Study Title: A development study to evaluate a full face mask for the treatment of Obstructive sleep apnea

NCT Number : NCT03329352

Document date: 1st September 2017

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Fisher & Paykel
HEALTHCARE

# Clinical Investigation Plan

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## Review and Approval

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## 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 |
| F&P | 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 |
| IRB | Independent Review Board |
| OSA | Obstructive Sleep Apnea |
| PAP | Positive Airway Pressure |
| SAE | Serious Adverse Event |
| UI | User Instructions |

[redacted]

## 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 in regards to satisfaction.

### 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.

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### 2.4. Monitoring Arrangements

F&P will be conducting the study, and as such the investigators will monitor the progress of the investigation. The principal investigator will have access to all source documents needed to verify the entries on the Case Report Forms (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 the protocol and the completeness, consistency and accuracy of the data being entered on them.

The investigator's file will contain the protocol/amendments, financial disclosure form, 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 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 Fisher & Paykel healthcare. Copies of the CRF will be stored on site at North Texas Lung and Sleep Clinic for 15 years.

## 3. Investigator Information

### 3.1. Primary Investigator

Name: Dr. David Ostransky, MD

Address: 2801 S Hulen Street, Suite #600, Fort Worth, TX, 76109

[redacted]

Email: dostransky@NTLSC.com

Phone: 817-731-0230

Professional Position: Board Certified Sleep Specialist

### 3.2. Coordinating Investigator

Name: Bobbie Lambert, RPGST

Address: 2801 S Hulen Street, Suite #600, Fort Worth, TX, 76109

Email: blambert@NTLSC.com

Phone: 817-731-0230

Professional Position: Clinical Sleep Educator, Sleep Director & Clinical Liasion.

### 3.3. Other Investigators

[redacted]

### 3.4. Institution

Name: North Texas Lung and Sleep Clinic

Address: 2801 S Hulen Street, Suite #600, Fort Worth, TX, 76109

[redacted]

Email: dostransky@NTLSC.com

Phone: 817.731.0230

Country of residence: United States of America

# 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 9 574 0123 Ext 7909

Email: hanie.yee@fphcare.co.nz

Profession: Clinical Research Manager

Country of residence: New Zealand

## 4.2. Overseas Representative

[redacted]

# 5. Device Information

[redacted]

## 5.2. Device Risk Analysis and Management

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

[redacted]

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# 6. Justification for a Clinical Trial

## 6.1. Synopsis

The investigation is a prospective, non-randomized, non-blinded study. This investigation is designed to evaluate the performance (leak and comfort) as well as participant's overall acceptance of the F&P full-face mask amongst participants with diagnosed OSA. A minimum of 40 participants with OSA currently using a full-face mask will be recruited by NTLSC (phone recruitment script is available in Appendix A).

This study will involve a baseline visit (Visit 1) where the participant's prescribed PAP therapy treatment settings will be gathered. An F&P ICON+ device will be issued to the participant (if required) during this visit as well as gaining their informed consent for the F&P full face mask trial.

Visit 2 will take place 7 ± 5 days after Visit 1. At this visit, participants will be fitted with the F&P full face mask as well as being asked a few questions in the form of a structured questionnaire. Initial impressions, comments and photographs will be captured via recorded audio and video (both with their consent). If the participant does not provide video and/or audio consent, written notes will be taken.

Visit 3 will take place 14 ± 5 days after Visit 2. The participants will come in for a final visit to return the trial mask and documentation and provide their feedback in the form of verbal comments and a structured questionnaire. Photographs will be captured as well as audio and video will be recorded during this visit (both with their consent). If the participant does not provide audio and/or video consent, written notes will be taken.

The mask and CPAP (if from the research pool) will be returned to NTLSC at the conclusion of the trial and the participant will return to their previous mask and mode of device treatment. This institution will recruit all participants within two weeks of beginning of the study.

If the participants prefer the F&P full face mask to their usual mask they will be invited to use the mask in-home for an additional 6 months. Monthly phone calls will be made and at the end of six months the participants will be asked to return the mask and continue using their usual mask.

This study will be conducted in accordance with ICH/GCP Guidelines. No deviation from the protocol will be implemented without the 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.

## 6.2. Literature Review

Obstructive Sleep Apnea (OSA) is a common sleep breathing disorder affecting up to 9% of the adult population[1] and is characterized by periodic collapse of the upper airway during sleep. The standard

[redacted]

treatment for obstructive sleep apnea is PAP, which consists of pressurized air applied to the nose via an interface. PAP includes continuous positive airway pressure (CPAP), automatic positive airway pressure (APAP) and Bilevel positive airway pressure (Bilevel PAP). Despite the effectiveness of PAP in abolishing upper airway obstruction, acceptance of and adherence with therapy has been sub-optimal[2,3]. Reasons for the low compliance include nocturnal awakenings, incorrect therapeutic pressure and primarily discomfort due to poor mask fit. Poor mask fit can result in facial abrasion, leak causing fluctuations in therapeutic pressure and irritation of the eyes[4,5].

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### 6.5. Justification for Administration

Participants will remain on their prescribed PAP pressure during the duration of the trial. Baseline PAP data on the participant's usual mask will be collected for 7 ± 5 days in order to evaluate leak measurements and efficacy of treatment compared to the investigational mask. Participants will not be randomised to use the F&P full face mask in-home for 14 ± 5 days.

## 7. Objectives of the Clinical Investigation

### 7.1. Hypothesis

[redacted]

Primary Objective:

- To evaluate the performance, comfort and ease of use of the F&P full face mask in a home environment in regards to the participants' view on overall comfort, overall experience and satisfaction.

Secondary Objective:

- To continue to evaluate the feedback of the F&P full face mask with users that preferred this over their usual mask (trial extension).
- To obtain 3D face scan data and head measurements from OSA participants in order to catalogue different facial structures for the use in the design of OSA interface masks.

### 7.3. Population

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

### 7.4. Risks

PAP therapy is standard clinical practice for patients with OSA. The risks associated with this treatment are limited to the potential for slight discomfort and pressure injury associated with the use of a full face mask during sleep. There will be no greater risk to participants in this trial as the site will be following routine practice for medical management of their patients. Participants in the study may benefit from receiving medical advice regarding their sleep disorders as well as regular medical follow-up.

### 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

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## 8.4. End Points

### 8.4.1. Primary Outcomes

Primary Outcome:

- The F&P full face mask is easy to use, accepted by the participant and provides adequate treatment for OSA during in-home use measured via custom questionnaires and PAP data download.

### 8.4.2. Secondary Outcomes

- Seal performance as measured by leak measurements/PAP data.
- To obtain 3D face scanning and head measurements to assist with future product development.

## 8.5. Variables

| Variable | Justification |
|---|---|
| Ease of use/Acceptability | To assess the ease of using the mask in the home and overall mask acceptability. |
| Mask Comfort | To assess the comfort (or lack of) of the mask as experienced by the participant while using it in-home. |
| Usability of the mask | To evaluate the usability of the F&P full face mask through a custom designed ease of use usability script |
| General Demographics | To gather participants general demographics |
| Preference | To assess which mask the participants prefers to use going forward. |
| Mask performance | To assess the mask's performance in relation to leak |

[redacted]

[redacted]

[redacted]

| | |
|---|---|
| | |
| Anthropometric Scans | To assist with future product development |

[redacted]

## 8.6. Measurements

Refer to section 8.5 for measurements. The questionnaires as well as the sleep diary are included in the appendix B, C & D of this CIP document.

[redacted]

## 8.8. Inclusion / Exclusion criteria

### Inclusion Criteria

- AHI $\geq$ 5 from the diagnostic night
- Aged 22 and over (FDA defined as default)
- Either prescribed APAP, CPAP or Bi-level PAP for OSA
- Existing Full-Face mask user
- Fluent in spoken and written English

### 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 think they may be pregnant

[redacted]

## 8.9. Point of Enrolment

Participants will be recruited from patients who are prescribed either APAP, CPAP or Bi-level PAP for OSA at North Texas Lung and Sleep Clinic. The principal investigator (or those identified in delegation log) will ask the subjects whether they're interested to take part in the trial. The participants who provide informed consent and meet the inclusion/exclusion criteria will then be enrolled into the trial.

## 8.10. Patient Procedure

The study coordinator will ask the subjects whether they're 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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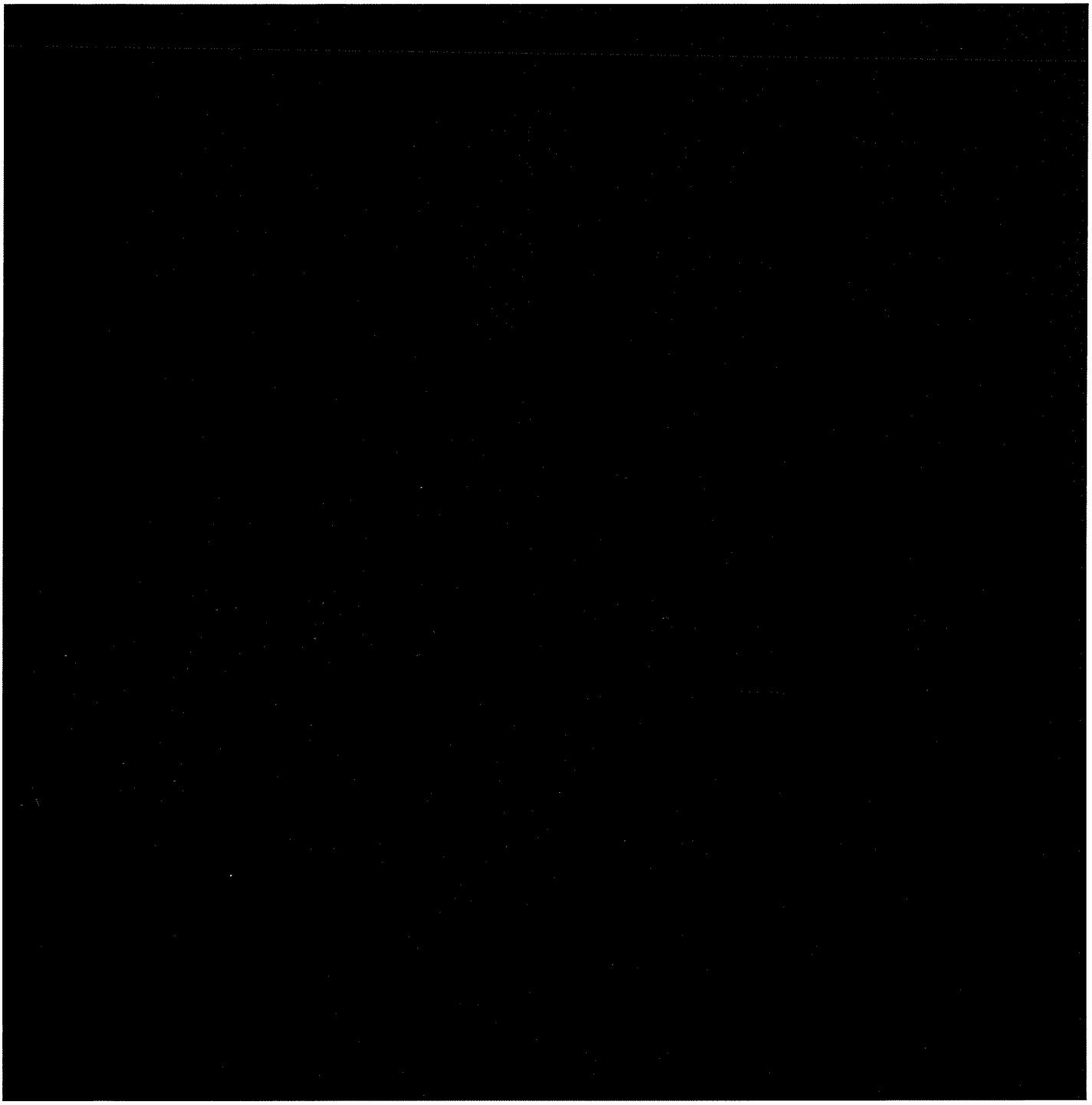

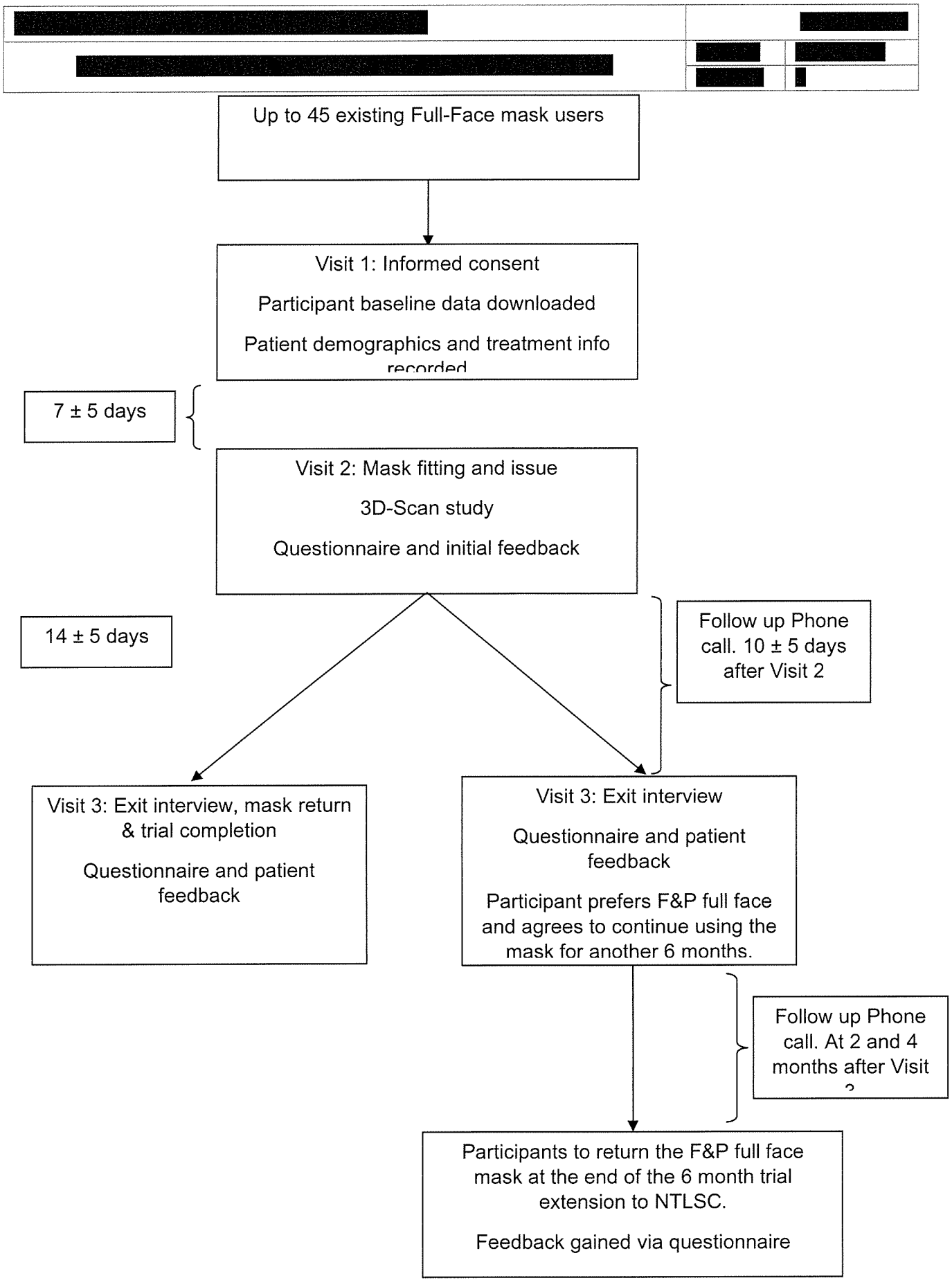


**Figure 1: Vitera Validation US In-Home Clinical Trial Procedure**

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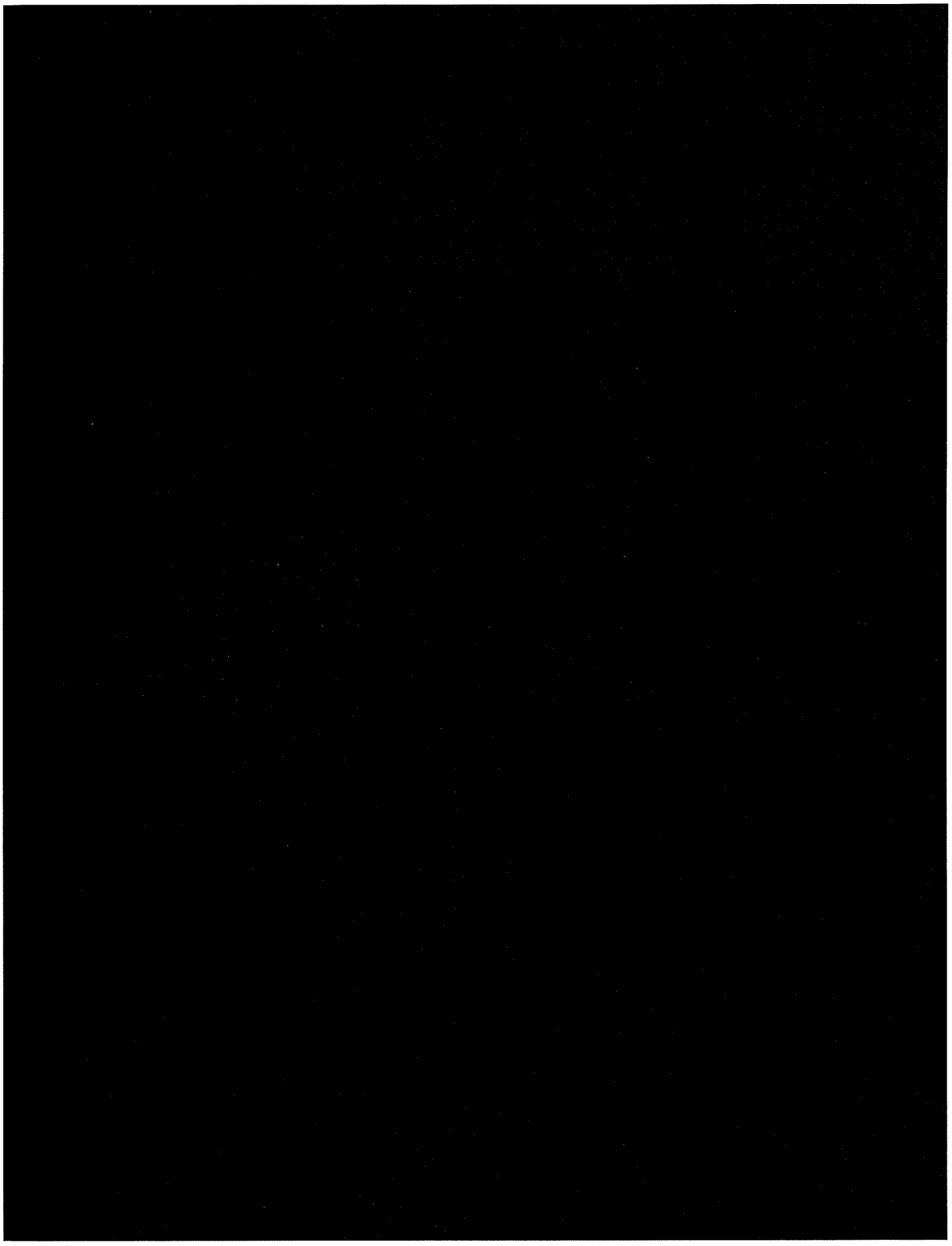
With the following section, the days (± N) reflects: the date that will begin for that section (± the range within which the visit is acceptable)

[redacted]

[redacted]



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## 8.14. Foreseeable Complications

From the MAUDE database, the common reported injuries from general CPAP and interface use are pressure sores, leading to cuts, rashes, skin abrasion and skin breakdown. Allergic reaction to the material of the mask can occur. Common complaints are discomfort and soreness on the areas of contact.

Participants on the trial are informed that they are able to switch back to their normal therapy if required. Adverse events will be noted in the individual's CRF.

# 9. Clinical Trial Documentation

[redacted]

STATISTICAL CONSIDERATIONS

## 9.5. Description of the Statistical Design

Since the trial is regarding the performance and acceptability of the trial device in order to inform product development, no statistical design is required.

[redacted]

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## 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[13]. 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.

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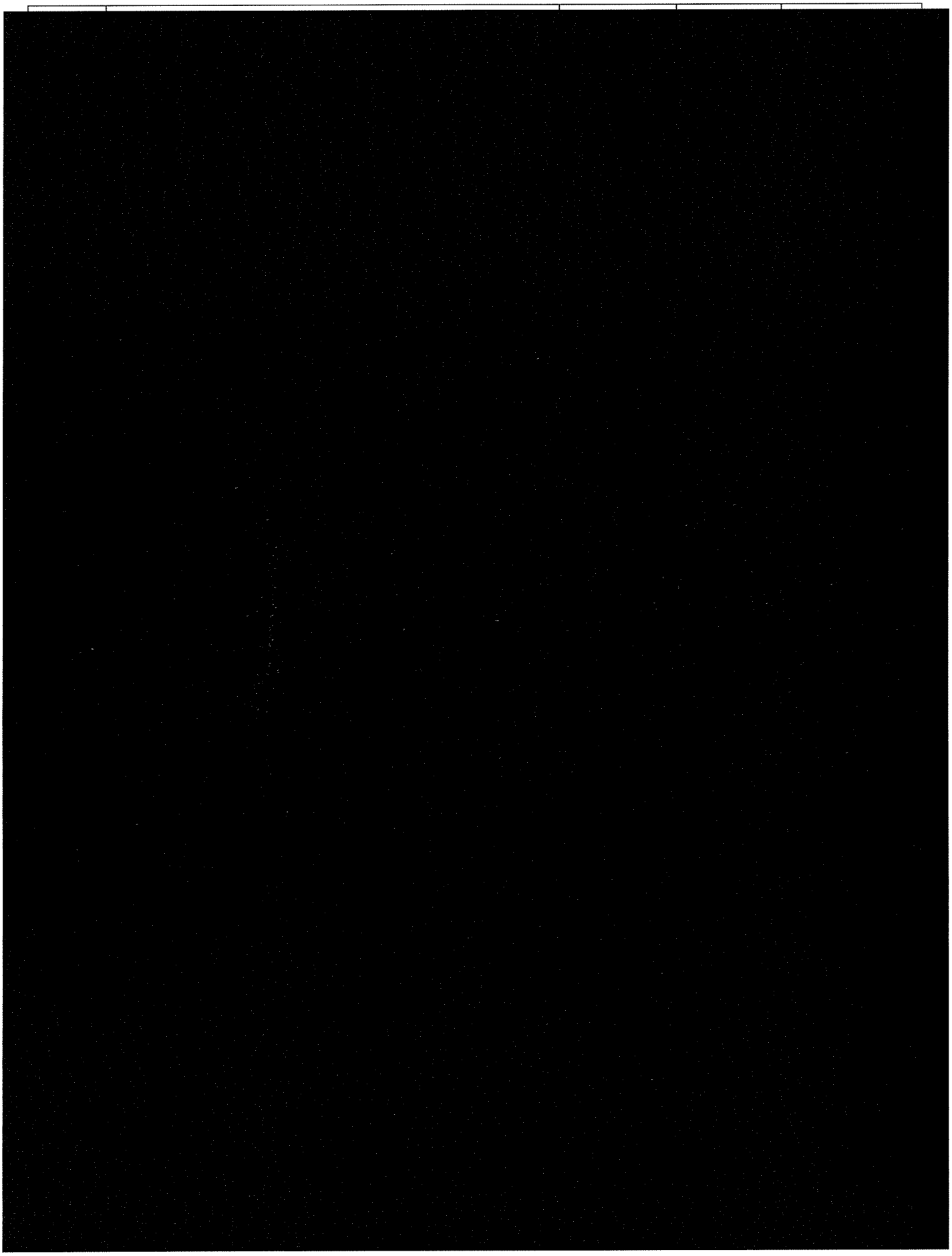

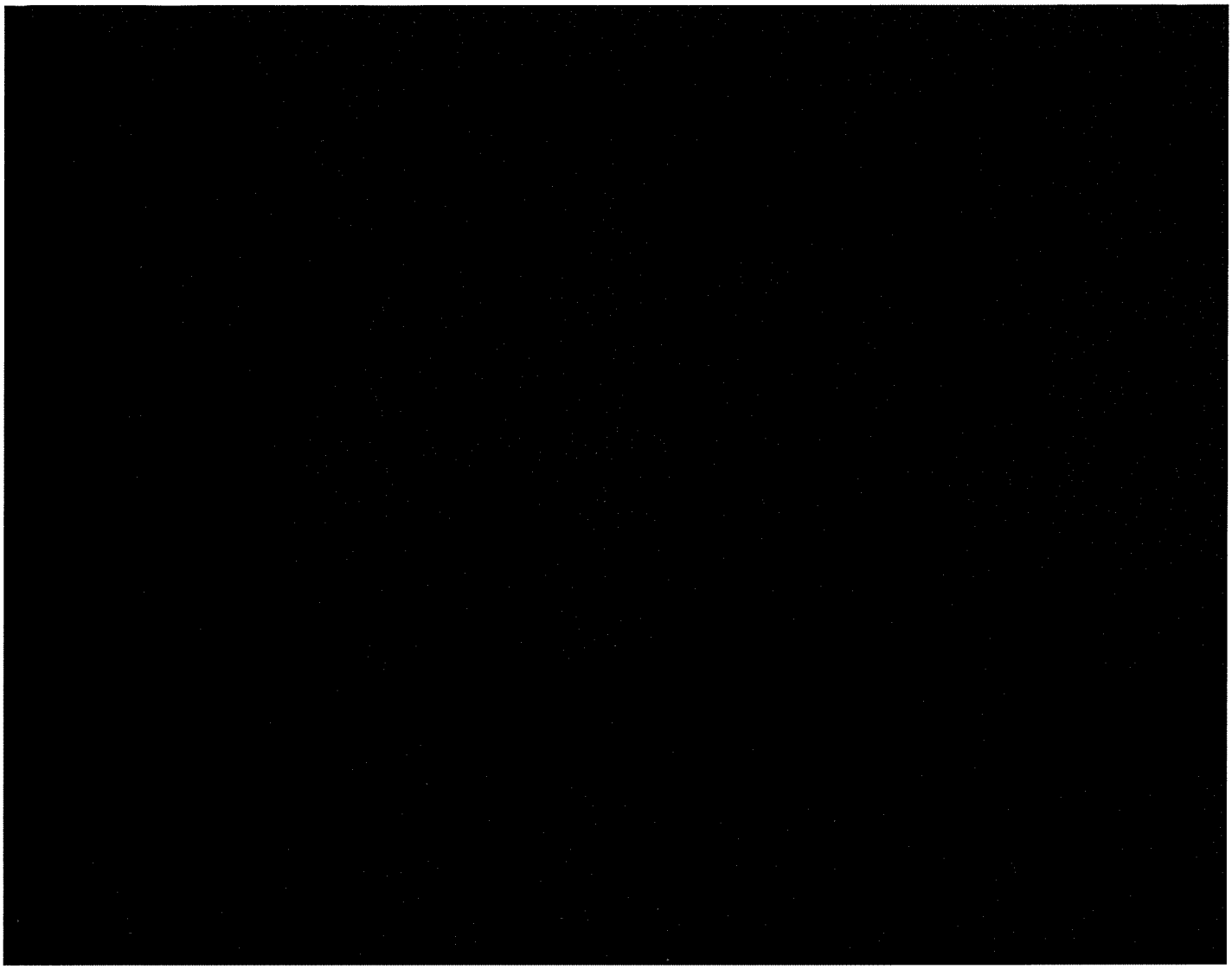

### 9.8. Statistical Termination

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.

### 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 unfavourable 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

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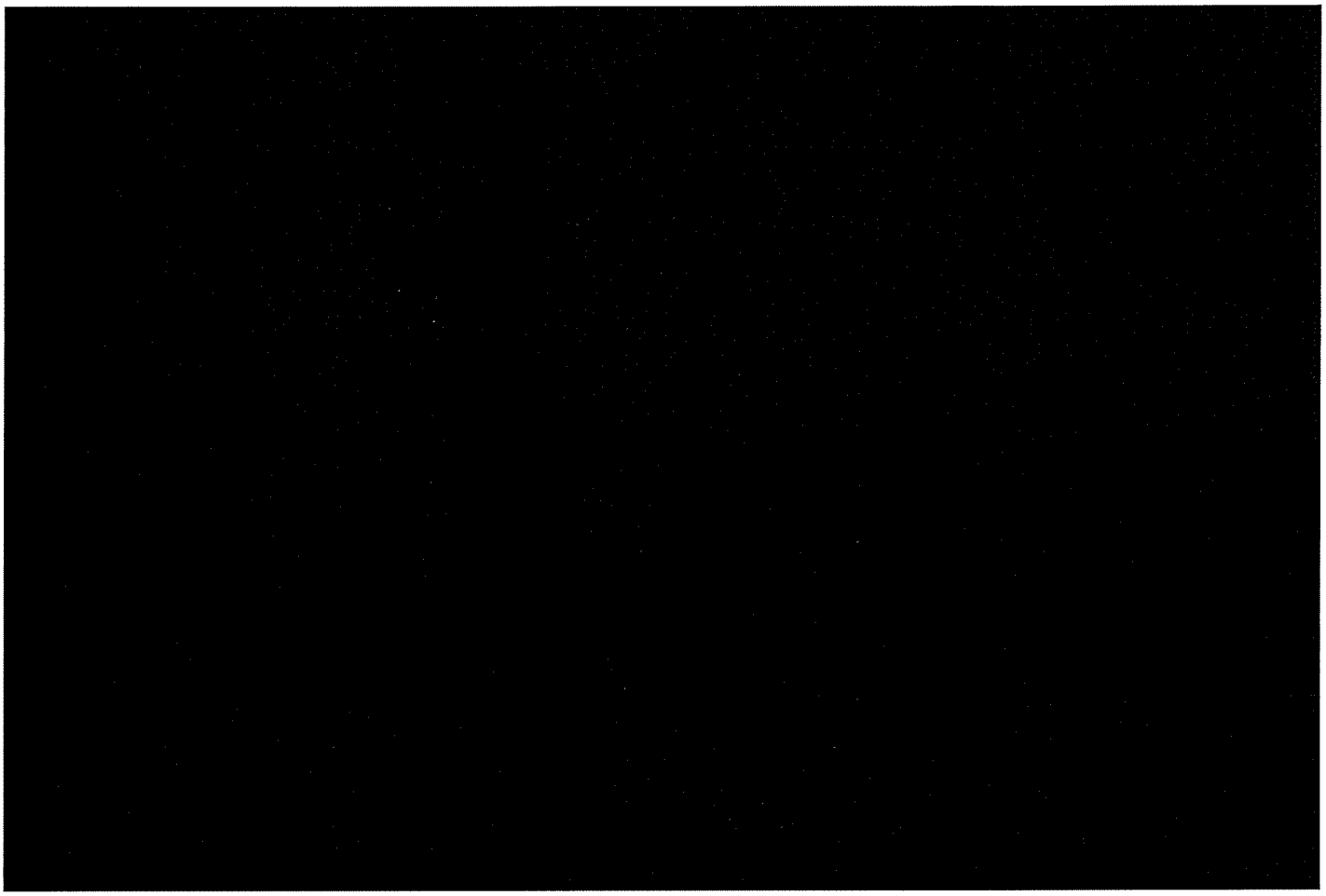


## 10.4. Early Termination

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.

### 10.4.1. 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.

### 10.4.2. 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.

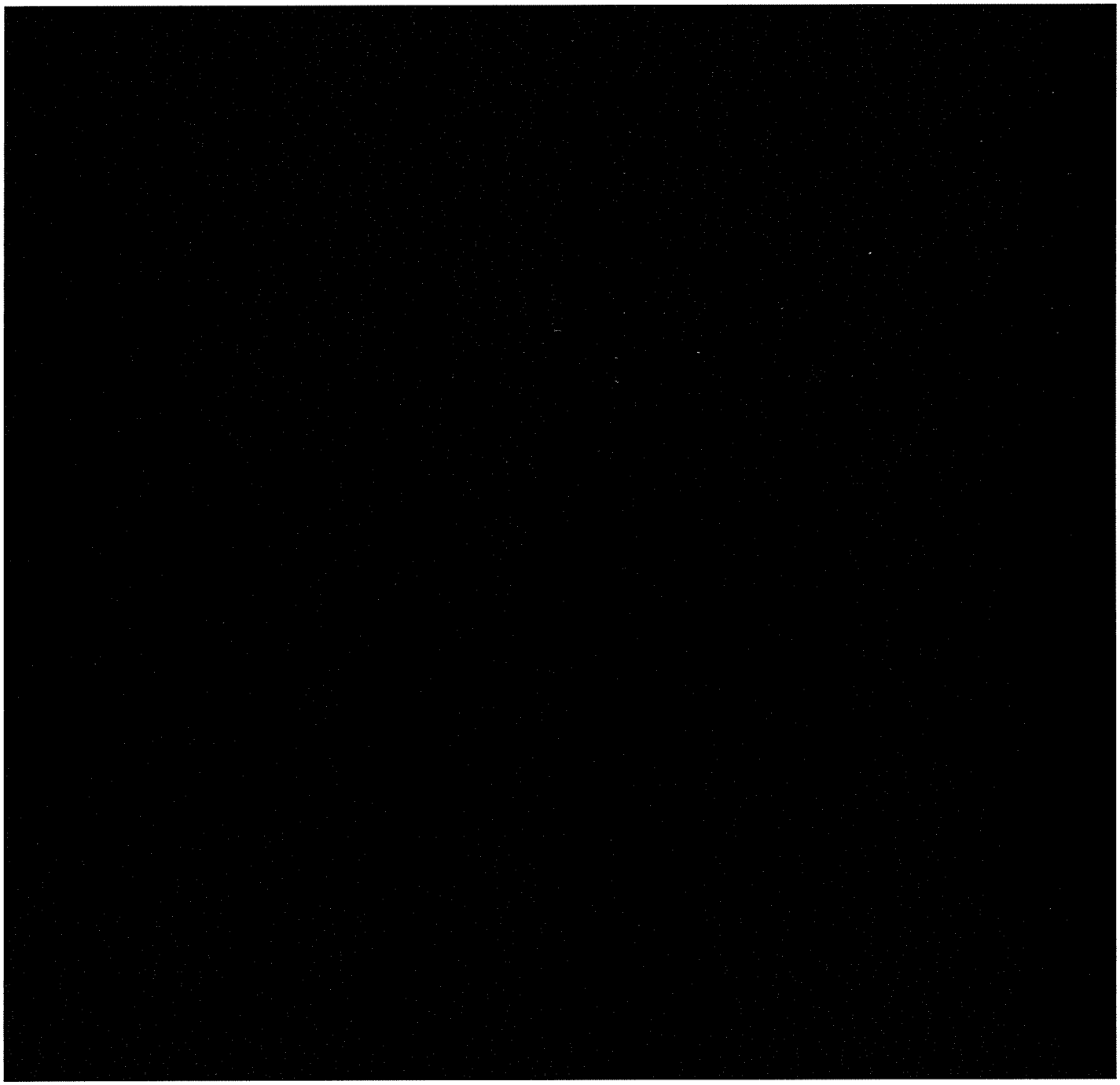
[redacted]

### 10.4.3. Institutional Review Board (IRB) or Independent Ethics Committee (IEC)

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 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.



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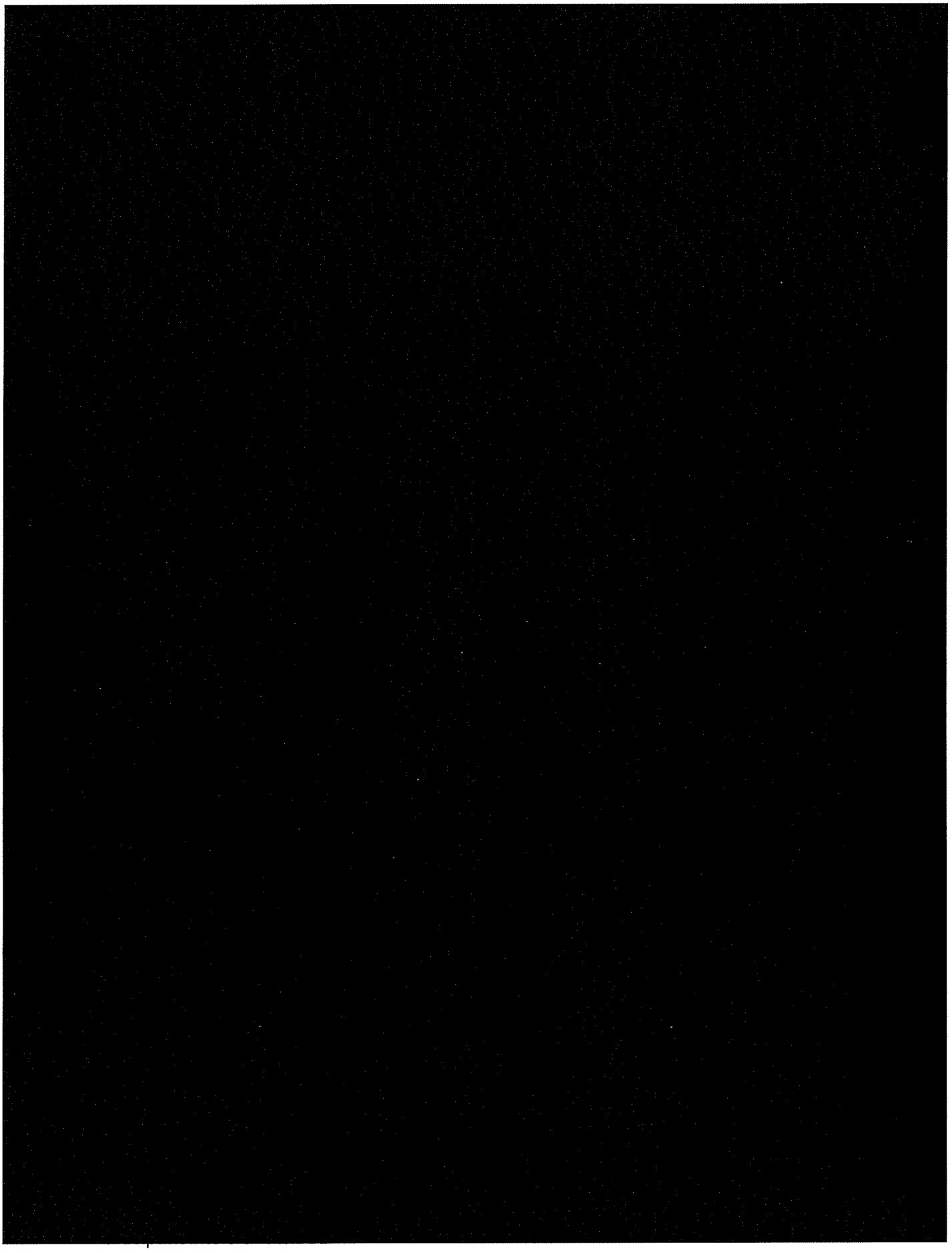

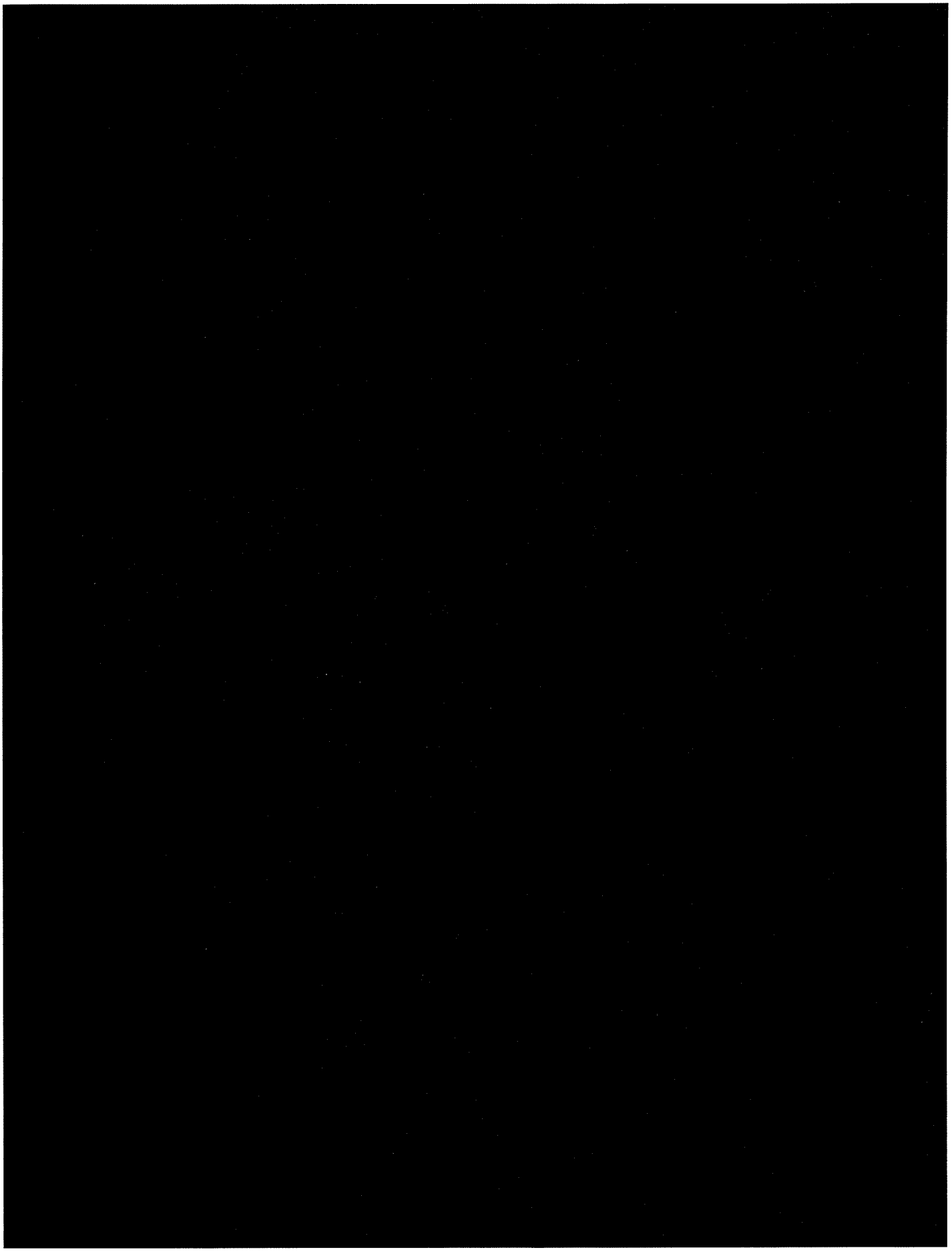

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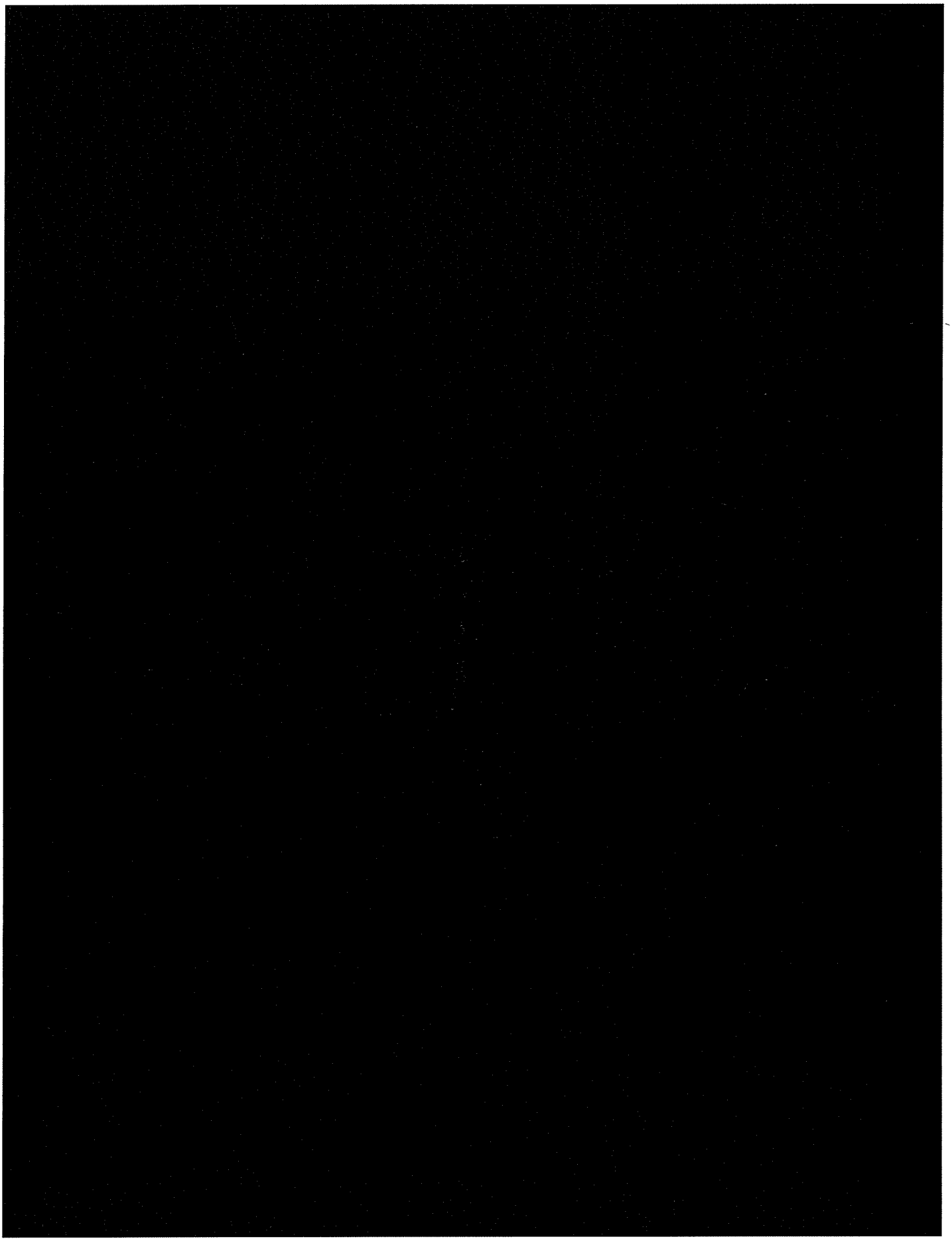

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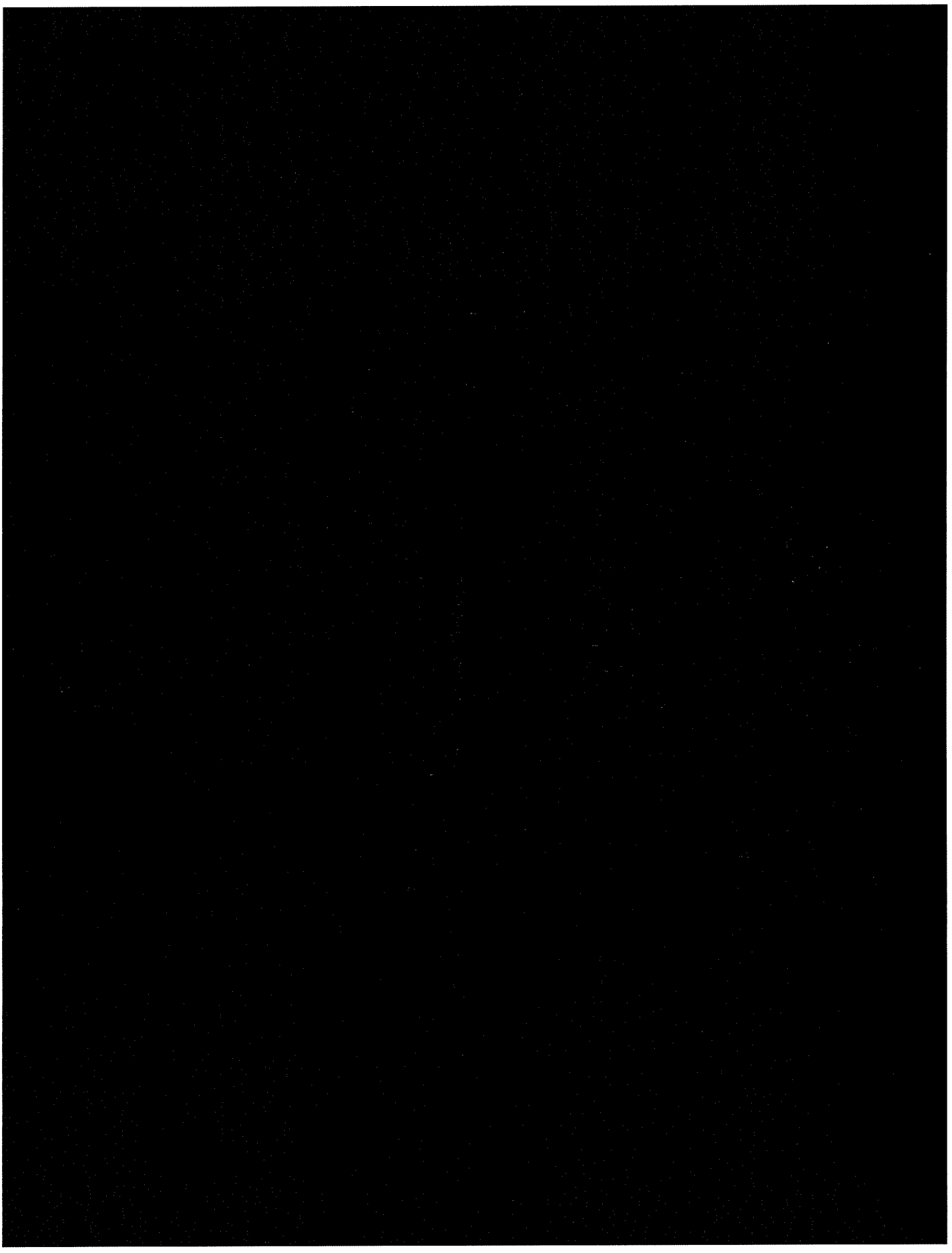

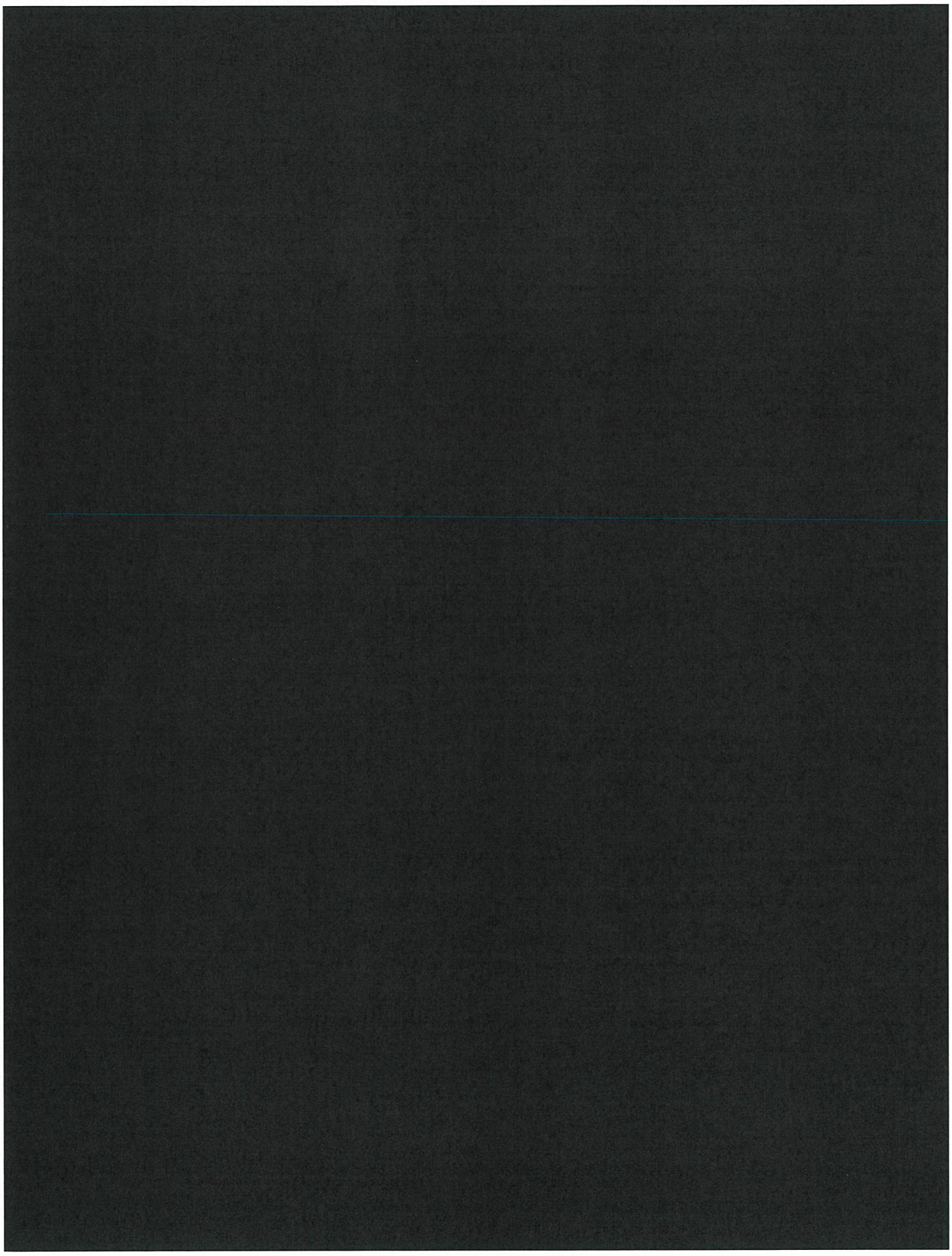

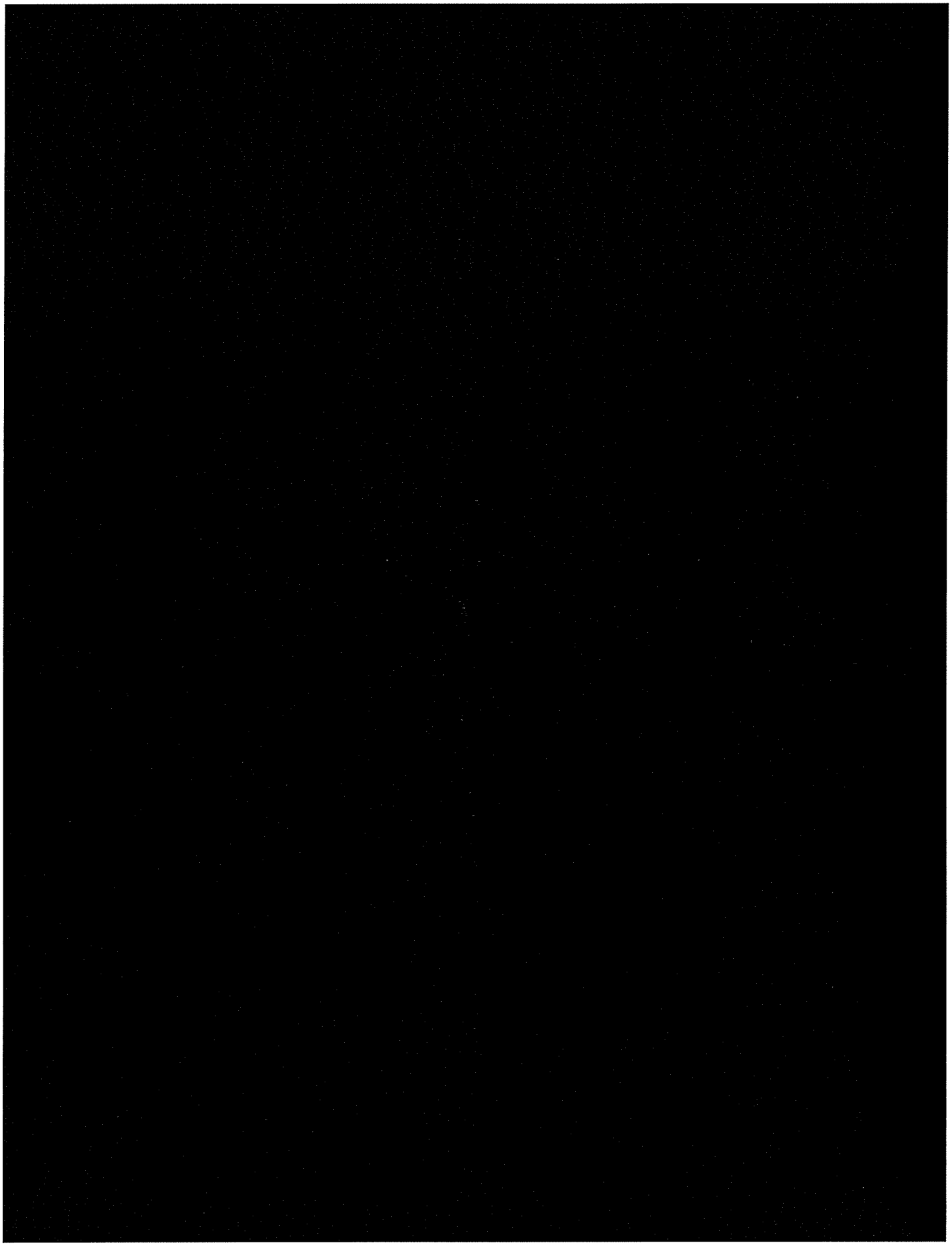

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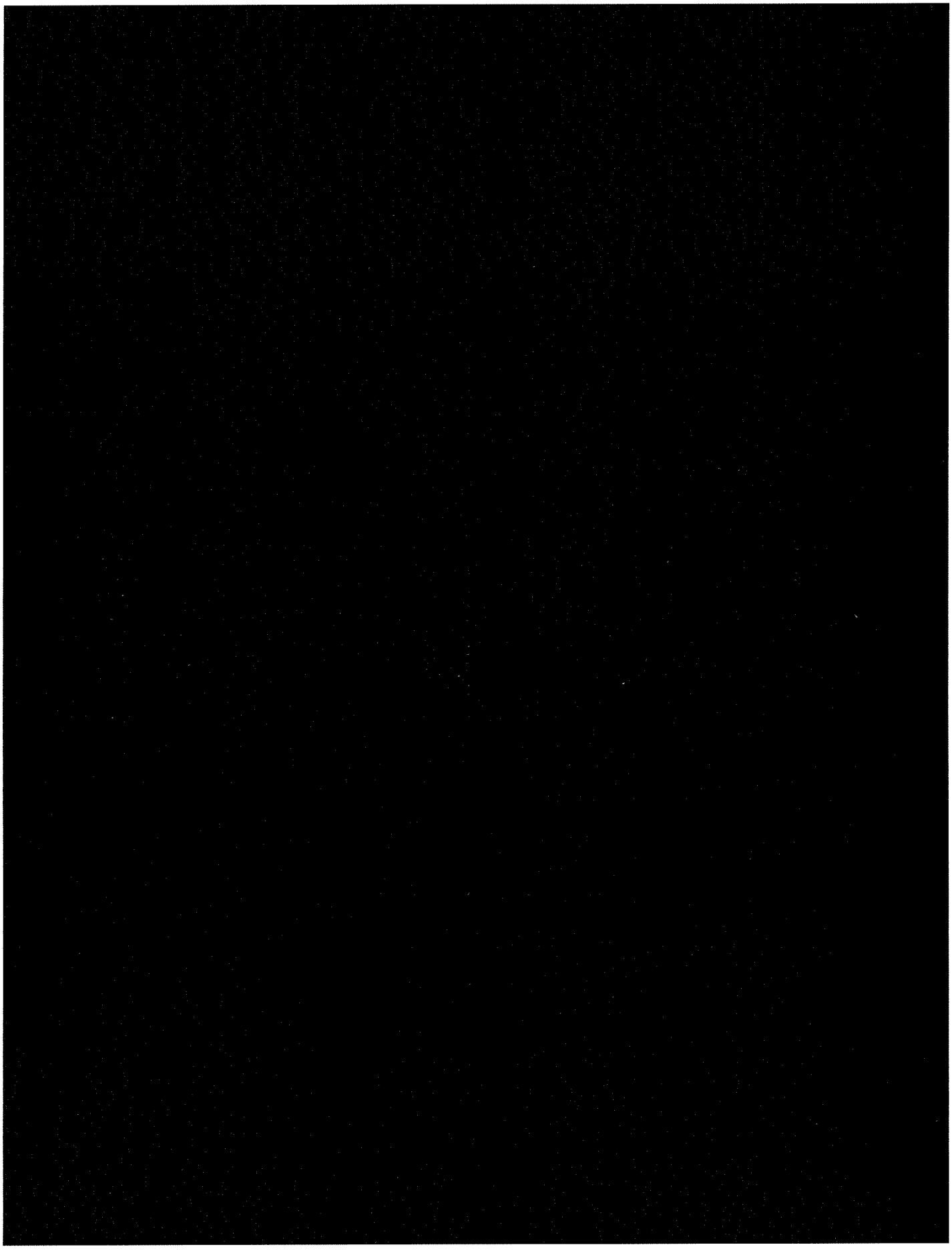

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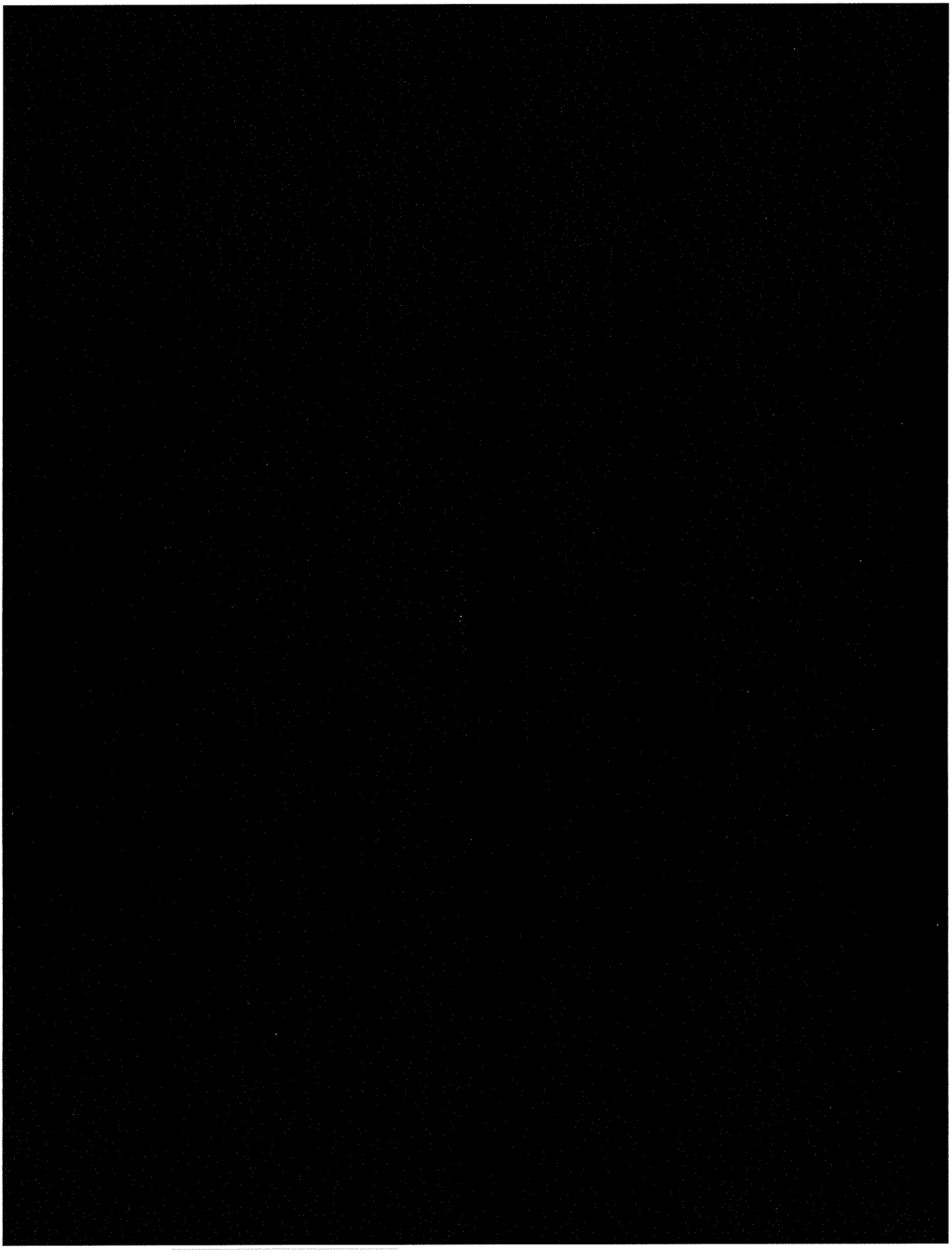

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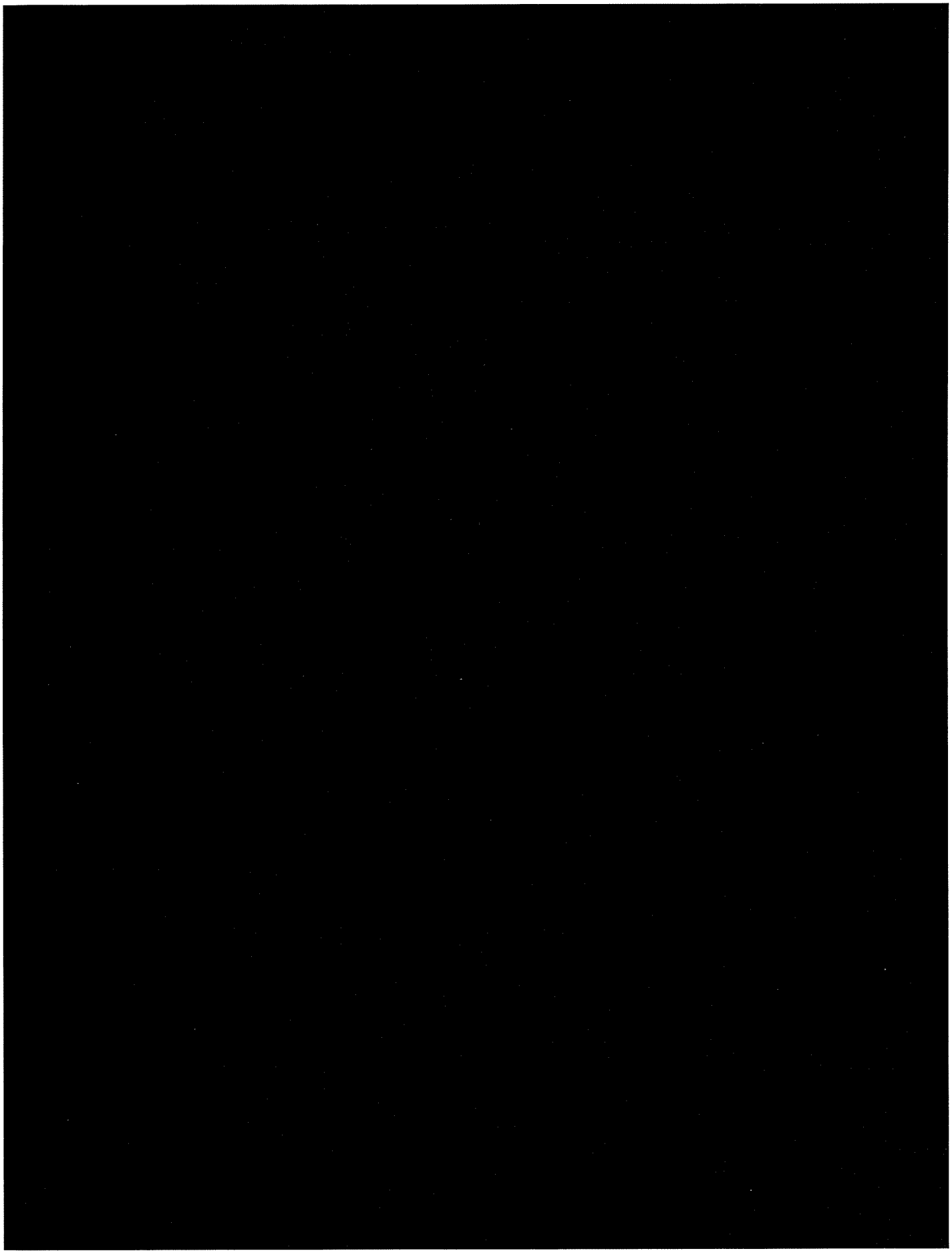

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