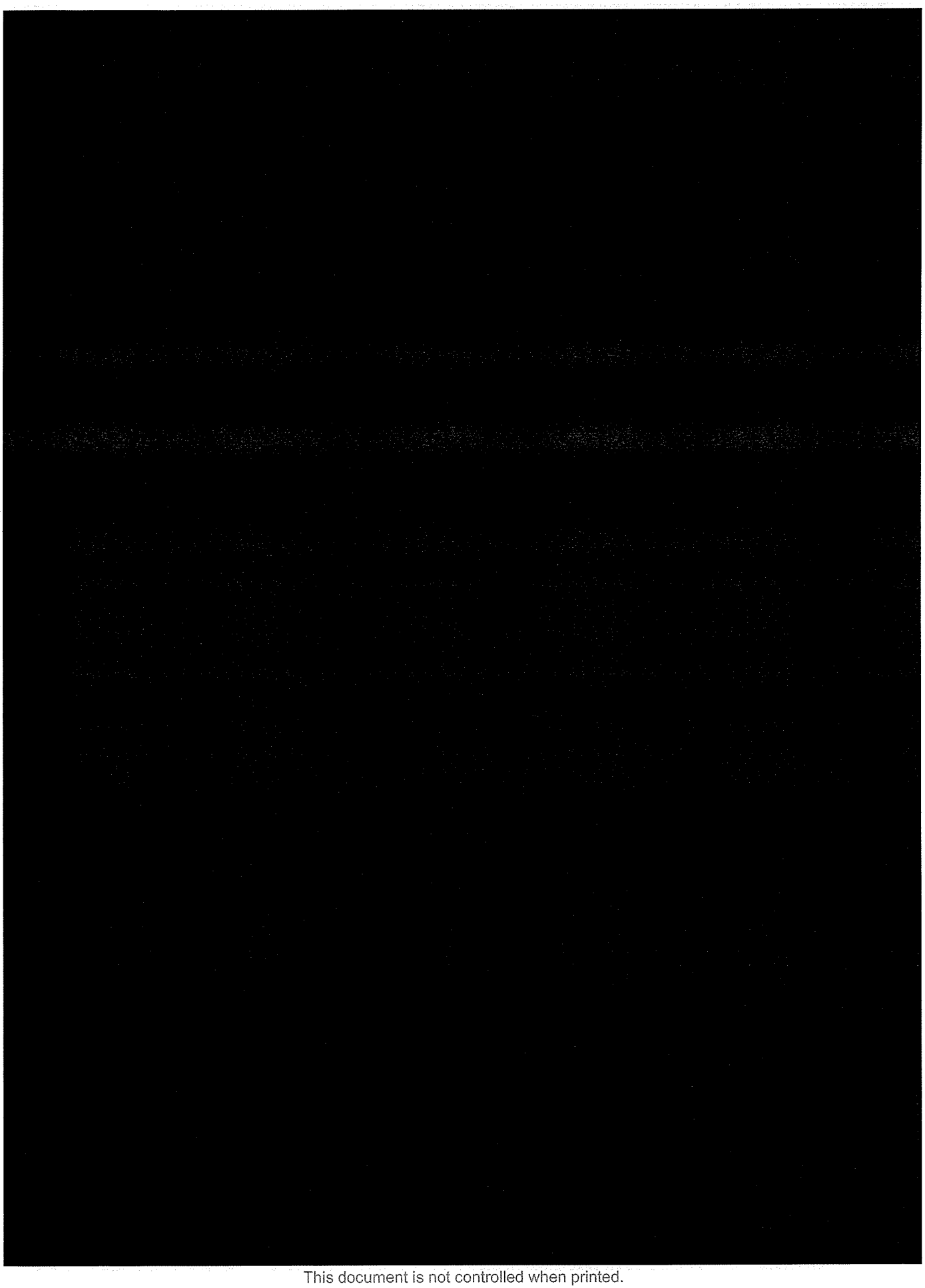

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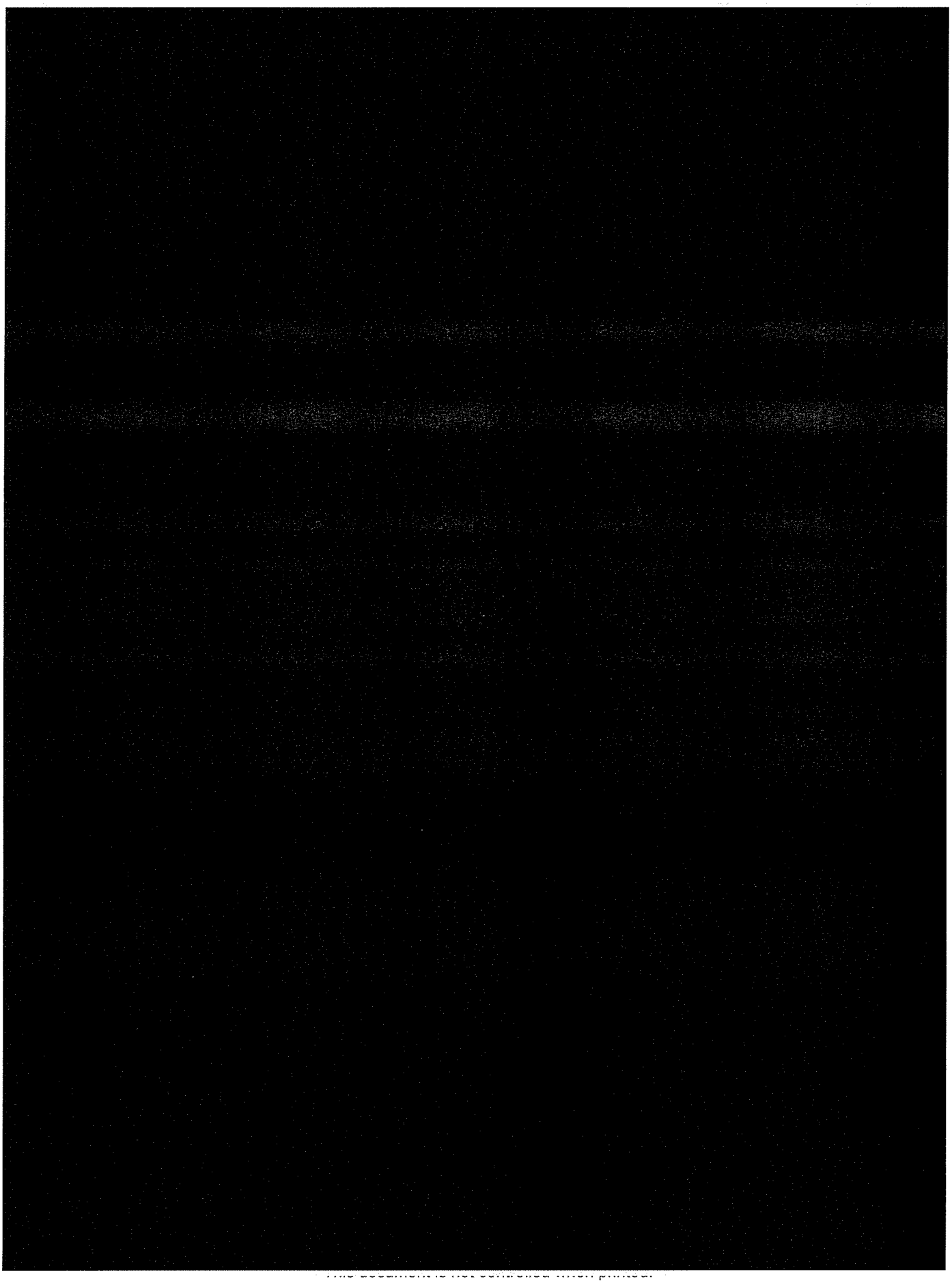

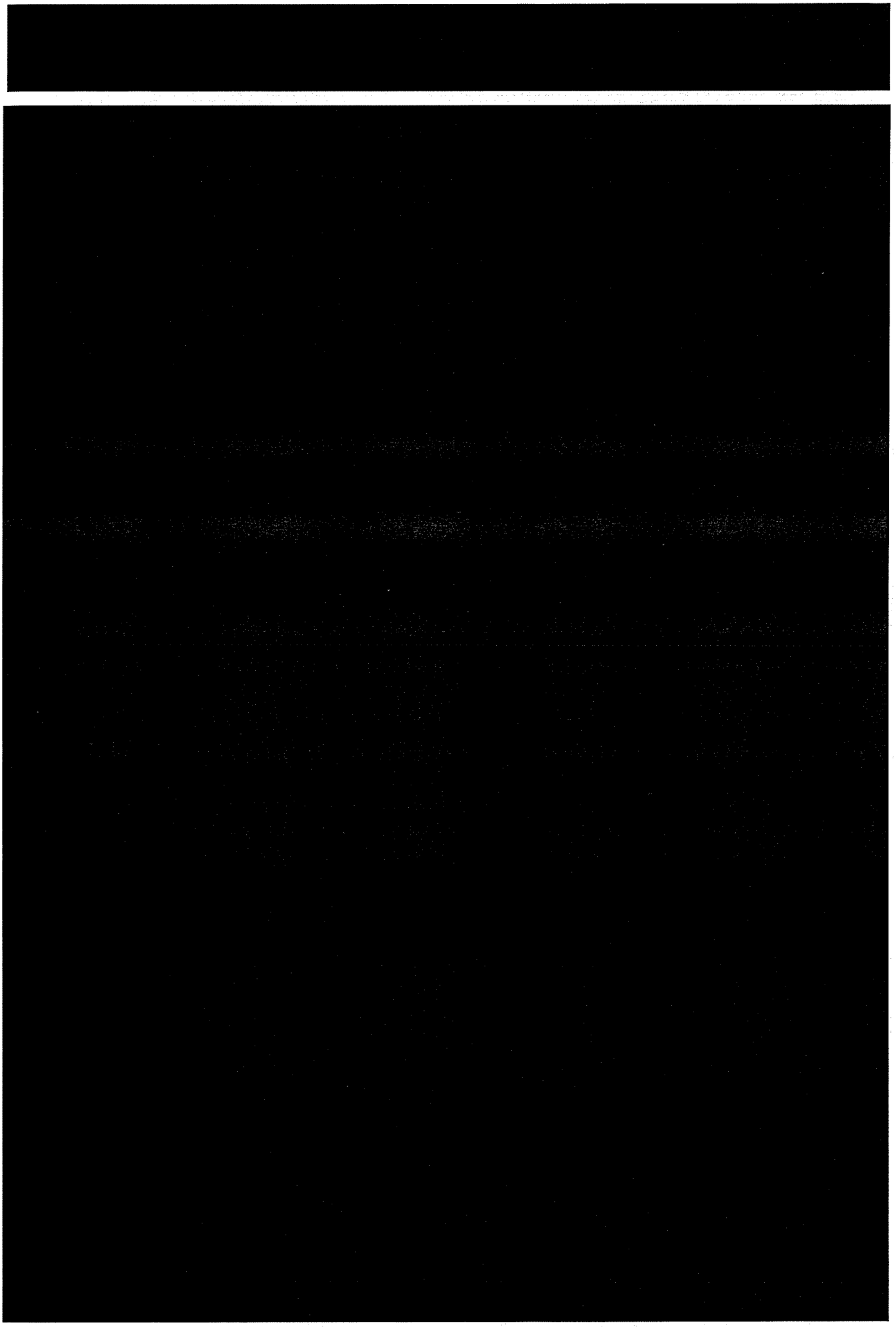

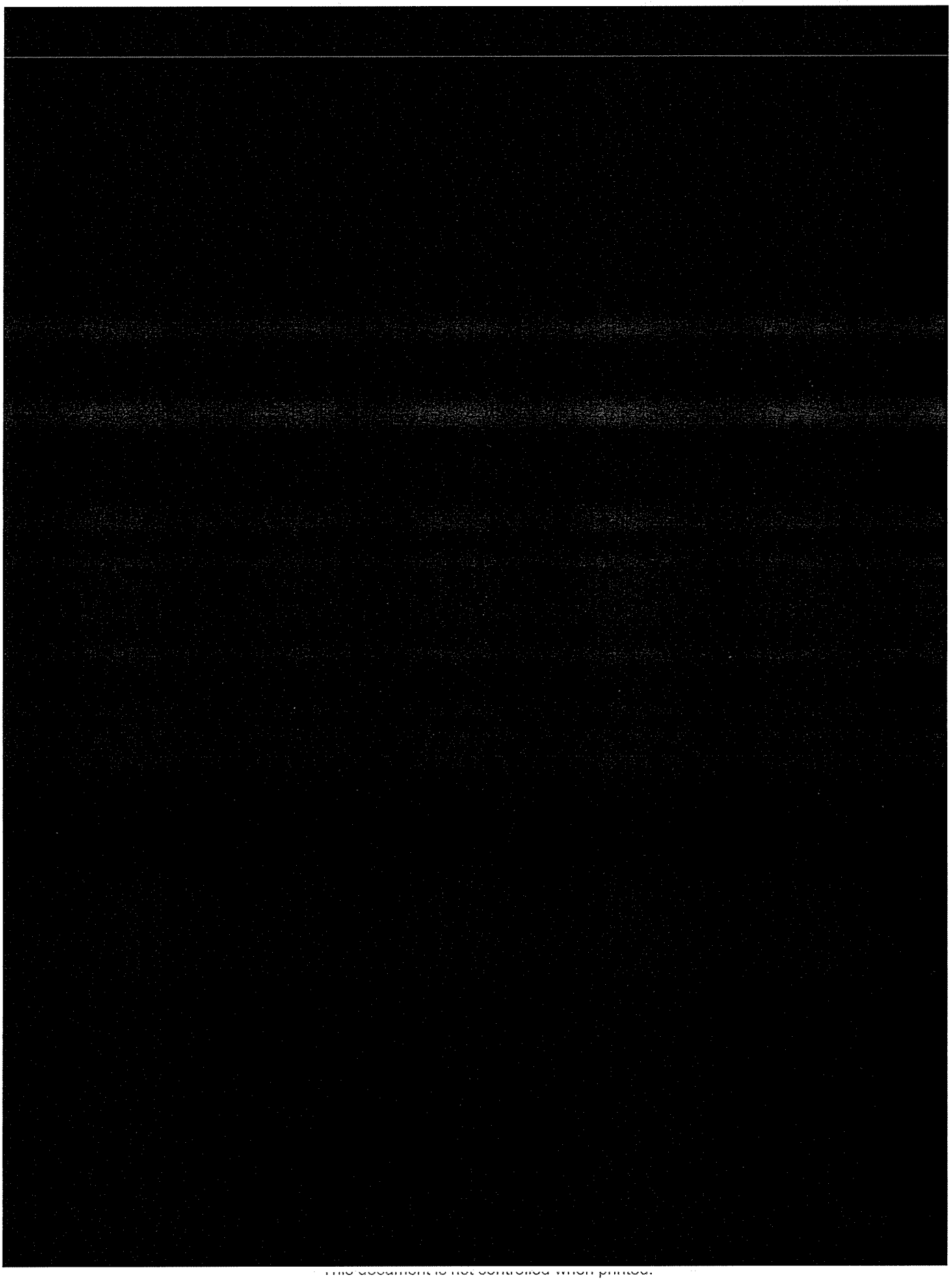

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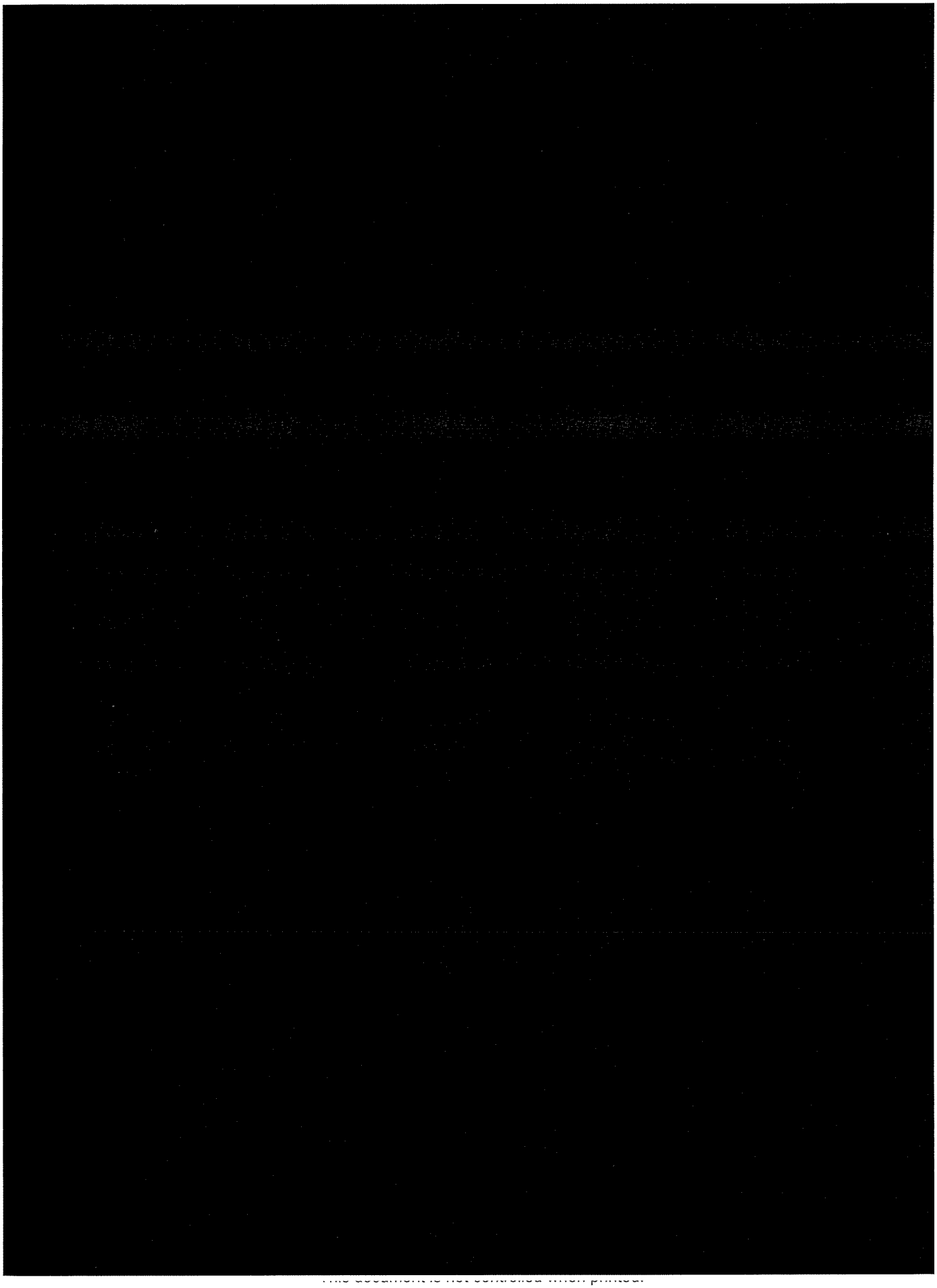

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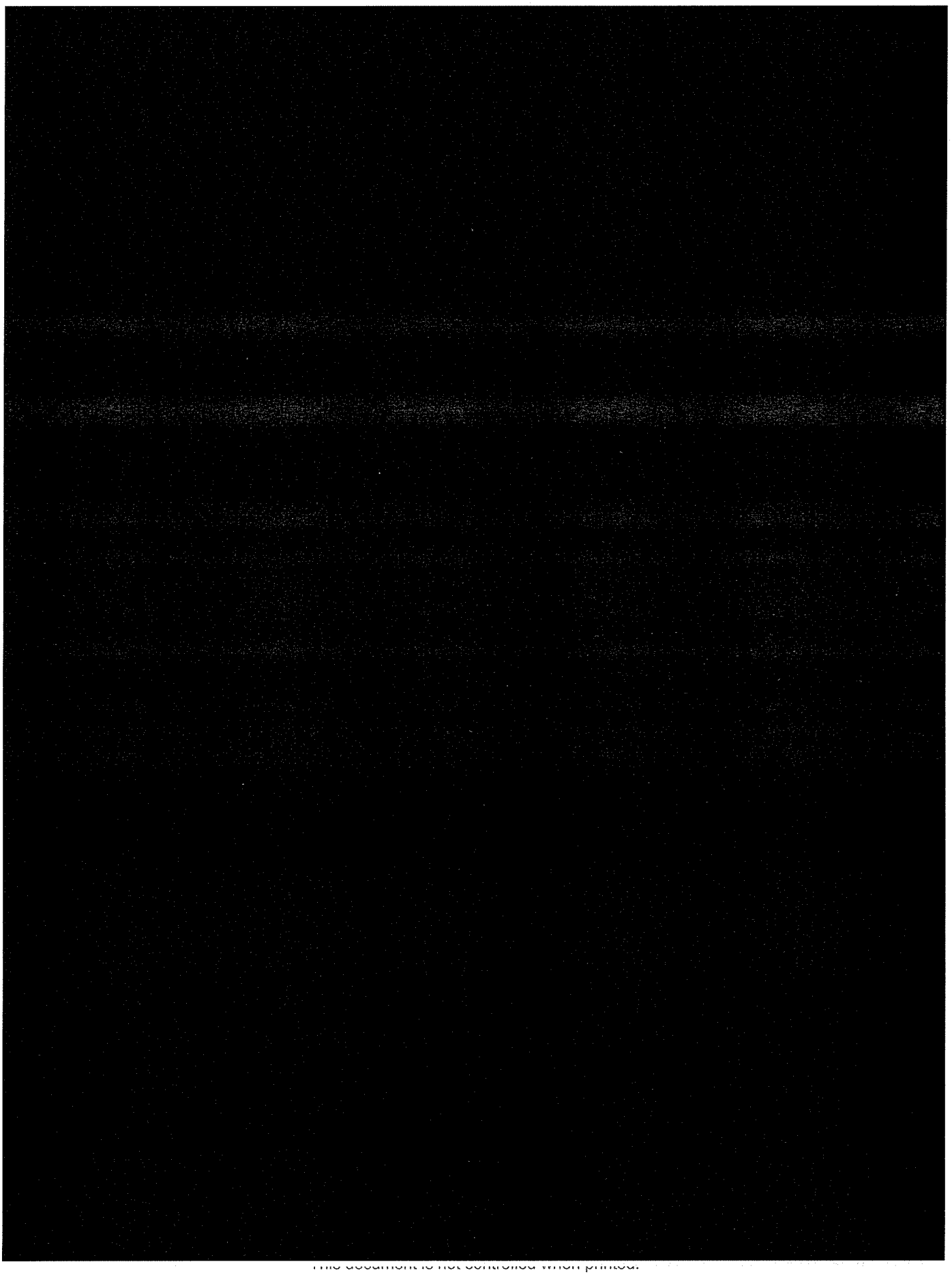

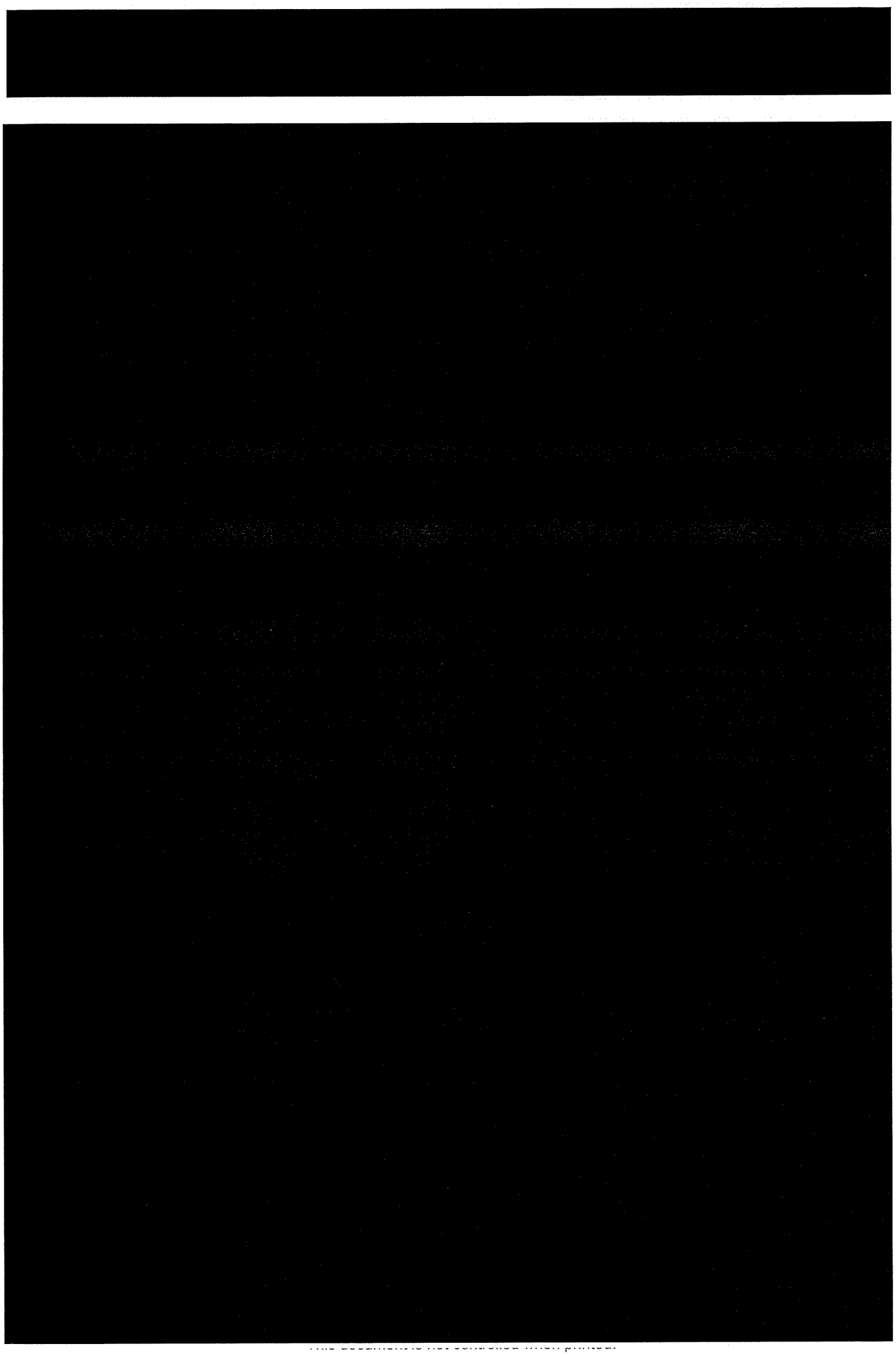

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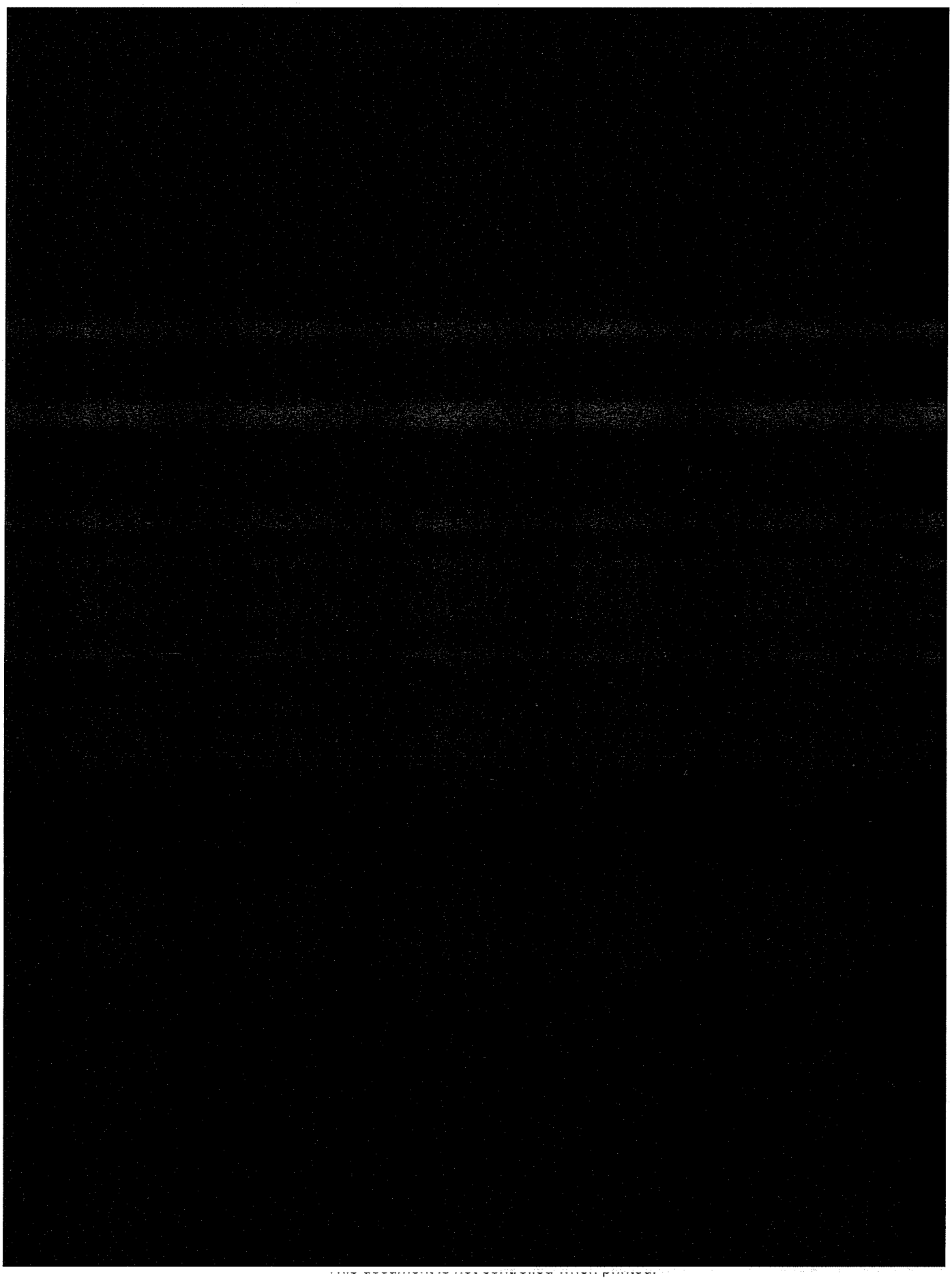

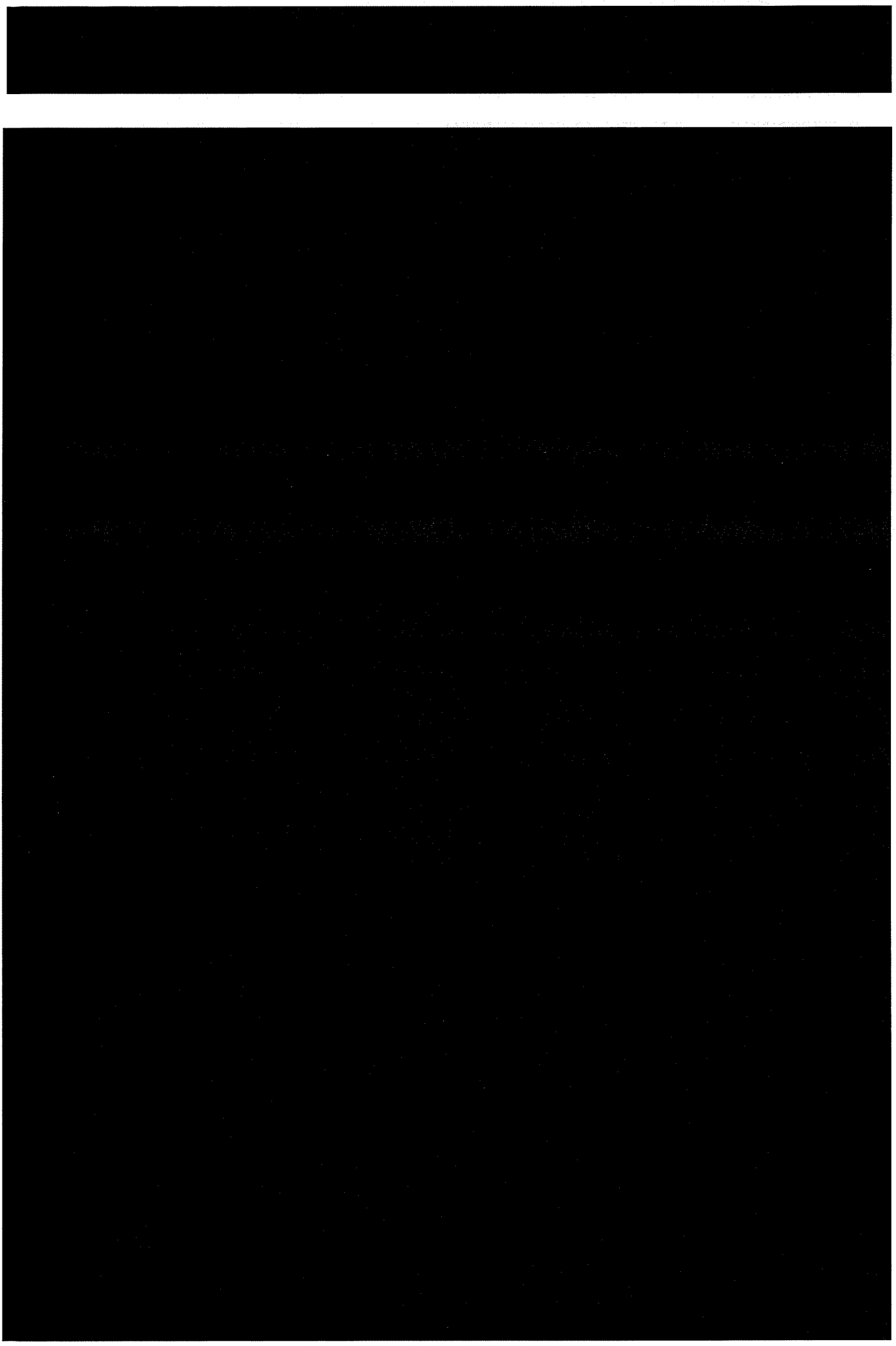

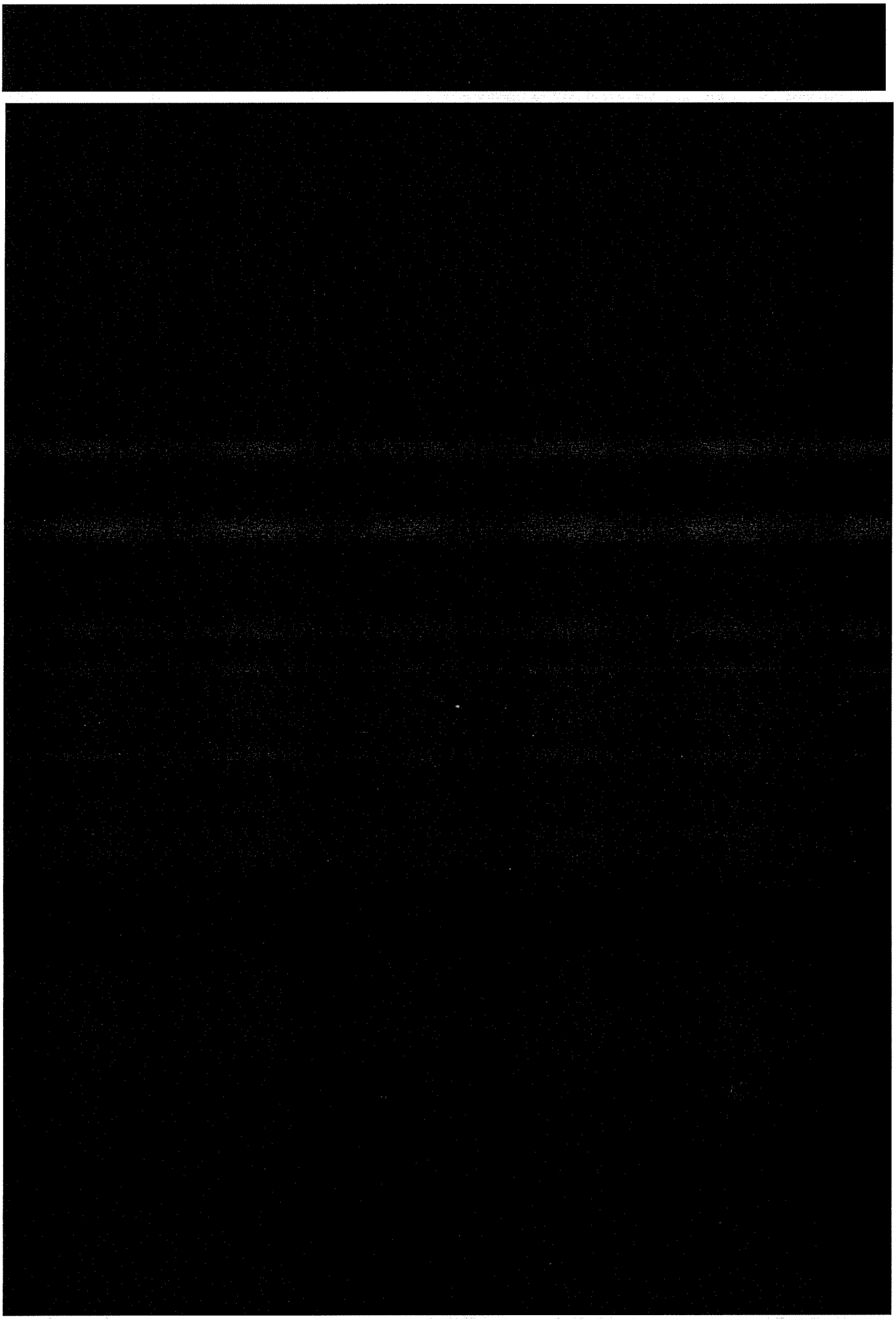

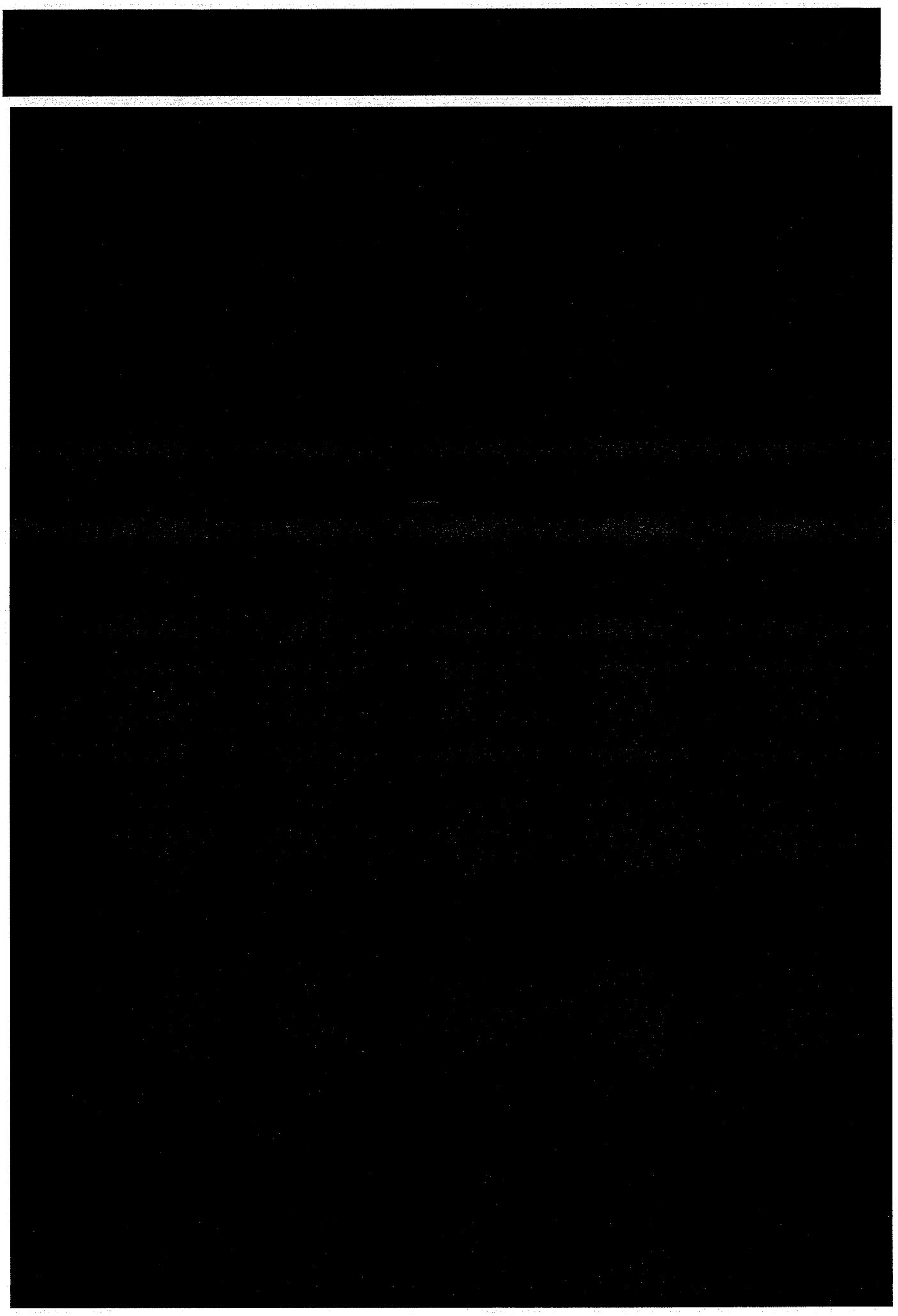

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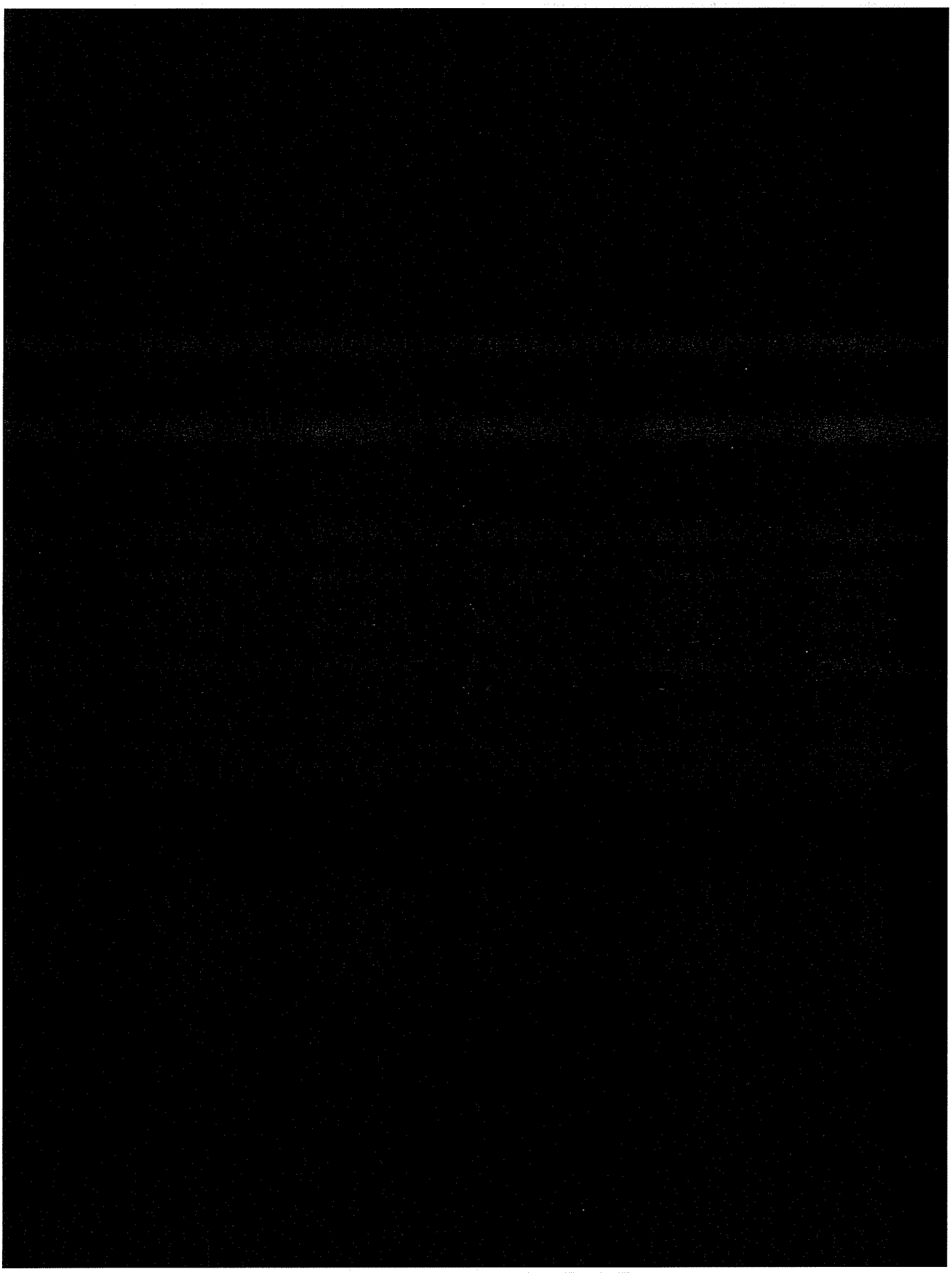

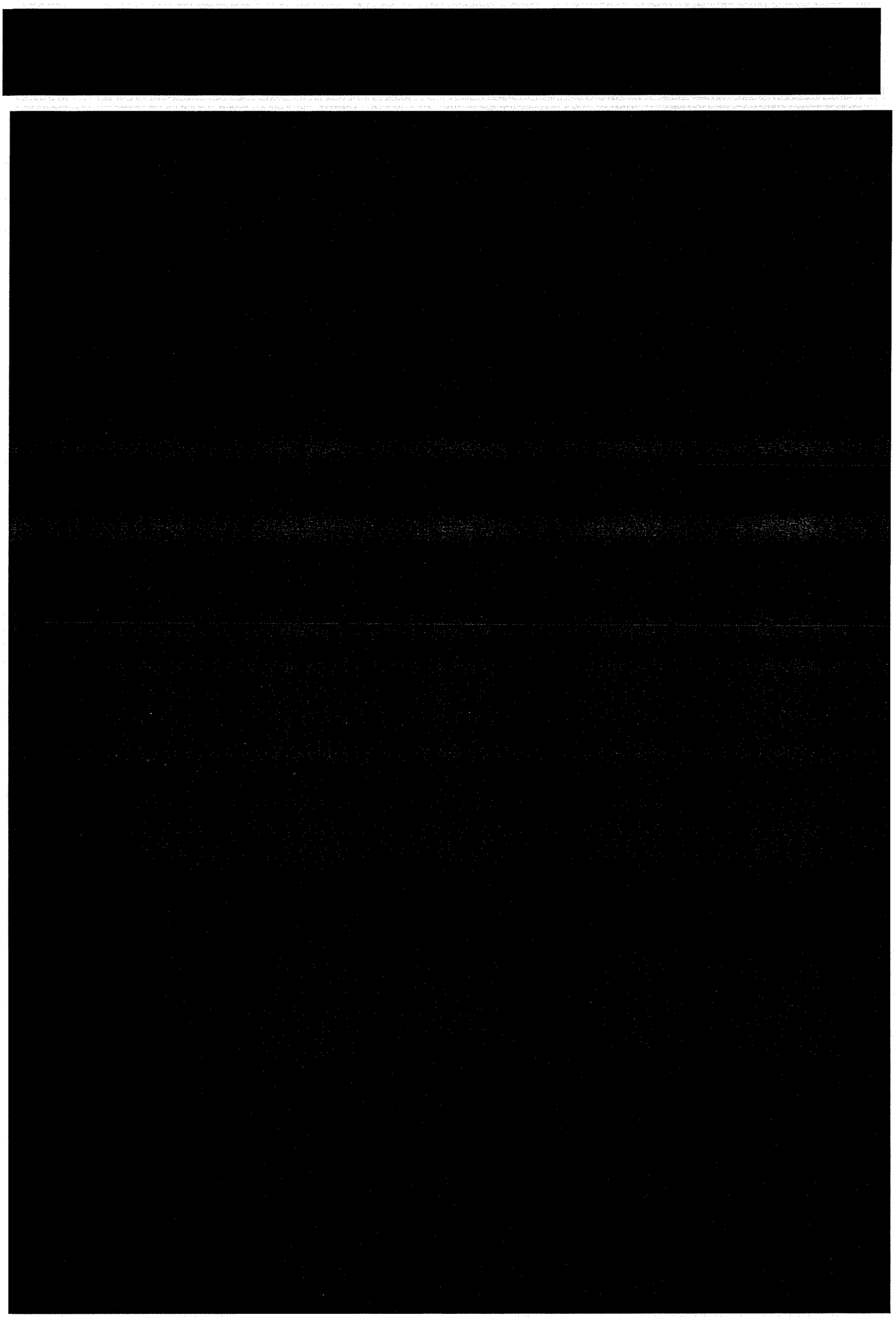

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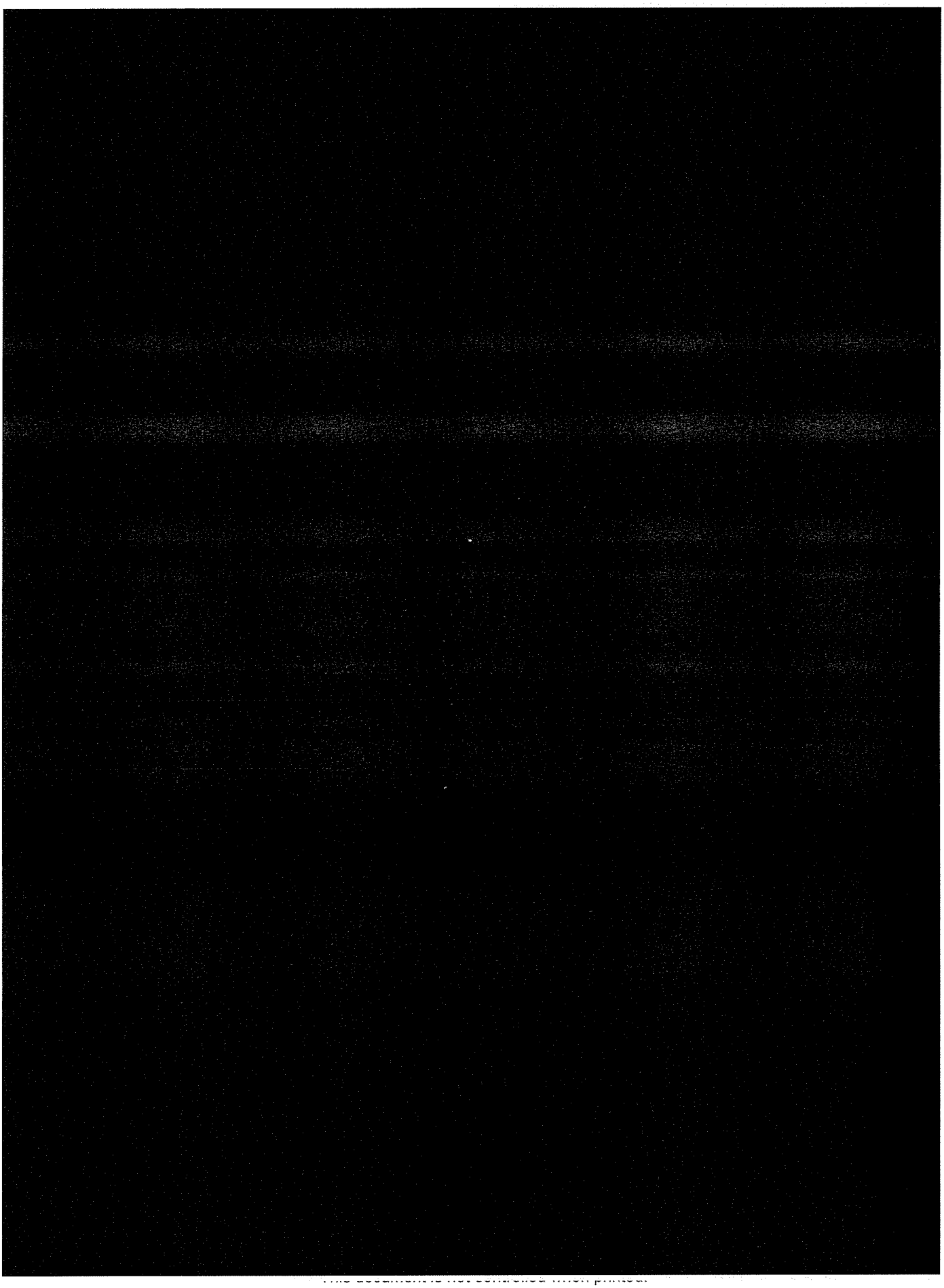

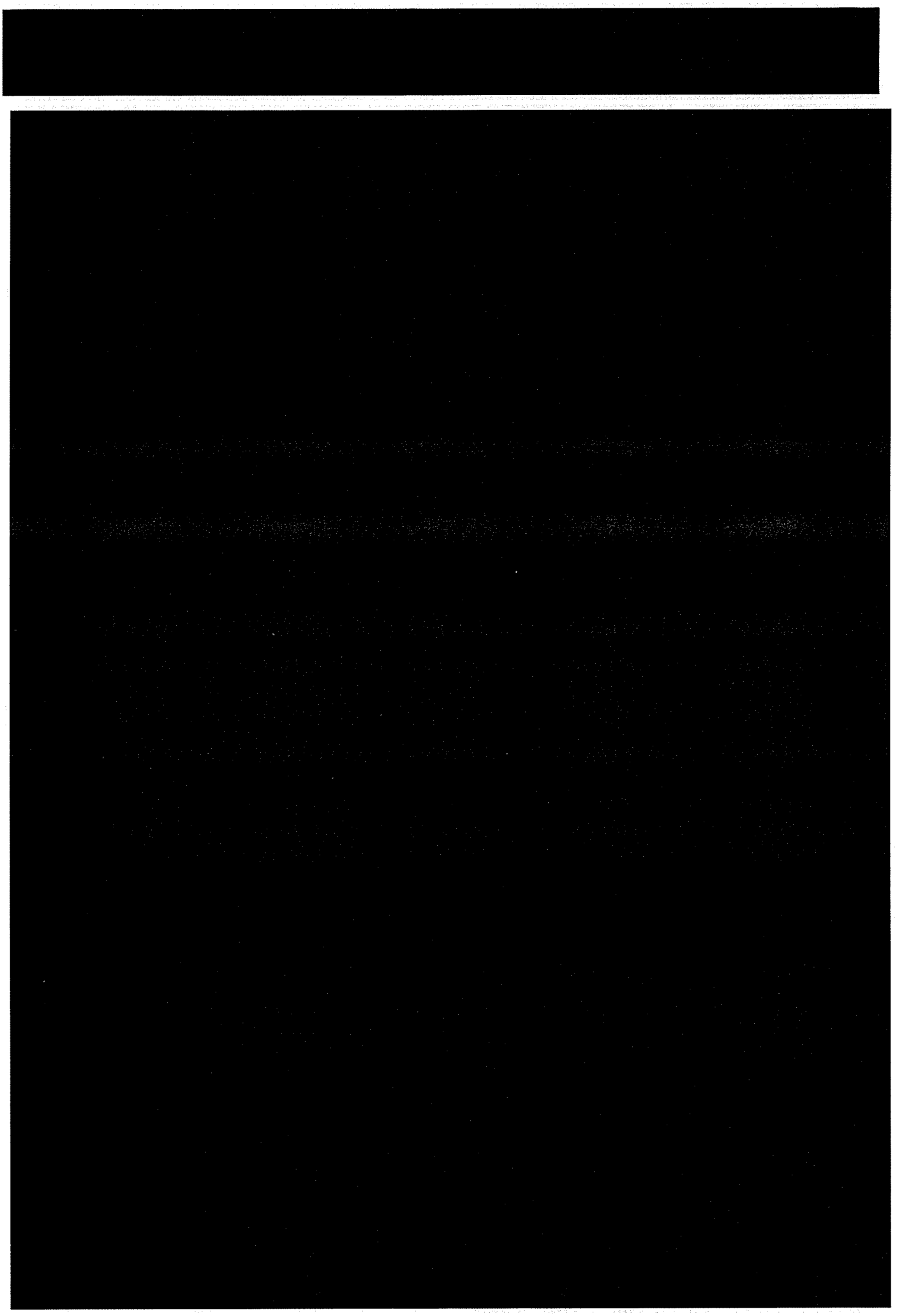

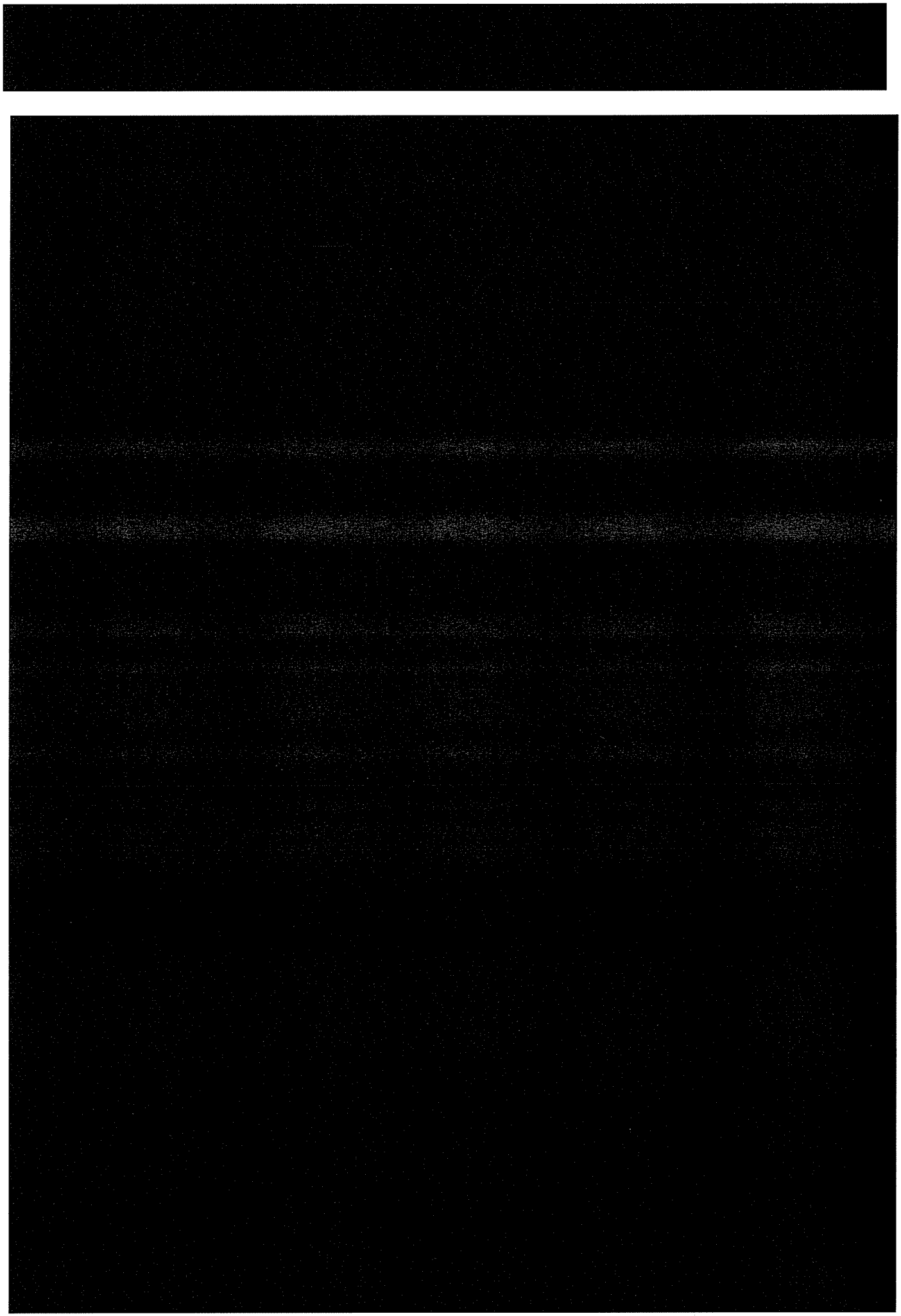

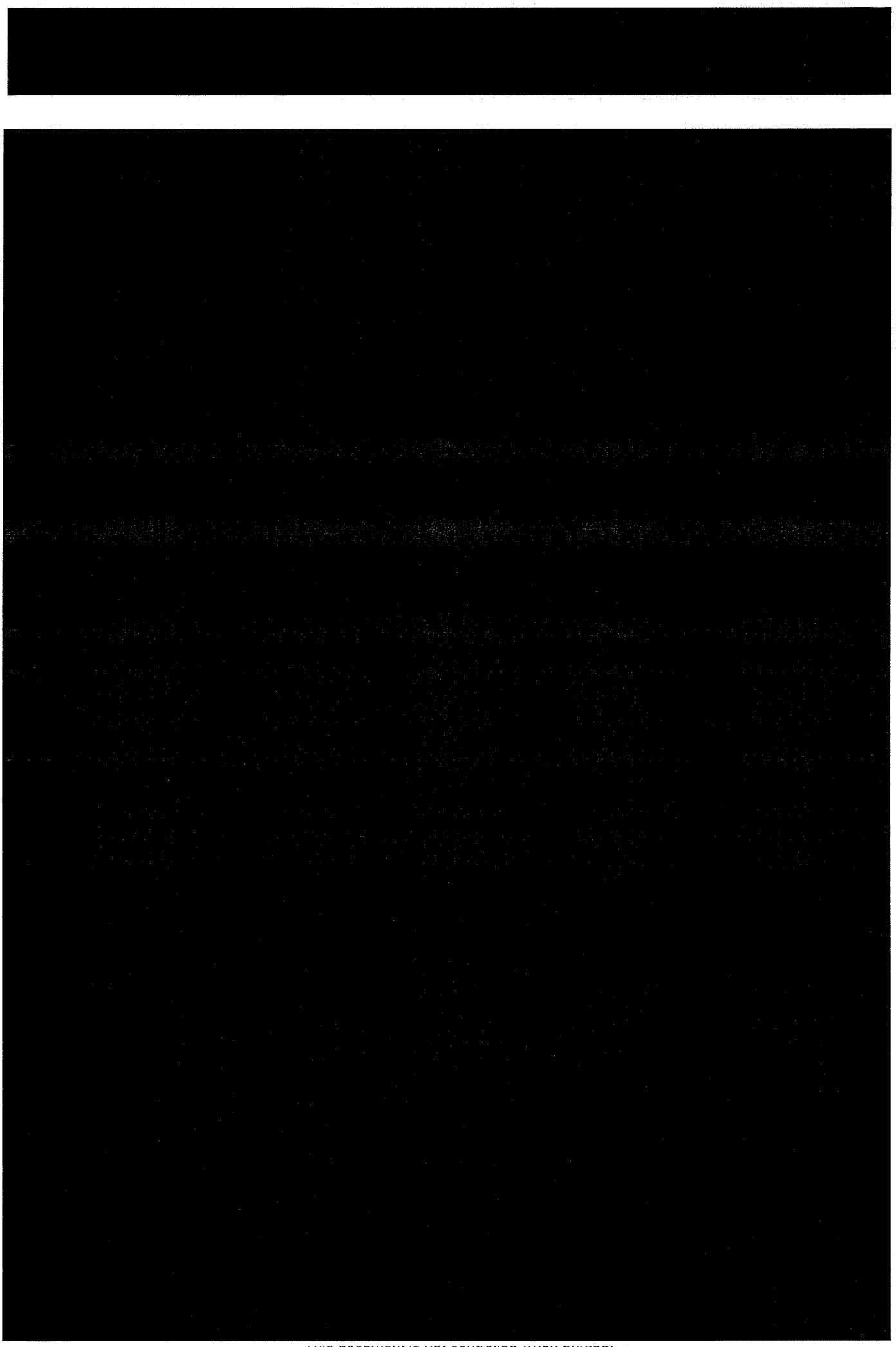

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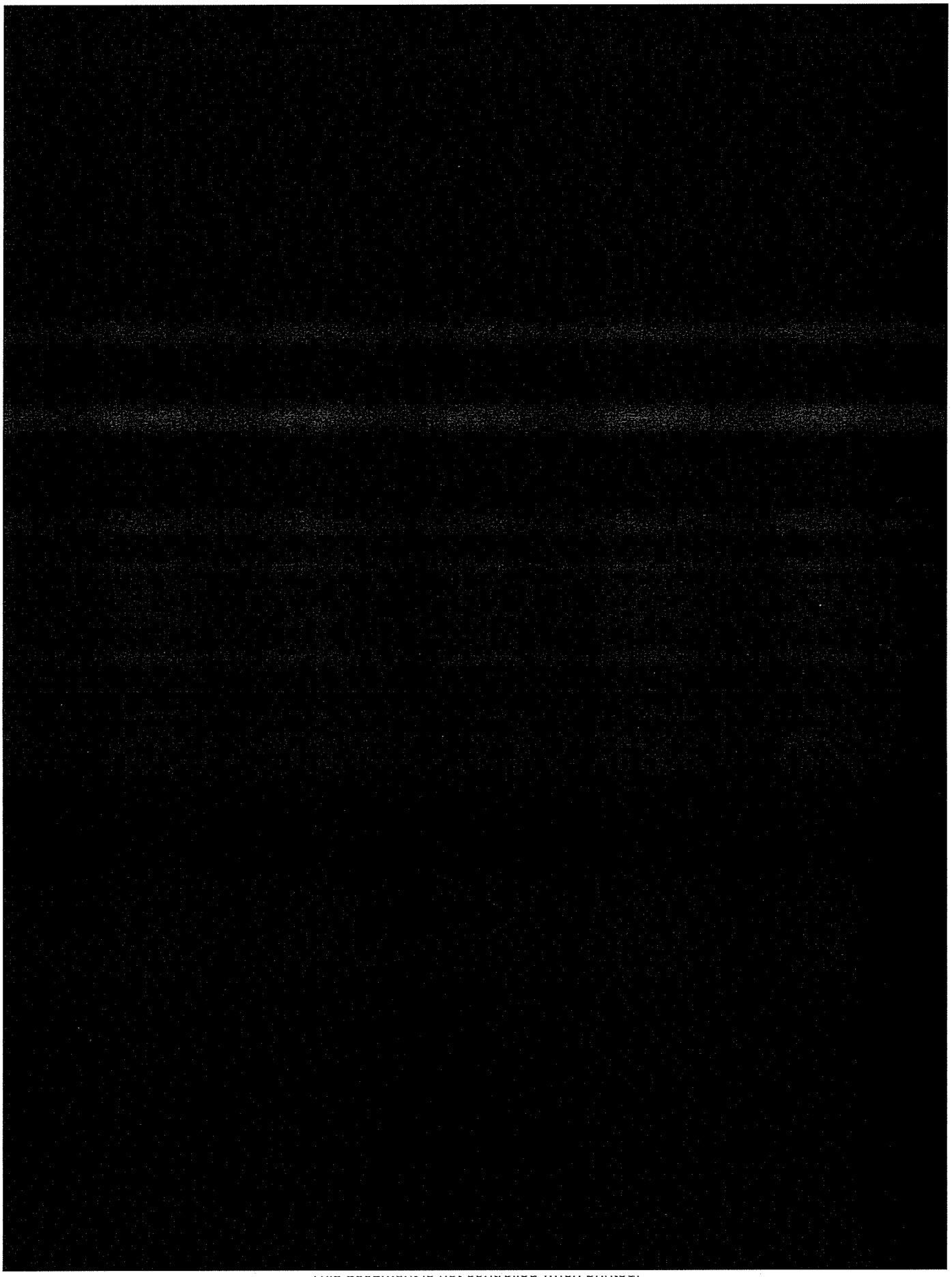

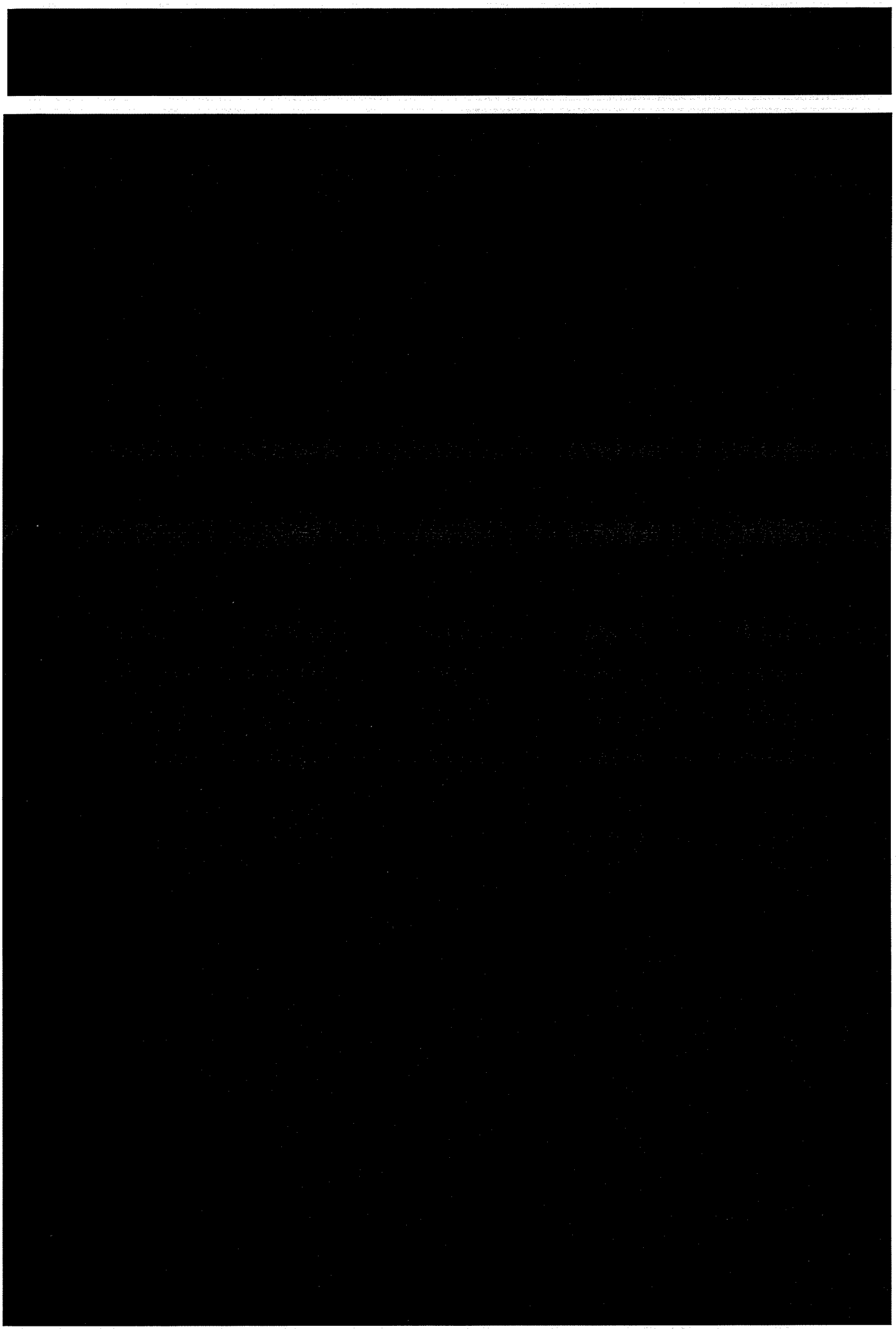

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