TEMELÍN OPTION

EPC CONTRACT

CONTRACT SPECIFICATION

DOCUMENT NAME:	**TECHNICAL REQUIREMENTS DOCUMENT VOLUME 5 (EXCL. DRAWINGS)**
VERSION DATE:	**March 2025**

CONTENT:

CHAPTER 5.1	CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE ON THE SITE
CHAPTER 5.2	SITE DESCRIPTION
CHAPTER 5.3	CONNECTION POINTS
CHAPTER 5.4	TRANSPORT OF HEAVY AND OVERSIZED COMPONENTS
CHAPTER 5.5	FIGURES
CHAPTER 5.6	TABS
CHAPTER 5.8	DOCUMENTS

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SIGNATURE PAGE

IN WITNESS WHEREOF the Owner* and the Supplier* have hereby signed the above listed parts of the EPC Contract*.

For and on behalf of the **OWNER**, **Elektrárna Dukovany II, a. s.**

Signature
Name
Title

Signature
Name
Title

[redacted]

For and on behalf of the **SUPPLIER, Korea Hydro & Nuclear Power Co., Ltd.**

Signature
Name
Title

Signature
Name
Title

[redacted]

TEMELÍN OPTION

EPC CONTRACT

CONTRACT SPECIFICATION

DOCUMENT NAME:	**TECHNICAL REQUIREMENTS DOCUMENT VOLUME 5 SITE CHAPTER 5.1 CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE ON THE SITE**
VERSION DATE:	**March 2025**

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CHAPTER 5.1 CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE ON THE SITE

5.1.1 FUNCTIONAL CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE

5.1.1.A

Functional civil structures and technical infrastructures located on the Construction Site* are listed in Table 5.1.1-1.

Table 5.1.1-1 Functional civil structures and technical infrastructures

Name	Area	Identification
[illegible]	[illegible]	[illegible]

Name	Area	Identification

Name	Area	Identification

Name	Area	Identification

[redacted]

5.1.1.B

The description of the listed civil structures and technical infrastructure is stated in the Technical Requirements Document*, Section 5.2.11.

5.1.1.C

For more information about functional civil structures and technical infrastructures see in the Construction and Commissioning Document*, Section 2.6.3.3.5

5.1.2 NON-FUNCTIONAL CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE

5.1.2.A

Non-functional civil structures and technical infrastructures located on the Construction Site* are listed in Table 5.1.2-1.

Table 5.1.2-1 Non-functional civil structures and technical infrastructures

Identification	Area	Name

[redacted]

Identification	Area	Name

Identification	Area	Name

Identification	Area	Name

Identification	Area	Name

5.1.2.B
The description of the listed civil structures and technical infrastructure is stated in the Technical Requirements Document*, Section 5.2.11.

5.1.2.C
For more information about Non-functional civil structures and technical infrastructures see in the Construction and Commissioning Document*, Section 2.6.3.3.5

5.1.3 UNIDENTIFIED CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE

A

Disconnected infrastructure after construction time ETE1,2

After the Existing Nuclear Power Plant* has been built all temporary civil structures designed for on-site facilities area used during construction period were demolished and removed, – incl. foundation structures up to a depth of –1 m under graded ground level. Also underground structures, such as shafts, channels, etc were demolished up to that level. Channels located more than 1,0 m below from the graded ground level were backfilled by crushed concrete and soil. Sewerage shafts were closed by concreting below that level, and in the case of underground water intake system they were filled with gravel. Technical infrastructure was demolished in the following way: cable lines were removed up to –0,5 m depth, and piping and pipes up to –1,0 m under graded ground surface. Transport infrastructure incl. hard surface yards were demolished in full scope. After Biological Reclamation* the Topsoil* layer is approximately 0,3 m

B
For more information about unidentified civil structures and technical infrastructures see in the Construction and Commissioning Document*, Section 2.6.3.3.5

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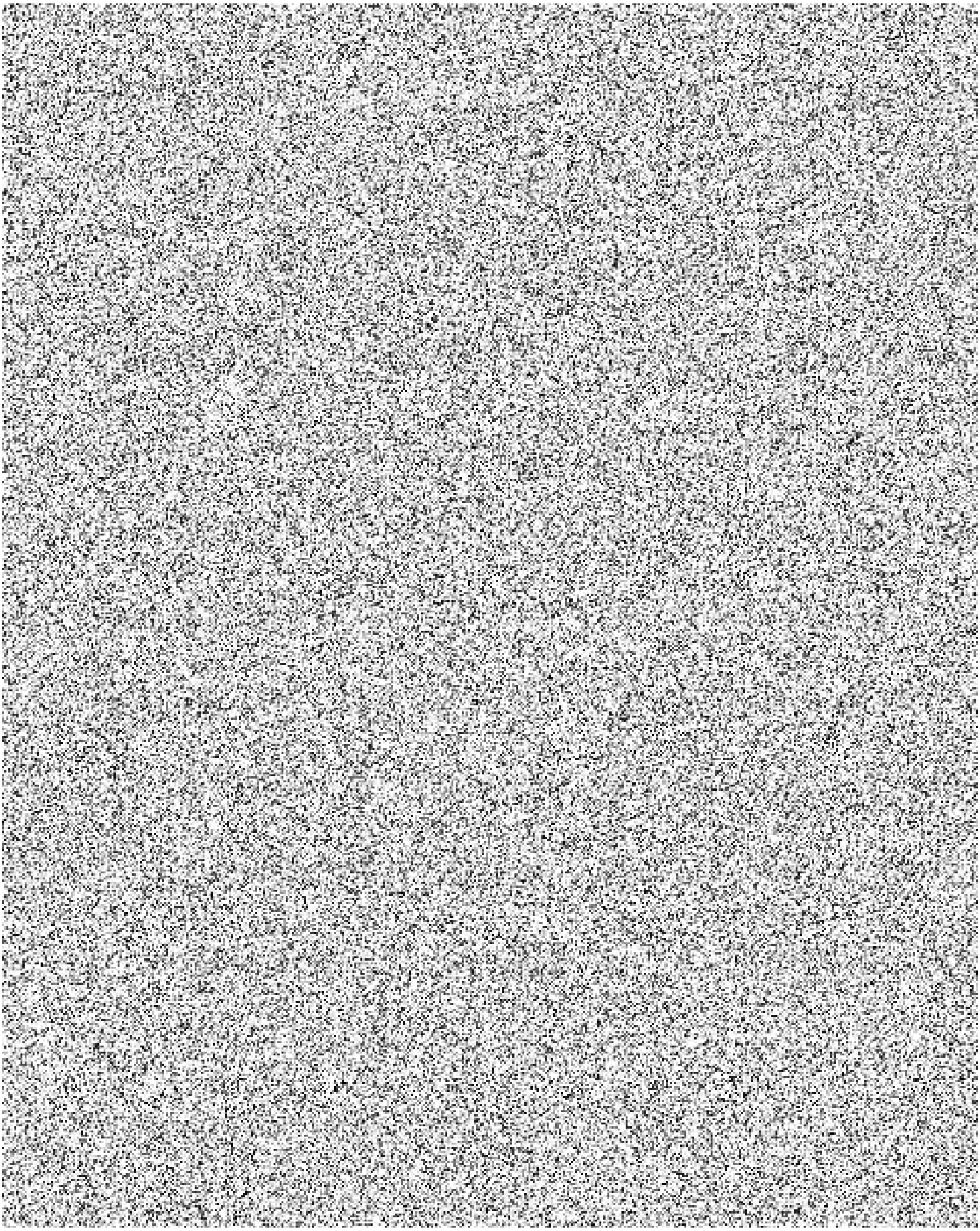
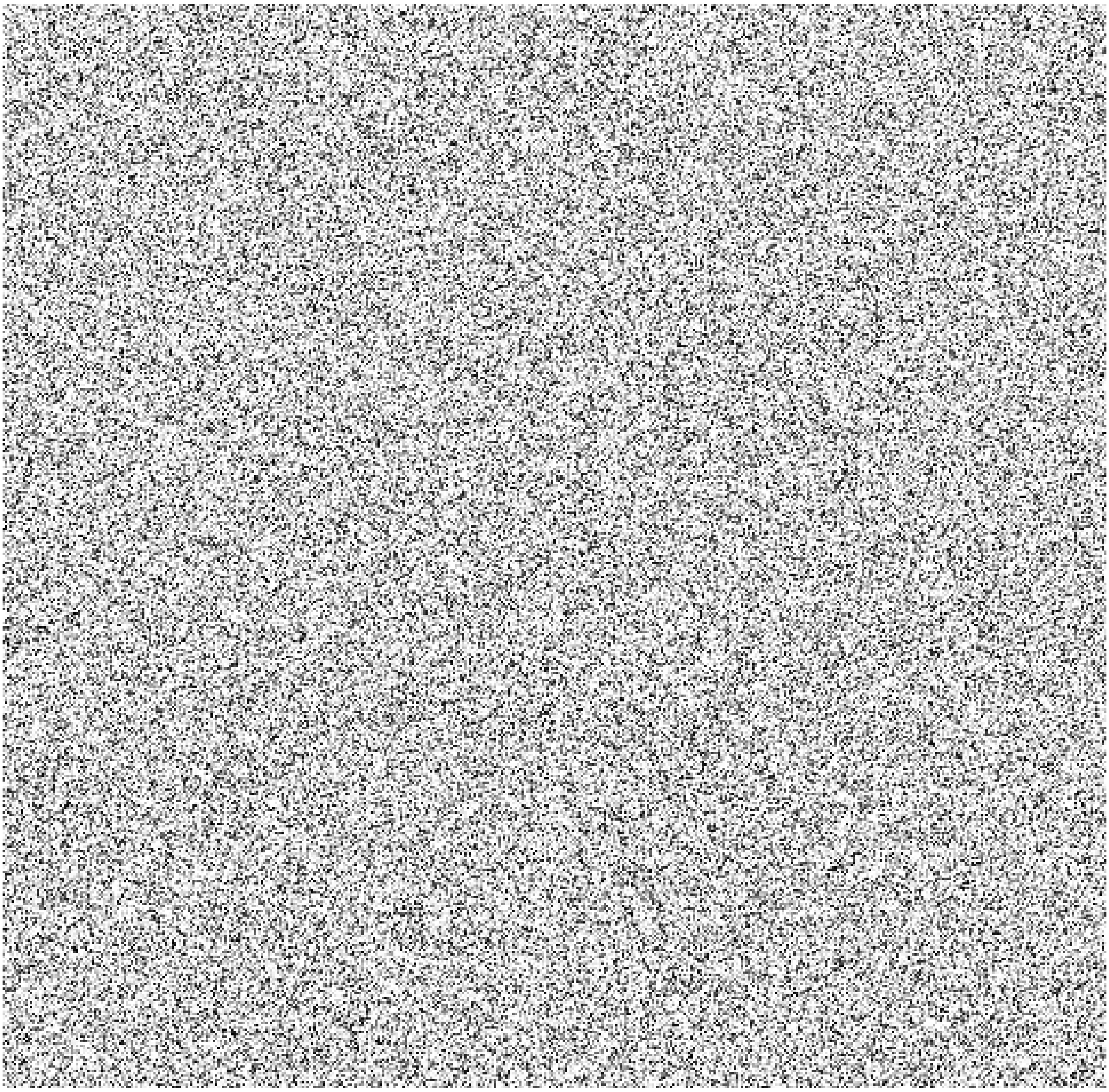
CHAPTER 5.2 SITE DESCRIPTION

5.2.1 BASIC INFORMATION





Description of the surroundings

In the close vicinity of the Construction Site* are no large industrial factories, no densely populated areas, no major transport routes, no mines, no quarries nor large warehouses of explosive or toxic materials except the Existing Nuclear Power Plant*. In the close vicinity are no intensions of the significant increase of the industrial or transportation activities. The character of the close vicinity of the Existing Nuclear Power Plant* is the agricultural and livestock production and small industrial manufactories.

Existing Nuclear Power Plant* Temelín, adjacent to the Construction Area* S1, has been uprated and now has the installed electrical output 2×1080 MWe. The Existing Nuclear Power Plant* consists of the two reactor buildings, two turbine buildings, four cooling towers and supporting facilities. Each cooling tower is 155 m high. Moreover, the Existing Nuclear

Power Plant* consists of the interim storages of spent fuel. Spent fuel is stored in the CASTOR containers.

In the distant locality are these district towns: Písek (21 km), České Budějovice (25 km), Tábor (33 km), Strakonice (34 km), Prachatice (35 km), Český Krumlov (42 km) and Jindřichův Hradec (46 km). Municipalities Křtěnov, Březí and Temelínec has been demolished in the past in connection with the Existing Nuclear Power Plant* construction.

Locality is connected to the railway system of Czech Republic by the railway siding (allowed axle load 22,5 t, railway superstructure type S 49 on concrete sleepers) from the railway station Temelín. The Construction Site* and the Existing Nuclear Power Plant* is connected to the road II/105 which leads through the Týn and Vltavou – České Budějovice and the road II/138 to Temelín village.

5.2.2 INDUSTRIAL, TRANSPORT AND MILITARY INFRASTRUCTURE IN THE VICINITY

There are no major industrial facilities, quarries mines, warehouse of toxic and explosive materials or frequent transport routes in the immediate vicinity of the Plant*. All objects and sources of risk were identified in the 10 km vicinity from the site (40 km in the case of the hazards associated with nearby airports) as recommended by IAEA SSG-79. Objects listed in the following table were identified as nearby industrial, transport and military facilities.

The biggest issue in the vicinity of the Plant* is the high-pressure transit pipelines adjacent closely from the northwest to the Construction Site* with a security zone of the transit gas pipeline in the width of 80 m. The other source of risk can be transport of dangerous substances on the railway.

Table 5.2.2-1 External stationary sources of risk at Plant* vicinity

Object	**Hazardous substances**
Fuel station Temelín	Diesel, gasoline
Quarry Slavětice	Explosives
Brick factory Wienerberger Týn nad Vltavou	Diesel
Electrical substation Kočín	Transformer oil
Graphite product factory Graphite Týn nad Vltavou	Sulfuric acid, sodium hydroxide, hydrogen peroxide
Bioethanol factory Býšov	Ethanol, gasoline, ammonia water, sodium hydroxide, sulfuric acid, flammable dust dispersion
Forest in the vicinity of the Plant*	Flammable vegetation

Road transport

Main roads in a distance up to 5 km from the Plant* are:

Roads No. II/105 (~ 5 500 vehicles daily), No. II/138 (~ 700 vehicles daily) and No. II/141 (~ 1 400 vehicles daily)

Railway transport

Railway tracks in a distance up to 10 km radius from the Plant* are:

Railway line 192 Týn nad Vltavou - Číčenice with a rail branch to Existing Nuclear Power Plant* in a distance of about 100 m from the Construction Site*.

Air transport
Around the Existing Nuclear Power Plant* is prohibited airspace (except emergency flights), which has a cylindrical shape with a radius of 2 km (1,1 NM) centered at a position in the middle of the Existing Nuclear Power Plant* (coordinates 49 10 48,73 N 014 22 13,77 E) and spreading from the ground to the height of 5 000 ft AMSL (about 1 500 m above sea level).

The Design-Basis of the Plant* shall consider unintentional impact of an aircraft crash, detailed information in section 2.4.1.3.1 AIRCRAFT CRASH.

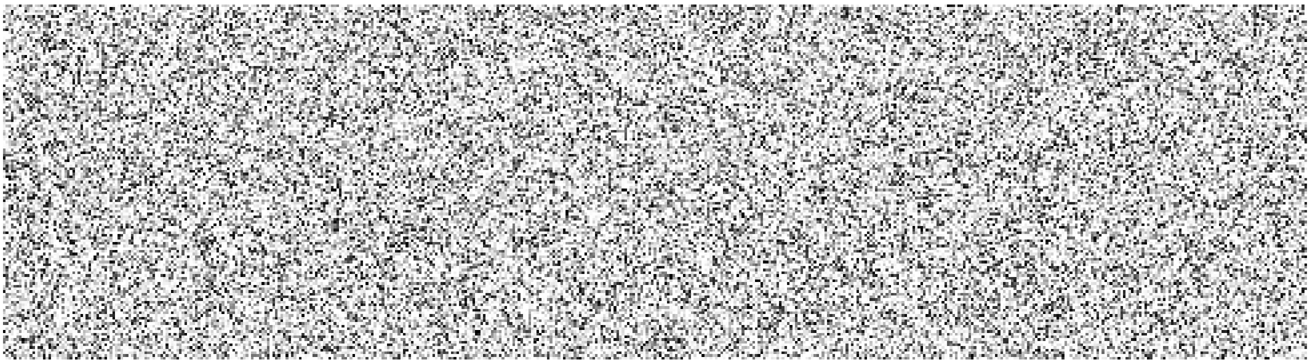
Pipeline
Transit gas pipeline is passing close to the Construction Area* of the Site* area (toward northwest). It is a corridor with 4 high-pressure pipelines transporting natural gas.

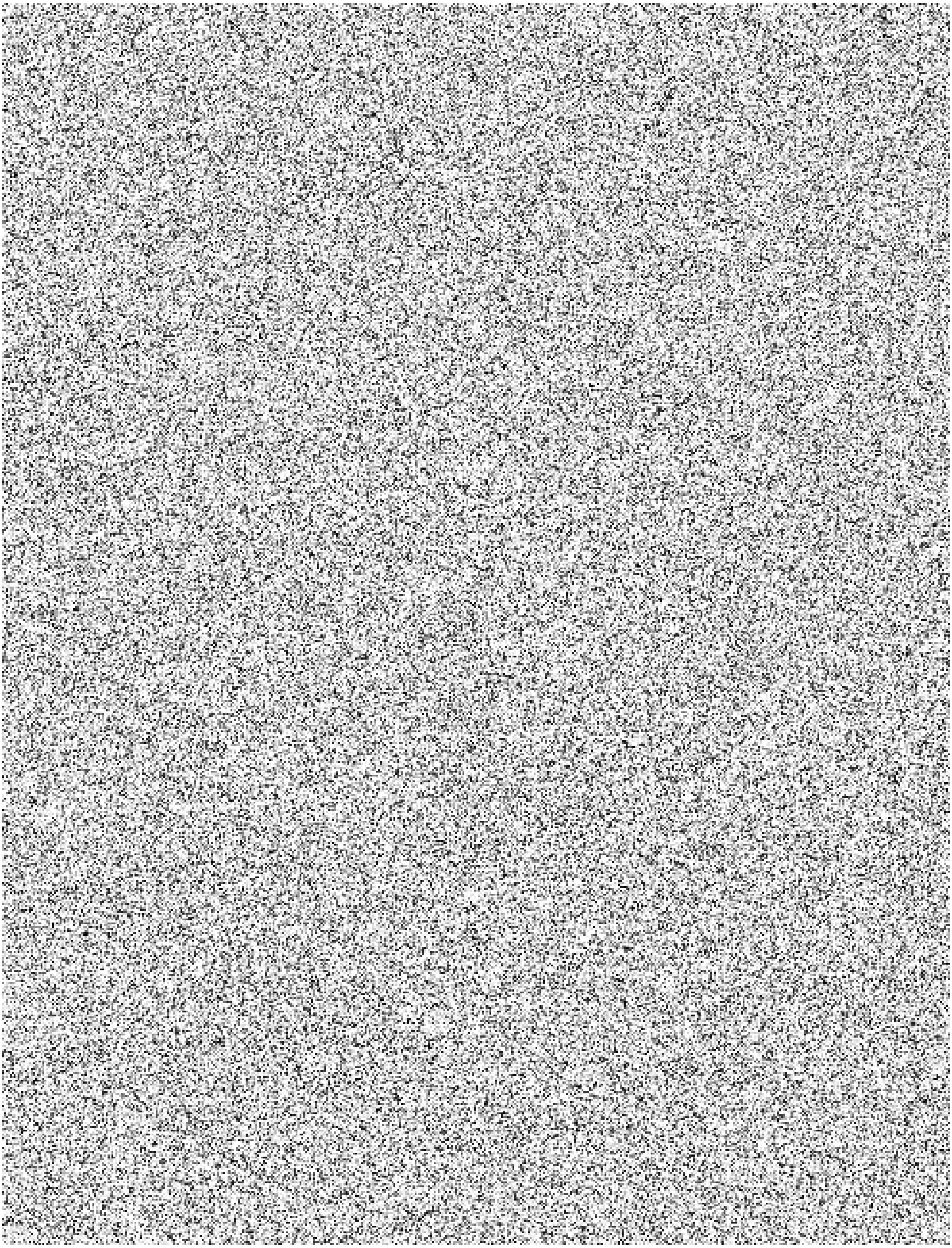
- high-pressure gas pipeline transit line with internal diameter 800 millimeters and a maximum pressure 7,5 MPa.
- high-pressure gas pipeline transit line with internal diameter 1 000 millimeters and a maximum pressure 7,5 MPa.
- high-pressure gas pipeline transit line with internal diameter 1 400 millimeters and a maximum pressure 7,5 MPa,
- high-pressure gas pipeline transit line with internal diameter 200 millimeters and a maximum pressure 4 MPa.

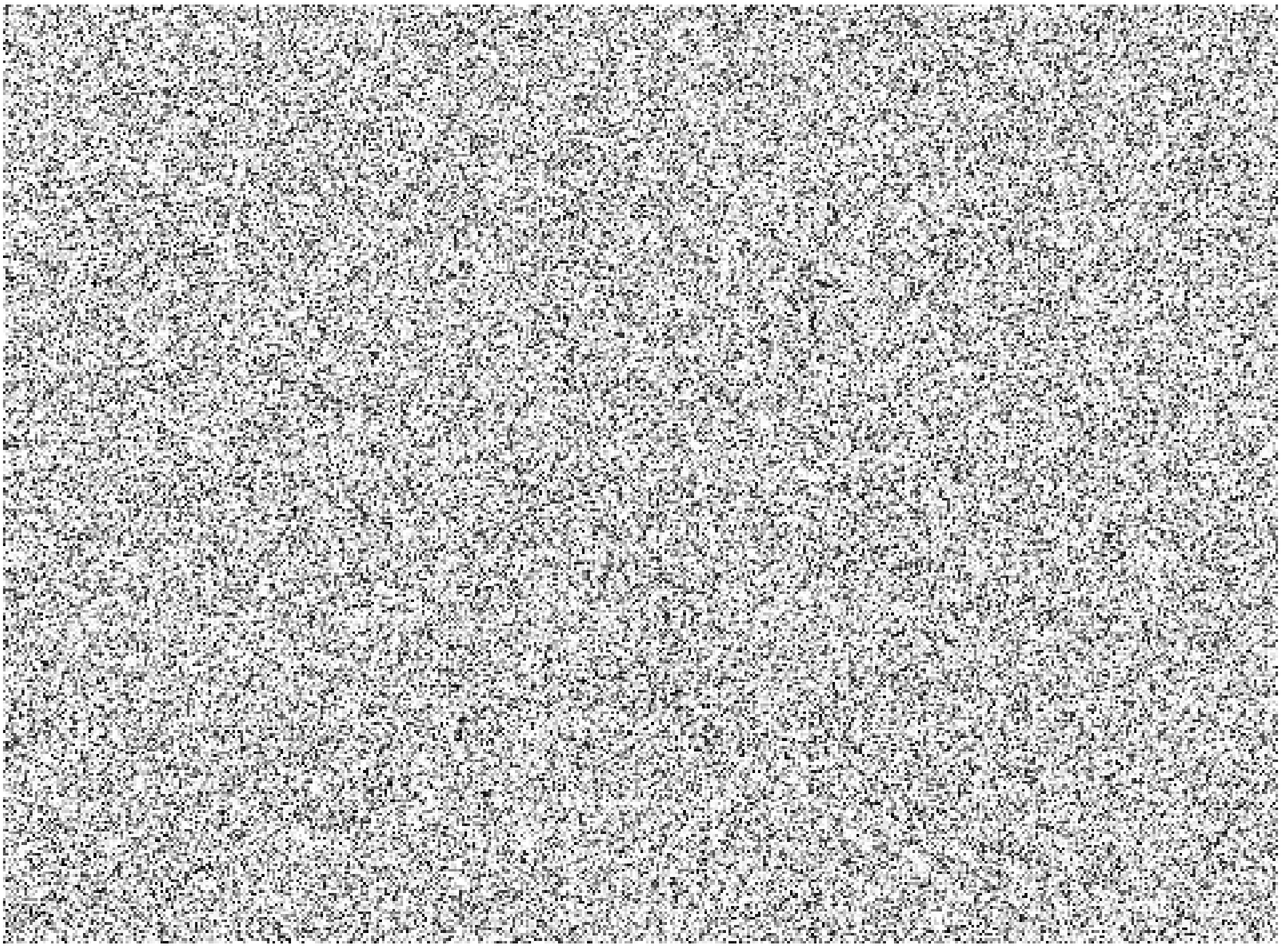
External events which cannot be neglected
Based on the background study, the external events whose interaction with the Plant* cannot be neglected are:

- spreading of a cloud of toxic gases in case of accident (fires, spilling of ammonia or nitrate acid) on nearby railroad
- underground gas diffusion from pipelines
- aircraft crash
- snowstorm
- electromagnetic interference
- HVAC system blocking

5.2.3 HAZARDOUS ACTIVITIES IN THE EXISTING NUCLEAR POWER PLANT







5.2.4 METEOROLOGY

From macro climate point of view located in temperate zone of the northern hemisphere in the center of Europe. Distant locality can be included in the interface areas MT7, MT10 and MT11 (Tab. 5.2.4-1). Site* vicinity is located in climatic area MT7.

The description of climatic condition of climatic area MT7 according to Quitt's classification:

- normally long, mild and slightly dry summers
- short transitional periods with mild springs and slightly warm autumns
- winters are normally long, slightly warm, dry to slightly dry with short time of snow cover

Tab. 5.2.4-1: Criteria of climatic areas MT7, MT10, MT11 according to Quitt's classification

Climatic area	MT7	MT10	MT11
Number of warm days	30 – 40	40 – 50	40 – 50
Number of days with average air temperature 10 °C and higher	140 – 160	140 – 160	140 – 160
Number of frost days	110 – 130	110 – 130	110 –130
Number of cold days	40–50	30 – 40	30 – 40
Average temperature in January (°C)	-2 - -3	-2 - -3	-2 - -3
Average temperature in July (°C)	16 – 17	17 – 18	17 – 18
Average temperature in April (°C)	6 - 7	7 - 8	7 - 8
Average temperature in October (°C)	7 - 8	7 - 8	7 - 8
Average number of days with amount of precipitation 1 mm and higher	100 – 120	100 – 120	90 – 100
Total rainfall during the growing season (mm)	400 – 450	400 – 450	350 – 400
Total rainfall during winter season (mm)	250 – 300	200 – 250	200 – 250
Number of days with snow cover	60 – 80	50 – 60	50 – 60
Number of cloudy days	120 – 150	120 – 150	120 – 150
Number of sunny days	40 – 50	40 – 50	40 – 50

Average annual temperature at the Temelin station for period 1989 to 2016 is 8,5 °C. Usually the warmest month is July with average temperature 18,4 °C, the coldest month is January with average temperature -1,1 °C. An annual precipitation for period 1989–2016 is on average of 611 mm.

5.2.4.1 EXTREME METEOROLOGICAL PARAMETERS

For the Site* these meteorological variables were evaluated:

- extreme instantaneous wind velocity
- extreme snow depth
- extreme rain precipitation
- extreme air temperature

Extreme Meteorological parameters were evaluated in accordance with IAEA NS-G-3.4 and SSG-18

Wind velocity

Determination of the wind loadings is based on measurements of annual maximum instantaneous wind speed values. Wind gusts 1s are measured values of instantaneous wind speed. For determination of the extreme wind load meteorological station Temelin, Churáňov, Praha-Ruzyně and Kocelovice were chosen. In terms of load the effects of this phenomenon on objects of Plant* are covered by design values of extreme wind speed with a repetition of 10 000 years.

Tab. 5.2.4.1-1: Recommended estimation values at 1s and 10 s and 10 min of wind load (m/s)

Repetition time	**100 years**	**10 000 years**
Wind gust 1 s (m/s)	48	65
Wind gust 10 s (m/s)*	38,9	52,7
10-minute mean speed (m/s)	26,8	36,3

**One-second gusts were measured, ten-second gusts are recalculated of one-second gusts with coefficient 0,81*

Snow conditions

Snow load is expressed by water rate of snow – water column height in mm, which arises from thawing of snow. This value contains not only water in the form of snow, but also water in the form of liquid precipitation captured by snow.

Tab. 5.2.4.1-2: Design values for water rate of snow (water column height in mm) for the Site* with repetition time of 100 years.

Parameter	**Estimation method**	**Repetition time**
		100 years
Water rate of snow (mm of water column)	Gumbel MLE	109

Tab. 5.2.4.1-3: Design values for water rate of snow (water column height in mm) for the Site* with repetition time of 10 000 years.

Parameter	**Estimation method**	**Repetition time**
		10 000 years
Water rate of snow (mm of water column)	Gumbel MLE	189

Precipitation

Recommended estimations are shown in the tables below and are based on the Gumbel distribution for Temelin, Tábor, Třeboň and České Budějovice station.

Tab. 5.2.4.1-4 Recommended estimations of storm rains with repetition time of 100 years

Amount/time	**Estimation method**	**Repetition time 100 years**
mm/15min	Gumbel	42,0
mm/3hours	Gumbel	71,0
mm/6hours	Gumbel	83,1
mm/24hours	Gumbel	105,0

The above mentioned repetition time of 100 years is standardly used for structural design and dimensioning of water drainage system in case of storm rains.

To allow a comparison of the extreme meteorological events and other meteorological parameters are in Tab. 5.2.4.1-5 given storm rains estimated for repetition time 10 000 years.

Tab. 5.2.4.1-5 Recommended estimations of storm rains with repetition time of 10 000 years

Amount/time	**Estimation method**	**Repetition time 10 000 years**
mm/15min	Gumbel	59,0
mm/3hours	Gumbel	120,0
mm/6hours	Gumbel	140,0
mm/24hours	Gumbel	180,0

Temperature

Extreme load effects of outdoor temperatures are established using the measurements of outdoor air temperatures at stations Temelín, Tábor, České Budějovice a Kocelovice.

Tab. 5.2.4.1-6 Recommended estimations of maximum and minimum air temperatures for the Site* and their assumption until 2030 and 2080.

Recommended temperature estimations (°C)	Estimation method	Repetition time		Estimation until 2030	Estimation until 2080
		100 years	10 000 years		
Maximum instantaneous temperature	Gumbel(MLE)	42,0	52,0	to 43	to 48
Maximum 6 hour average	Gumbel(MLE)	38,6	46,2	to 39	to 44
Maximum 24 hour average	Gumbel(MLE)	32,0	39,3	35	to 37
Maximum 7 day average	Gumbel(LM)	27,8	34,6	32	to 34
Minimum instantaneous temperature	Gumbel(MLE)	-35,6	-47,0	-36	to -40
Minimum 6 hour average	Gumbel(LM)	-32,0	-47,0	-34	to -38
Minimum 24 hour average	Gumbel(MLE)	-24,3	-37,3	-25	-30
Minimum 7 day average	Gumbel(MLE)	-20,4	-33,1	-21	-25

Following air humidity values for the Site* were determined by the Czech Hydrometeorological Institute (ČHMÚ).

Relative humidity to air temperature 52 °C (maximum instantaneous temperature for repetition time 10 000 years)	19 %
Relative humidity to air temperature 43 °C (maximum instantaneous temperature, that will not be exceeded by 2030 with a probability 1/10 000)	25 %

5.2.4.2 EXCEPTIONAL METEOROLOGICAL CONDITIONS

The data were processed in accordance with IAEA NS-G-3.4, article 3.13 and SSG-18, article 3.23.

Data monitored on the Temelin meteorological station and on the nearest climatological stations in Tábor, České Budějovice and also on the meteorological station Kocelovice, were used to calculate the long-term average number of days with the phenomenon (storms, icing and hailstones) in accordance with the recommendation IAEA NS-G-3.4 and SSG-18. Location of stations is described in the Technical Requirements Document*, Section 5.2.4.4

Snow storm

This phenomenon is not observed in the Czech Hydrometeorological Institute network, it rarely occurs in this geographical latitude.

Dust and sand storm

From the data available in the framework of soil erosion monitoring and based on Czech Hydrometeorological Institute findings, it is not possible to determine height of the dust (sediment) layer for a dust storm and the corresponding probability of their occurrence for the Site.

The assessment of the dust storm was made based on available data for the U.S. Columbia power plant. As the Columbia power station is located in a semi-aride climate area where dust storm incidence is more numerous than in ETE location conditions, the design parameters in Table 5.2.4.2-1 can be considered sufficiently conservative and are used for the Plant*.

Tab. 5.2.4.2-1 Recommended estimations of dust storm parameters for the Site*

Time period	**Integrated dust load**	**Duration**	**Average dust loading**	**Dust layer hight**	**Maximum pressure load**
	[mg·h/m³]	**[hour]**	**[mg/m³]**	**[cm]**	**[kPa]**
10 000 let	160	18	8,9	4	0,65
100 let	21,7	3,2	6,77	1,5	0,24

Tropical storms, typhoons, hurricanes, tropical cyclones

These phenomenons do not occur in Central Europe.

Drought

Drought is defined as an uninterrupted interval of days with daily precipitation not exceeding 2 mm inclusive (i.e. a period with strong deficit of moisture).

Tab. 5.2.4.2-1 Recommended estimations of uninterrupted interval with daily precipitation up to 2 mm inclusive with repetition time of 100 and 10 000 years

Parameter	**Estimation method**	**Repetition time**	
		100 years	**10 000 years**
The length of uninterrupted interval with daily precipitation up to 2 mm inclusive (number of days)	GEV LM	70	112

Hoarfrost

The following table contains average, maximum and minimum number of days with hoarfrost and freezing rain for the whole observation period at the Temelin and Kocelovice stations.

Tab. 5.2.4.2-2 Average, maximum and minimum monthly and annual number of days with hoarfrost at the Temelin and Kocelovice stations

Station	**Observation period**	**Statistics**	**Month**												**Year**
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Temelín	1989 - 2018	Average	6,5	3,5	1,5	0,2	0,0	0,0	0,0	0,0	0,0	0,7	3,0	5,8	21,0
		Maximum	20,0	12,0	4,0	2,0	1,0	0,0	0,0	0,0	0,0	3,0	14,0	12,0	33,0
		Minimum	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,0	5,0
Kocelovice	1975 - 2018	Average	6,3	3,2	1,0	0,2	0,1	0,0	0,0	0,0	0,0	0,9	3,5	7,0	22,1
		Maximum	15,0	13,0	6,0	3,0	1,0	0,0	0,0	0,0	0,0	3,0	11,0	15,0	33,0
		Minimum	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,0	6,0

Tab. 5.2.4.2-3 Average, maximum and minimum monthly and annual number of days with freezing rain at the Temelin and Kocelovice stations

Station	**Observation period**	**Statistics**	**Month**												**Year**
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Temelín	1989-2018	Average	1,3	0,5	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,5	1,5	4,1
		Maximum	7,0	4,0	2,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,0	6,0	10,0
		Minimum	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Kocelovice	1980-2018	Average	3,5	1,8	0,8	0,0	0,0	0,0	0,0	0,0	0,0	0,1	1,7	4,2	12,1
		Maximum	11,0	7,0	4,0	1,0	1,0	1,0	0,0	0,0	0,0	2,0	8,0	13,0	22,0
		Minimum	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,0	4,0

Hailstones

The following table contains average, maximum and minimum number of days with hailstones for the whole observation period at the Temelin and Kocelovice stations.

Tab. 5.2.4.2-4 Average, maximum and minimum monthly and annual number of days with hailstones at the Temelin and Kocelovice stations

Station	**Observation period**	**Statistics**	**Month**												**Year**
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Temelín	1989-2018	Average	0,0	0,0	0,1	0,2	0,4	0,4	0,2	0,1	0,0	0,0	0,0	0,0	1,4
		Maximum	0,0	0,0	2,0	2,0	2,0	2,0	2,0	1,0	1,0	0,0	0,0	1,0	4,0
		Minimum	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Kocelovice	1975-2018	Average	0,0	0,1	0,1	0,2	0,7	0,4	0,3	0,1	0,1	0,0	0,0	0,0	1,9
		Maximum	1,0	1,0	1,0	2,0	3,0	2,0	2,0	1,0	1,0	0,0	1,0	1,0	5,0
		Minimum	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,0

Based on historical data about maximum hailstones in the locality, Czech hydrometeorological institute set the maximal hailstones in the site vicinity should be up to 5 cm in diameter.

Lightning

The following table contains average, maximum and minimum number of days with storm for the period 1989- 2012 at the Temelin station. The annual average number of days with storm approximately corresponds to the average annual number of days with occurrence of at least 2 flashes of lightning into the ground within a distance of 10 and 15 km.
For the sake of comparison, the table below contains the number of days with storm at the Tábor, Kocelovice and České Budějovice stations

Tab. 5.2.4.2-5 Average, maximum and minimum monthly and annual number of days with storm.

Station	**Observation period**	**Statistics**	**Month**												**Year**
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Temelín	1989-2018	Average	0,1	0,1	0,6	1,5	4,5	5,7	6,3	4,5	1,0	0,0	0,0	0,0	24,2
		Maximum	1,0	1,0	4,0	6,0	9,0	12,0	11,0	10,0	4,0	1,0	0,0	1,0	37,0
		Minimum	0,0	0,0	0,0	0,0	0,0	1,0	1,0	1,0	0,0	0,0	0,0	0,0	14,0
Kocelovice	1975-2018	Average	0,1	0,1	0,8	2,0	6,3	7,3	8,0	6,9	1,6	0,2	0,1	0,0	33,4
		Maximum	1,0	2,0	14,0	6,0	15,0	12,0	13,0	13,0	6,0	2,0	1,0	0,0	51,0
		Minimum	0,0	0,0	0,0	0,0	1,0	2,0	2,0	3,0	0,0	0,0	0,0	0,0	19,0

Station	Observation period	Statistics	Month												Year
			1	2	3	4	5	6	7	8	9	10	11	12	
Tábor	1961-2018	Average	0,1	0,2	0,4	1,8	4,9	6,8	7,5	6,4	1,8	0,2	0,1	0,2	30,4
		Maximum	1,0	2,0	2,0	6,0	10,0	13,0	14,0	14,0	7,0	4,0	1,0	3,0	51,0
		Minimum	0,0	0,0	0,0	0,0	1,0	2,0	3,0	1,0	0,0	0,0	0,0	0,0	17,0
České Budějovice	1961-2018	Average	0,1	0,1	0,4	1,1	4,1	5,3	5,4	4,3	1,3	0,1	0,0	0,1	22,3
		Maximum	2,0	1,0	2,0	5,0	8,0	12,0	13,0	10,0	5,0	1,0	0,0	1,0	36,0
		Minimum	0,0	0,0	0,0	0,0	0,0	1,0	1,0	1,0	0,0	0,0	0,0	0,0	10,0

Tornados

The nearest tornados that occurred relatively near the Site* was tornado of F1 intensity at a distance of 12 km from the Site*. The nearest tornado of F2 intensity was recorded at a distance of 40-50 km from the Site*.

Tab. 5.2.4.2-6: The probability of occurrence of a tornado on a given intensity for the Site*.

Intensity of tornado	Repetition time			
	100	10 000	100 000	1 000 000
F1	0,004	0,37	3,7	37
F2*	0,002	0,22	2,2	22
F3	0,000	0,00	0,002	0,024
F1 and higher	0,006	0,59	5,9	59
F2 and higher	0,002	0,22	2,2	22

** estimated maximum wind gust 51-70 m·s^{-1}*

Tab. 5.2.4.2-7 Initiating tornado parameters for the Site*

Maximum wind velocity (m/s)	Translation velocity (m/s)	Maximum rotary wind velocity (m/s)	Maximum rotary velocity radius (m)	Air pressure drop (hPa)	Air pressure drop rate (hPa/s)
72	14	57	45,7	40	13

Note: These parameters are in accordance with US NRC RG 1.76 – Region III

Waterspouts

This phenomenon is not observed in the Czech Hydrometeorological Institute network, it rarely occurs in this geographical latitude.

5.2.4.3 METEOROLOGICAL PARAMETERS INFLUENCING DISPERSION

Meteorological parameters influencing dispersion and background documentation for the locality diffusion model consist of:

- the atmosphere stability category. The stability category also determines the turbulence conditions and vertical temperature layers
- data on the flow vector
- data on precipitation

Data were processed in accordance with IAEA NS-G-3.2, article 2.23 – 2.7.

Dispersion conditions in the atmosphere listed in IAEA NS-G-3.2 may be collectively expressed by stability classes

Stability category

Values in Tab. 5.2.4.3-1 were processed as an average for the period 2004-2012 based on measurements results of an automatic weather station as programs for calculating the stability classes according Pasquill scale with sampling after 10 minutes.

Tab. 5.2.4.3-1 Relative frequency of stability classes on the Temelin station

Average frequency in the period	**Category**						**Total**
	A	**B**	**C**	**D**	**E**	**F**	
	strongly unstable (labile)	**unstable**	**slightly unstable**	**indifferent (neutral)**	**stable**	**strongly stable**	
2004-2018	15,9	9,7	12,7	26,5	9,3	25,9	100

Wind direction and velocity

Mean wind velocity for individual stability classes depending on the flow direction is listed in table below (average for the period between 2000 – 2010). For processing the values of frequency, direction and speed the data measured by wind speed measurement system (ie. currently used methodologies for atmosphere stability assessment) were used.

Tab. 5.2.4.3-2 Mean wind velocity for individual stability classes depending on the flow direction. Average for the period 2000-2018.

Sector	**Category A.F**	**Category A**	**Category B**	**Category C**	**Category D**	**Category E**	**Category F**
N	3,09	4,08	2,68	2,75	3,67	2,54	1,69
NNE	2,81	3,43	2,88	3,13	3,39	2,69	1,9
NE	2,49	2,53	2,53	2,79	3,07	2,70	1,94
ENE	2,16	2,09	2,35	2,61	2,77	2,52	1,54
E	2,77	2,25	2,89	3,41	3,81	2,68	1,65
ESE	3,76	3,38	3,74	4,31	4,81	2,87	1,91
SE	3,10	2,91	3,04	3,81	3,98	2,51	1,65
SSE	2,24	2,15	2,48	2,89	2,82	2,13	1,33
S	1,88	1,92	2,02	2,45	2,39	1,90	1,22
SSW	1,92	1,96	2,02	2,43	2,33	2,16	1,44
SW	2,35	2,55	2,28	2,71	3,22	2,57	1,70
WSW	3,35	3,34	3,64	4,10	4,85	2,76	1,71
W	4,25	2,68	3,51	4,78	5,52	3,12	1,93
WNW	4,23	3,76	4,15	4,84	5,31	3,24	1,92
NW	3,11	3,51	3,26	3,86	3,88	2,70	1,77
NNW	3,12	4,04	3,10	3,46	3,48	2,79	1,8
Total	3,06	2,95	3,07	3,71	4,24	2,69	1,73

Tab. 5.2.4.3-3 Specification of class velocity

Class	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Velocity [m/s]	0-0,1	0,1-1,0	1.1-2.0	2,1-3,0	3,1-4,0	4,1-6,0	6,1-8,0	8,1-12	12,1~16	16,1~20	20,1~25	>25.1
Class velocity	0,05	0,6	1,5	2,5	3,5	5	7	10	15	18	22,5	25,1

Tab. 5.2.4.3-4 Relative wind direction frequencies for each wind velocity class at the Temelin station without distinguishing stability classes period between 2000-2018.

Cat. A - F	Wind velocity class												
Sector	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
N	0,09	0,35	0,75	0,97	0,81	0,83	0,19	0,04	0,00	0,00	0,00	0,00	4,03
NNE	0,12	0,49	1,43	1,88	1,25	0,91	0,17	0,03	0,00	0,00	0,00	0,00	6,28
NE	0,15	0,68	2,31	2,82	1,38	0,71	0,10	0,02	0,00	0,00	0,00	0,00	8,16
ENE	0,20	0,78	1,65	1,34	0,67	0,36	0,05	0,01	0,00	0,00	0,00	0,00	5,04
E	0,10	0,64	1,29	1,25	0,83	0,78	0,22	0,05	0,00	0,00	0,00	0,00	5,16
ESE	0,08	0,42	0,99	1,30	1,23	1,61	0,64	0,27	0,02	0,00	0,00	0,00	6,57
SE	0,09	0,40	0,83	1,05	0,76	0,73	0,24	0,08	0,01	0,00	0,00	0,00	4,19
SSE	0,09	0,43	0,79	0,67	0,33	0,20	0,04	0,01	0,00	0,00	0,00	0,00	2,56
S	0,11	0,56	0,95	0,51	0,21	0,13	0,03	0,01	0,00	0,00	0,00	0,00	2,50
SSW	0,17	0,94	2,19	1,12	0,42	0,25	0,04	0,01	0,00	0,00	0,00	0,00	5,13
SW	0,26	1,31	4,48	3,11	1,21	0,98	0,28	0,08	0,00	0,00	0,00	0,00	11,72
WSW	0,23	1,07	2,75	2,21	1,39	1,82	0,94	0,52	0,06	0,01	0,00	0,00	11,00
W	0,17	0,67	1,41	1,76	1,89	3,23	1,68	0,72	0,06	0,01	0,00	0,00	11,59
WNW	0,10	0,44	0,86	1,21	1,38	2,43	1,10	0,41	0,04	0,00	0,00	0,00	7,97
NW	0,09	0,37	0,82	1,08	0,78	0,76	0,23	0,07	0,01	0,00	0,00	0,00	4,20
NNW	0,08	0,31	0,72	0,99	0,82	0,76	0,18	0,05	0,00	0,00	0,00	0,00	3,91
Total	2,12	9,85	24,21	23,25	15,35	16,48	6,13	2,37	0,20	0,02	0,00	0,00	100,00

Turbulence indicators in the atmosphere

Stability classes see Section 2.4.2.3.2, contain information about the turbulence rate in the atmosphere, which is required for the calculation of diffusion models. Therefore no additional turbulence indicator is required.

Precipitation and humidity

Tab. 5.2.4.3-5 Distribution of precipitation intensity frequency at station Temelin distinguished classes

Class		I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Precipitation intensity [mm/h]		0	0,0–0,1	0,2–0,4	0,5–1,0	1,1–2,0	2,1–3,0	3,1–6,0	6,1–10	10,1–20,0	> 20	>=0
Year	2004	94,95	2,05	1,08	0,84	0,58	0,21	0,21	0,05	0,02	0,01	100
	2005	94,35	3,93	1,31	0,30	0,05	0,03	0,01	0,01	0,01	0,00	100
	2006	92,44	1,88	2,33	1,78	0,93	0,27	0,22	0,08	0,04	0,03	100
	2007	92,98	2,01	2,23	1,43	0,72	0,25	0,28	0,04	0,05	0,01	100
	2008	93,28	2,20	2,22	1,23	0,62	0,19	0,18	0,03	0,02	0,03	100
	2009	87,78	3,51	5,89	1,56	0,79	0,19	0,16	0,06	0,03	0,03	100

Class		I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Precipitation intensity [mm/h]		0	0,0–0,1	0,2–0,4	0,5–1,0	1,1–2,0	2,1–3,0	3,1–6,0	6,1–10	10,1–20,0	> 20	>=0
	2010	91,20	2,78	2,71	1,80	0,72	0,26	0,32	0,07	0,05	0,09	100
	2011	93,86	1,9	1,85	1,36	0,59	0,19	0,19	0,02	0,01	0,01	100
	2012	91,77	2,2	2,28	2,33	0,87	0,23	0,23	0,04	0,04	0,02	100
	2013	91,98	2,56	2,62	1,72	0,66	0,2	0,17	0,05	0,03	0,01	100
	2014	94	1,85	1,69	1,4	0,6	0,19	0,16	0,05	0,03	0,04	100
	2015	93,88	1,94	1,94	1,32	0,56	0,17	0,12	0,04	0,02	0,01	100
	2016	93,11	2,4	2,49	1,33	0,49	0,13	0,05	0,01	0	0	100
	2017	90,42	3,14	2,74	1,84	1,08	0,39	0,27	0,08	0,03	0	100
	2018	94,42	1,51	1,78	1,17	0,57	0,2	0,2	0,08	0,05	0,04	100
Average		92,69	2,39	2,34	1,43	0,66	0,21	0,18	0,05	0,03	0,02	100

Air temperature

Relevant temperature data are implicitly included in the stable class category according to Pasquill, therefore these data do not need to be provided in the dispersion studies.

Inversion

Analysis of the inversion frequency was processed based on meteorological measurements from 48 stations of the Czech Hydrometeorological Institute located in the Czech Republic between 1 January 1961 and 31 March 2012, regardless of the observation completeness. The meteorological parameters were measured by professional stations with hourly measurements. The following aspects were used for the calculation: the number of lowest observed layers of clouds and the base height and wind velocity. Furthermore, data on the height of the Sun above the horizon were also used.

Tab. 5.2.4.3-6 contains (from the left) name of the station, geographical location, start and end of observation and number of processed cases (hours with observation).

Tab. 5.2.4.3-6 List and location of stations used for the calculation of the average inversion frequency in the Czech Republic

Station	Altitude (m)	Longitude (°)	G. Latitude (°)	Beginning	End	Number of cases
Bechyně	409	14,4708	49,3	1.1.1961	10.7.1992	140319
Brno	241	16,6889	49,1531	1.1.1961	31.3.2012	314760
Červená	749	17,5419	49,7772	1.1.1961	31.3.2012	294151
České Budějovice	420	14,4292	48,9469	1.1.1961	30.6.1994	162651
České Budějovice	394	14,4714	48,9519	1.1.1961	31.3.2012	27891
České Budějovice	395	14,4714	48,9519	4.1.2000	31.1.2008	76834
Doksany	158	14,1703	50,4583	1.1.1995	31.3.2012	150347
Dukovany	400	16,1344	49,0958	1.10.1995	31.3.2012	142338
Holešov	222	17,5697	49,3206	1.1.1961	31.3.2012	203696
Cheb	483	12,3911	50,0686	1.1.1961	31.3.2012	324026

Station	Altitude (m)	Longitude (°)	G. Latitude (°)	Beginning	End	Number of cases
Chotusice	235	15,3858	49,9419	1.1.1961	31.3.2012	194399
Churáňov	1118	13,615	49,0683	1.1.1961	31.3.2012	325350
Karlovy Vary	603	12,9143	50,2016	17.4.1961	31.3.2012	299035
Kocelovice	515	13,8408	49,4669	1.3.1975	31.3.2012	277447
Kopisty	240	13,6233	50,5442	27.4.2000	31.3.2012	26331
Kostelní Myslová	569	15,4392	49,16	1.1.1961	31.3.2012	312438
Košetice	534	15,0797	49,5733	1.1.1989	31.3.2012	111626
Kuchařovice	334	16,0864	48,8825	1.1.1961	31.3.2012	301855
Liberec	398	15,0242	50,77	1.1.1961	31.3.2012	314242
Luká	510	16,9533	49,6522	1.10.1974	31.3.2012	163112
Lysá Hora	1322	18,4478	49,5461	1.1.1961	31.3.2012	317600
Mariánské Lázně	540	12,7183	49,9272	1.7.1995	1.1.1999	21936
Milešovka	833	13,9314	50,5547	1.1.1961	31.3.2012	208386
Mošnov	250	18,1217	49,6983	1.1.1961	31.3.2012	314776
Pardubice	225	15,7406	50,0161	1.1.1961	31.3.2012	192357
Pec pod Sněžkou	824	15,7288	50,6921	1.9.1988	31.3.2012	144972
Plzeň	360	13,2694	49,6764	1.1.1961	31.12.1981	60085
Plzeň	360	13,3786	49,765	1.7.2004	31.3.2012	67860
Plzeň	343	13,3833	49,7431	4.1.2000	30.6.2004	38280
Polom	748	16,3228	50,3519	1.1.2006	31.3.2012	54720
Pouchov	243	15,8433	50,2456	1.1.1961	31.12.1981	59639
Praděd	1490	17,23	50,0828	1.1.1961	15.9.1997	75463
Praha	364	14,2578	50,1008	1.1.1982	31.3.2012	253368
Praha	282	14,5425	50,1217	1.1.1961	31.3.2012	196107
Praha	232	14,4277	50,0693	1.9.2002	31.3.2012	83670
Praha	302	14,4469	50,0081	1.1.1982	31.3.2012	247733
Přerov	203	17,4064	49,4239	1.1.1961	31.3.2012	192755
Přibyslav	530	15,7625	49,5828	1.1.1961	31.3.2012	208153
Přimda	742	12,6781	49,6694	1.1.1961	31.3.2012	279289
Sedlec	474	16,1206	49,1708	1.1.1961	31.3.2012	194680
Sněžka	1602	15,7403	50,7358	18.10.2008	1.1.2012	22525
Svratouch	737	16,0336	49,735	1.1.1961	31.3.2012	313205
Šerák	1328	17,1086	50,1875	1.1.2004	31.3.2012	71709
Temelín	503	14,3419	49,1978	1.1.1989	31.3.2012	200964
Tušimice	322	13,3281	50,3767	1.1.1982	31.3.2012	265009
Ústí nad Labem	375	14,0411	50,6839	1.1.1979	31.3.2012	270850
Ústí nad Orlicí	402	16,4222	49,9803	1.1.1961	31.3.2012	160594
Žatec	273	13,5775	50,3789	1.1.1961	31.12.1981	53648

5.2.4.4 DATA FROM METEOROLOGICAL STATIONS AND THEIR INSTRUMENTATION

Input data for assessed meteorological parameters were obtained from the measuring network of the Czech Hydrometeorological Institute. The station selection for individual indicators was based on articles 2.12 to 2.31 of IAEA NS-G-3.2 and on the operating experience of the Czech Hydrometeorological Institute.

Tab. 5.2.4.4-1 Stations used for the analysis of climatic situations within a distance of 80 km from the Site*

Station	**Distance from the Site* (km)**	**Altitude (m above sea level)**	**Used for the characterization**											
			Temperature	**Wind**	**Precipitation**	**Snow**	**Snow storm**	**Dust and sand storm**	**Drought**	**Hoarfrost**	**Hailstones**	**Lightning**	**Tornadoes**	**Dispersion**
Bavorov	21	436				X	X	X					X	
Bechyně	15	409				X	X	X					X	
Bernartice	19	467				X	X	X					X	
Borkovice	22	419				X	X	X					X	
Brloh	32	582				X	X	X					X	
Č. Budějovice, Planá	29	420	X			X	X	X					X	
Č. Budějovice, pob.	27	394				X	X	X	X			X	X	
Dříteň	6	420				X	X	X					X	
Hluboká n. Vlt.	17	376				X	X	X					X	
Hosín	20	488				X	X	X					X	
Husinec	30	492				X	X	X					X	
Chelčice	15	466				X	X	X					X	
Churáňov	55	1004		X		X	X	X					X	
Jelmo, Rudolfov	23	505				X	X	X					X	
Jistebnice	35	580				X	X	X					X	
Kestřany	21	372				X	X	X					X	
Klenovice	27	421				X	X	X					X	
Kocelovice	47	519	X	X	X	X	X	X	X	X	X	X	X	
Křemže	32	524				X	X	X					X	
Lhenice	27	558				X	X	X					X	
Lomnice n. Luž.	30	423				X	X	X					X	
Milevsko	28	442				X	X	X					X	
Němčice	19	435				X	X	X					X	
Olešná	16	452				X	X	X					X	
Paračov	25	498				X	X	X					X	
Paseky	8	483				X	X	X					X	
Planá nad Lužnicí	32	406				X	X	X					X	
Praha, Ruzyně	101	364		X		X	X	X					X	
Protivín	9	394				X	X	X					X	
Roudné	31	393				X	X	X					X	

Station	Distance from the Site* (km)	Altitude (m above sea level)	Used for the characterization											
			Temperature	Wind	Precipitation	Snow	Snow storm	Dust and sand storm	Drought	Hoarfrost	Hailstones	Lightning	Tornadoes	Dispersion
Rudolfov, Jivno	26	558				X	X	X					X	
Řepeč	26	475				X	X	X					X	
Soběslav	27	421				X	X	X					X	
Strakonice	31	426				X	X	X					X	
Ševětín, Mazelov	23	438				X	X	X					X	
Tábor	35	459	X		X	X	X	X	X			X	X	
Temelín	0	503				X	X	X					X	
Temešvár	19	421				X	X	X					X	
Třeboň, Lužnice	33	420			X	X	X	X					X	
Týn n. Vltavou	7	371				X	X	X	X				X	
Vodňany	14	395				X	X	X					X	
Volyně Nihošovice	35	448				X	X	X					X	
Vráž	26	436				X	X	X					X	
Zálezly	34	569				X	X	X					X	

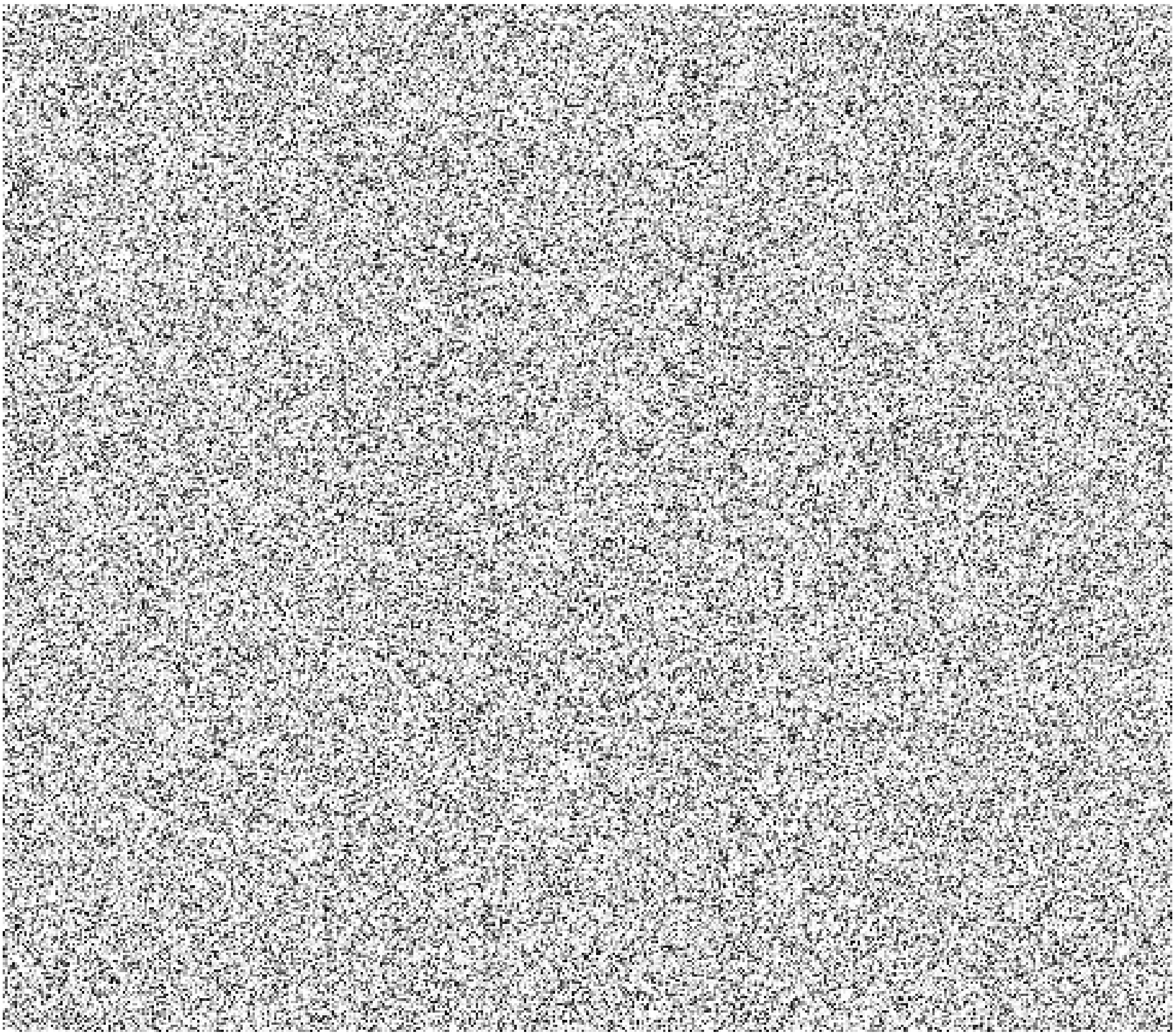
In accordance with IAEA NS-G-3.4, article 3.1, the instrumentation and its installation in measuring stations that obtained the data is designed exclusively in accordance with World Meteorological Organization (WMO) requirements and following methodological regulations of the Czech Hydrometeorological Institute. The technological equipment of individual stations and observation times and methods are therefore comparable at all stations.

5.2.5 HYDROLOGY

The Site* and its surroundings is located on the border of two main river valleys which numbers are 1-06-03 Vltava and 1-08-03 Blanice.
Hydrographically it is:

- Hydrography river valley of the 1-st class of the Labe river No. 1-00-00

- o Hydrology river valley 2-nd class of the Vltava river No. 1-06-03;
- o Hydrology river valley 4-th class of the Palečkův stream No. 1-06-03-077;
  Hydrology river valley 4-th class of the Strouha stream No. 1-06-03-073;
- o Hydrology river valley 2-nd class of the Blanice river No. 1-08-03;
  Hydrology river valley 4-th class of the Temelínecký stream No. 1-08-03-079/2;
- o Hydrology river valley 4-th class of the Malešický stream No. 1-08-03-079/3;



Part of the river valley No. 1-06-03 is the Strouha stream and Palečkův stream. Strouha stream consequently flows to the water reservoir Hněvkovice on the river Vltava. Strouha stream discharges the storm water from the Existing Nuclear Power Plant*. Water reservoir Hněvkovice on the Vltava river serves as the source of the raw water for the Existing Nuclear Power Plant*. Palečkův Stream consequently flows to the Vltava river under water reservoir Hněvkovice.

Part of the river valley No. 1-08-03 are Temelínecký stream and Malešický stream. Both flows to the Bílý stream, which consequently flows to the river Blanice. Vltava river is the biggest river in the surroundings of the Site*.

Vltava river

Vltava river rises at the confluence of Cold Vltava and Warm Vltava streams in the Šumava mountains southwest of České Budějovice city at the elevation 731 m a.s.l. Vltava river runs through Capital city Prague and flows to the Labe river nearby Mělník city at the elevation 156 m a. s. l.. The area of its river valley is 28 090 km^2 and its length is 430,2 km.

Vltava river is located circa 4,5 km east from the Site*. There is Vltava river raised by the water structures creating reservoirs Hněvkovice-Kořensko. Water reservoir Hněvkovice is the higher reservoir. Hněvkovice reservoir is the source of raw water for the Existing Nuclear Power Plant* and contains the flow hydro power plant. Water reservoir Kořensko is lower retaining reservoir. In reservoir Kořensko is situated the outfall for the technological water and it also contains the flow hydro power plant.

<u>Water structure Hněvkovice – Kořensko</u>

The set of the reservoirs Hněvkovice - Kořensko provides following functions:

- Hydro energy
  Utilization of the hydro energy at the flow hydro power plant Hněvkovice.
  Utilization of the hydro energy at the flow hydro power plant Kořensko.
- Water management
  Source of the raw water for the Existing Nuclear Power Plant*
  Improvement of the sanitary conditions at the river
  Flood protection
  Common usage (recreation, fishing, etc.)
  Flow rate improvement

Strouha stream
Strouha stream is the left inflow of the Vltava river, which is mouthed to the water reservoir Hněvkovice. On the Strouha stream is the retention reservoir, which serves as the reservoir for the inflow of the storm water discharge from the Existing Nuclear Power Plant*. Strouha stream valley area is 13,26 km^2 large.

Palečkův stream
Palečkův stream rises at the northwest direction from the Existing Nuclear Power Plant*. Palečkův stream is the left inflow of the Vltava river. On the stream is the retention reservoir, which serves as the reservoir for the inflow of the storm water discharge from the Existing Nuclear Power Plant*. Palečkův stream valley area is 11,63 km^2 large.

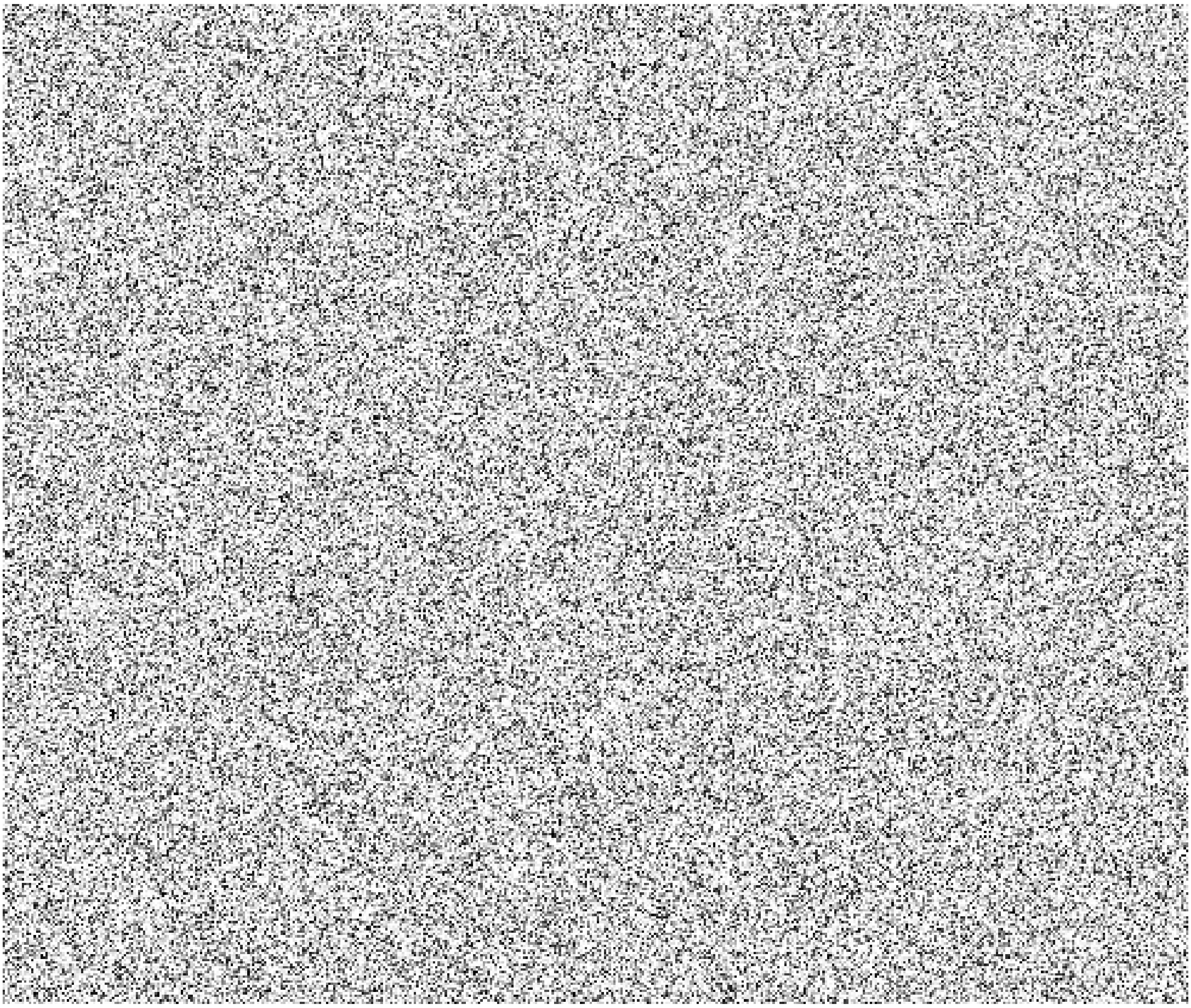
Temelínecký stream
Temelínecký stream depends to Blanice river valley. This stream is draining the southwest part of the On Site Facility Area* E and Construction Area* A . First part of this stream rises on Construction Area* A and second part on the west of On Site Facility Area* E where it is partially tubed in underground. Those two parts confluence at west of the Existing Nuclear Power Plant*. Then it is running through agricultural land and flows to the Bílý stream near by Malešice village. Temelínecký stream valley area is 5,59 km^2 large.

Malešický stream
Malešický stream depends to Blanice river valley. This stream is draining the east part of the On Site Facility Area* E, where it rises as a Dvorčický stream. Dvorčický stream changes into the Dvorčický pond nearby On Site Facility Area* E and from there it is running through agricultural land and flows to the Bílý stream near by Malešice village. Malešický stream valley area is 8,76 km^2 large.

Underground water, geothermal and mineral springs
Based on the analysis of map data and field exploration, it is possible that groundwater flows from S1, S2 and from their close surroundings into six directions. (Figure 5.2.5-2)

Presence of the geothermal and mineral springs has not been discovered at the Site*.

In accordance with the water management, the new Plant* cannot consider the usage underground water as the source of the technology, drinking or the fire water.



Protected areas in accordance with the water management
Protected area in accordance with the water management are listed in the national Implementation plan of the Frame directive from the 8.1.2003. In this register are not listed any protected areas determined for protection of economically significant types bounded to the water environment. Such a water environment is not placed on the Czech Republic.

Areas determined as the source of the drinking water for the human consumption
Site* does not influent to any of the protected area determined as the source of the drinking water.

Areas determined for the protection of the economically significant species related with the water
At the Site* there are not registered any areas determined for the protection of the economically significant species related with the water.

Water or the areas determined for the recreation including the areas for the swimming
Neither the place from where the raw water to be pumped nor the place where the process waste water to be discharged are registered as the nature swimming area.

The water reservoir Orlík, its nature swimming area (KO310701 and KO310801) will be indirectly influenced by the new Unit* by its offtake of the raw water and discharge of the process waste water.

Areas sensitive on nutrients
Any surface water or reservoirs in the Czech Republic in accordance with § 15 of Gov. order No. 401/2015 Coll. as amended, are designated as sensitive areas with specific water discharge quality limits.

Nitrate vulnerable areas
Nitrate vulnerable area is the term defined by the Nitrate directive (91/676/EHS). There are areas consisting of the all or the part of the river valley, where the agricultural activities negatively influences the concentration of the nitrates of the surface and underground water. The Site* is located within the nitrate vulnerable area.

Floods history of the Site*
The Site* is located on a hill at the elevation 495 - 507 m a. s. l.. The drainage of the surface water is to the rivers Vltava and Blanice. The water structure Hněvkovice-Kořensko was also built as a flood protection and its elevation is significantly lower than The Site*.

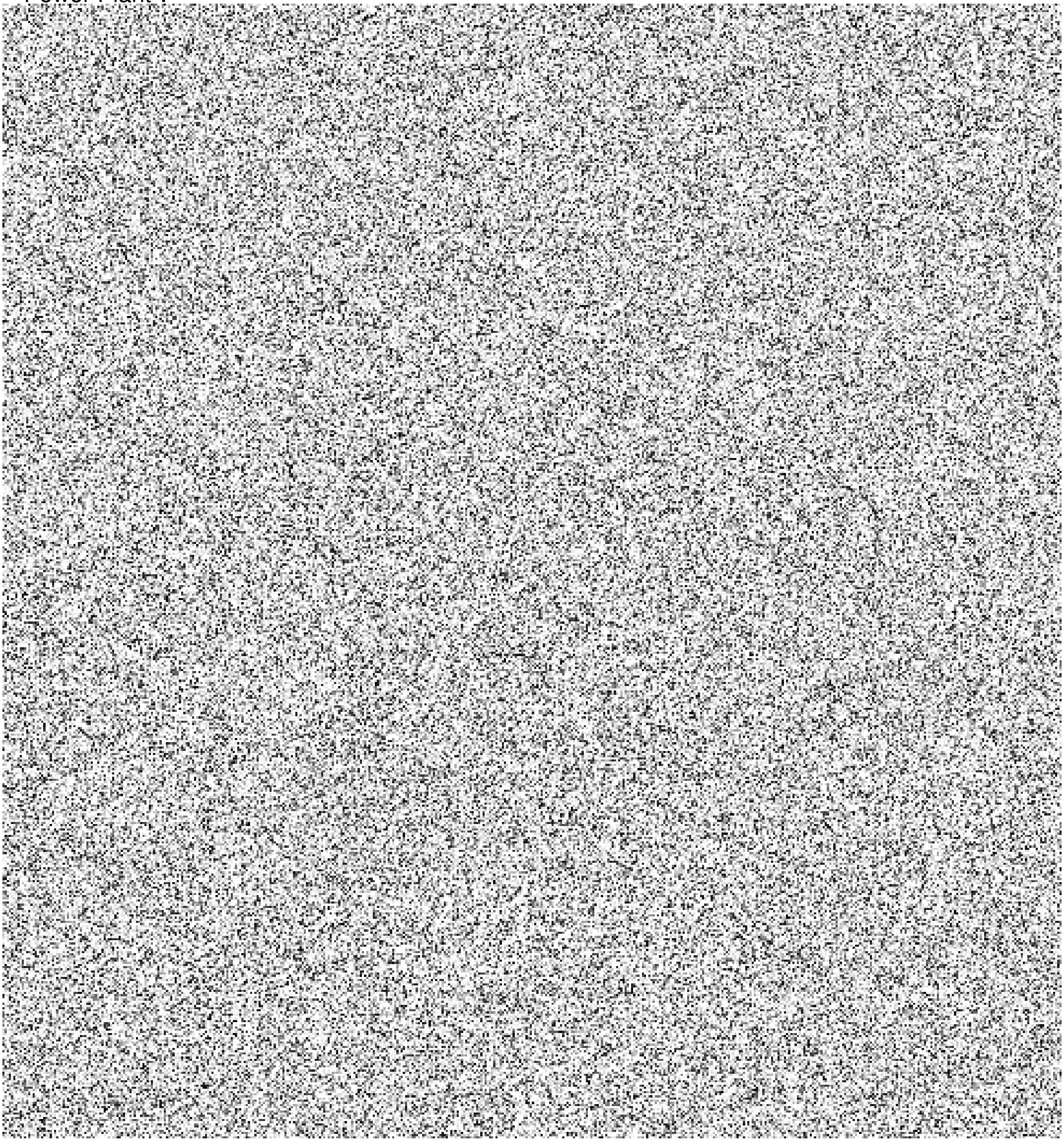
The water reservoir Hněvkovice, which is located the about 4,5 km east from the Site*, has the dam structure ca. 6,0 km from the Site*. The head of the dam structure has the elevation 372,6 m. a. s. l.. The Maximum retention level is at 370,1 m. a. s. l..

Consideration of the internal floods
From the above stated results that the Site* cannot be endangered by the floods caused by the closest river except the pumping station of the raw water, which is located on the Vltava river.

The risk for the new Plant* will be only the internal floods, i.e. the floods caused by the extreme precipitation on the Site*. This status represents the floods caused by inoperable storm water drainage.
This chapter does not concern the internal floods caused by technology malfunction.

Stormwater drainage
At present, is the flow system influenced by agricultural meliorations, landscaping in the area of the Existing Nuclear Power Plant*and its surroundings - the upper parts of the streams partially tubed in underground, construction of drainage channels (Figure 5.2.5-3), etc. Further,

by pumping groundwater from drainage wells, which reduce the levels in the Existing Nuclear Power Plant*.



5.2.5.1 BASIC HYDROLOGICAL DATA

5.2.5.1.1 VLTAVA RIVER

Profile Vltava - Hněvkovice

Basic characteristic of water gauging profile Vltava – Hněvkovice

river:	Vltava	A	P_a	Q_a
hydrological code:	1-06-03-076	**[km²]**	**[mm]**	**[m³/s]**
watergauging profile:	Vltava – dam Hněvkovice	3540,29	769	30,6

N-years flow rates at water gauging profile
M-days flow rates at water gauging profile Vltava – Hněvkovice

M-days flow rates at water gaugin g profile **M**	30	60	90	120	150	180	210	240	270	300	330	355	36 4
Q_M	64, 9	46, 6	37, 2	31, 0	26, 3	22, 7	19, 6	16, 8	14, 3	11, 9	9,3 1	6,4 3	4, 1

N-years flow rates at water gauging profile Vltava – Hněvkovice

N	1	2	5	10	20	50	100
Q_N	196	276	409	529	667	874	1054

Profile Vltava - Kořensko

Basic characteristic of water gauging profile Vltava – Kořensko

river:	Vltava	A	P_a	Q_a
hydrological code:	1-07-05-001	[km²]	[mm]	[m³/s]
watergauging profile:	Vltava – dam Kořensko	7828,85	716	54,9

Vltava – Kořensko

Q_M	119	84,9	67,2	55,5	46,9	40,0	34,2	29,1	24,5	20,0	15,3	10,1	4,04

Vltava – Kořensko

N	1	2	5	10	20	50	100
Q_N	259	366	543	702	882	1153	1387

Water Reservoir Hněvkovice and Kořensko

Water Reservoir	Volume of water [mil. m³]			Lenght and hight of dam [m]		
	$V_{STORAGE}$	$V_{PERMANENT}$	V_{TOTAL}	$H_{STORAGE}$	L_{DAM}	H
Hněvkovice	12,155	8,94	21,095	364,60 – 370,10	191,00	33,5
Kořensko	1,73	1,07	2,8	347,80- 352,60	40,50	8,00

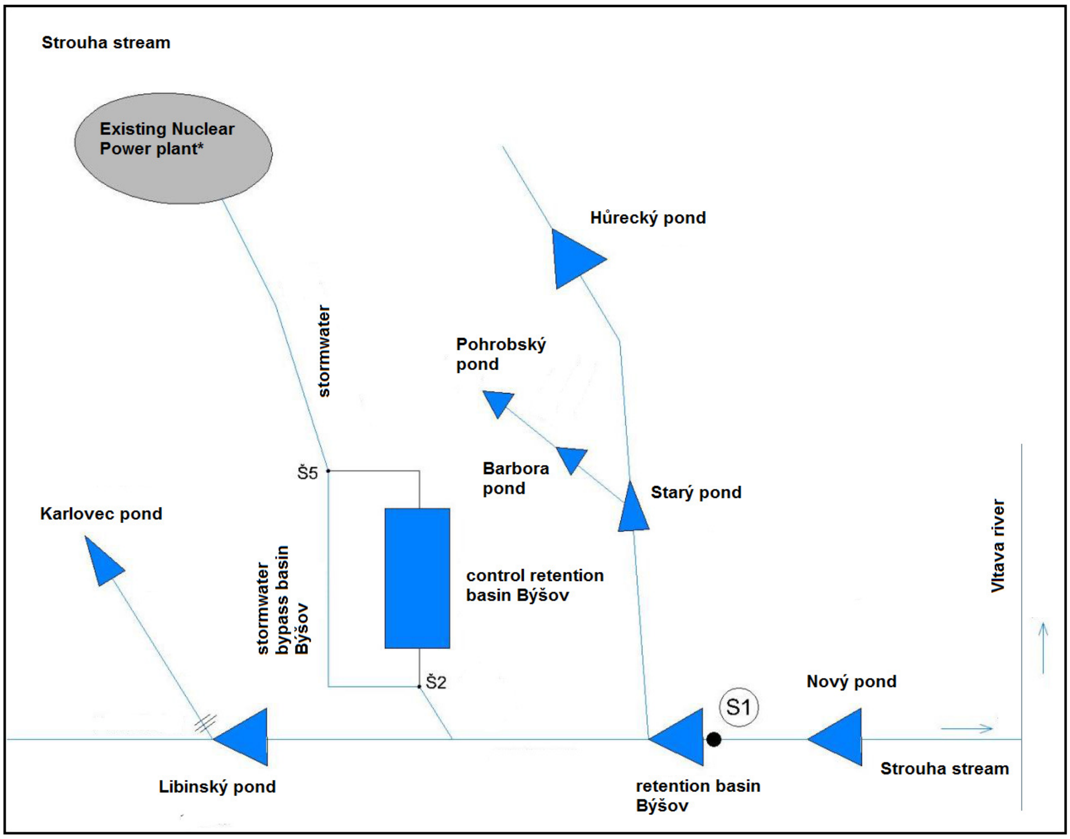
5.2.5.1.2 STROUHA STREAM

Basic characteristic of Strouha stream

stream:	Strouha stream	A	P_a	Q_a
hydrological code:	1-06-03-073	[km^2]	[mm]	[m^3/s]
water gauging profile:	1,4 km under Karlovec pond	1,01	637	0,005

Strouha stream

N	1	2	5	10	20	50	100	1000
Q_N[m^3/s]	0,3	0,6	1,0	1,8	2,6	3,8	5,0	9,3



5.2.5.1.2-1 Schematic catchments area of Strouha stream

5.2.5.1.3 PALEČKŮV STREAM

Basic characteristic of Palečkův stream

stream:	Palečkův stream	A	P_a	Q_a
hydrological code:	1-06-03-077	[km2]	[mm]	[m^3/s]
water gauging profile:	Above cross road II/105 Hluboká n. Vltavou - Týn n. Vltavou	2,73	634	0,012

M-days flow rates Palečkův stream

M	30	60	90	120	150	180	210	240	270	300	330	355	364
Q_M[m^3/s]	32	20	15	11	9	7	5	4	3	2	1	0,5	0,2

Palečkův stream

N	1	2	5	10	20	50	100	1000
Q_N[m^3/s]	1,2	1,7	2,6	3,5	4,5	4,2	7,5	13,9

5.2.5.1.3-1 Schematic catchments area of Palečkův stream

5.2.5.1.4 TEMELÍNECKÝ STREAM

Basic characteristic of Temelínecký stream

stream:	Temelínecký stream	A	P_a	Q_a
hydrological code:	1-08-03-079/2	[km2]	[mm]	[m^3/s]
water gauging profile:	Above "Pod Dubencem"	2,09	617	0,007

Temelínecký stream

M	30	60	90	120	150	180	210	240	270	300	330	355	364
Q_M	19	12	9	7	5	4	3	2	2	1	0,9	0,4	0,2

N-years flow rates Temelínecký stream

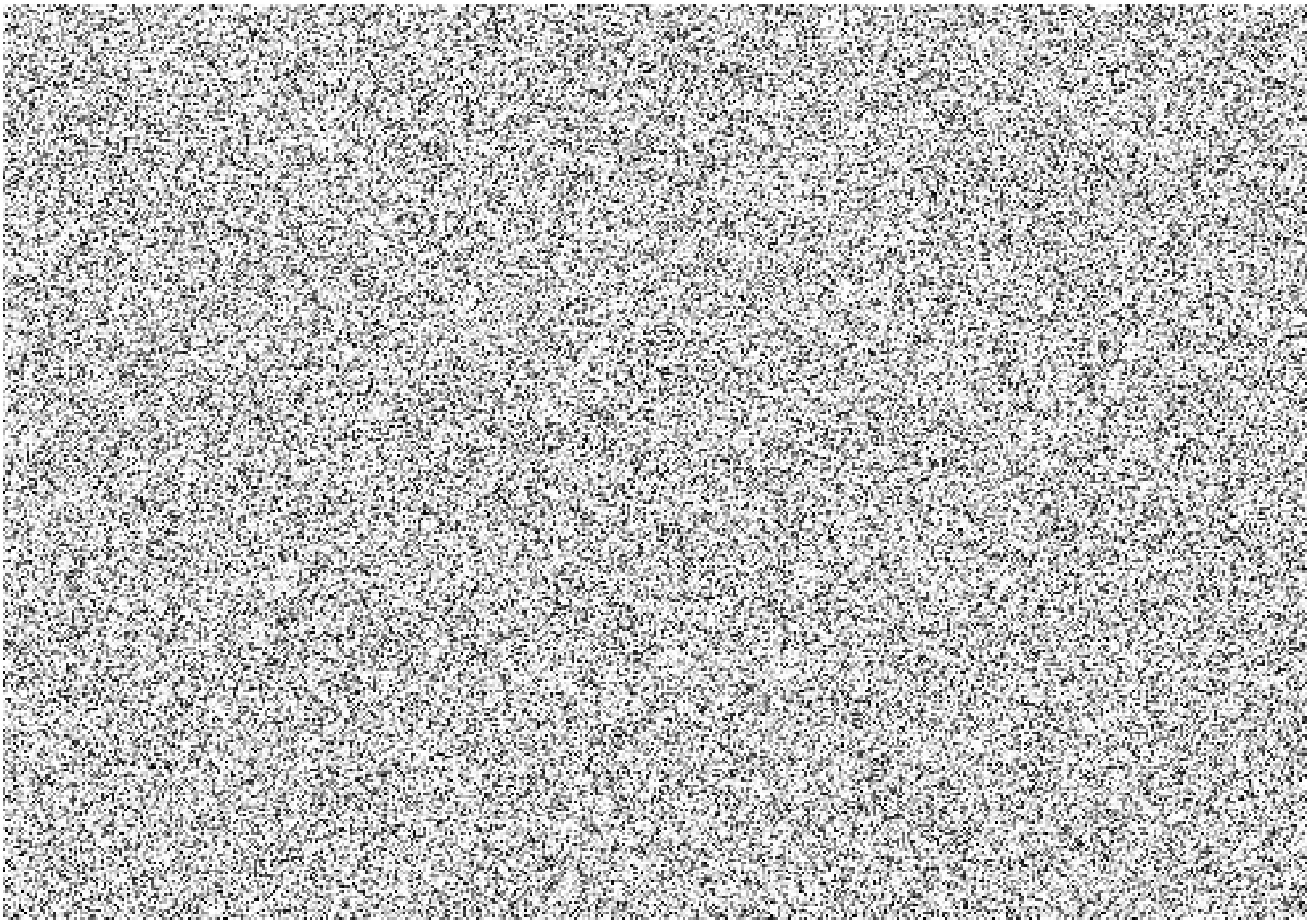
N	1	2		5	10	20	50	100	1000	
Q_N[m^3/s]	0,66	1,1	1,8	3,0	4,4			5,5	8,2	15,2

Fig. 5.2.5.1.4-1 Schematic catchments area of Temelínecký stream

5.2.5.1.5 MALEŠICKÝ STREAM

Basic characteristic of Malešický stream

stream:	Heřmanický stream	A	P_a	Q_a
hydrological code:	1-08-03-079/3	[km2]	[mm]	[m^3/s]
water gauging profile:	Above Olešna river	8,346	x	x



5.2.5.2 INFORMATION ON WATER QUALITY

5.2.5.2.1 RAW WATER QUALITY

The source of the raw water is raw water from the Vltava river, pumped from the Hněvkovice dam.

Table 5.2.5.2.1 - 1 Raw water quality parameters in the years 2000 - 2014.

Parameters	Unit	Average	Minimum	Maximum
BSK_5	[mg/l]	2,42	0,60	11,5
Ca	[mg/l]	15,1	6,30	30,8
Cl	[mg/l]	9,82	2,10	18,4
$CHSK_{Cr}$	[mg/l]	21,4	8,00	70,0
$CHSK_{Mn}$	[mg/l]	7,07	3,90	15,0
K	[mg/l]	3,19	0,40	8,00
Mg	[mg/l]	4,41	2,00	17,2

Parameters	Unit	Average	Minimum	Maximum
Na	[mg/l]	9,32	2,90	29,0
$N\text{-}NH_4$	[mg/l]	0,21	0,04	1,19
NL	[mg/l]	10,7	2,00	101
$N\text{-}NO_3$	[mg/l]	1,37	0,18	4,52
$P_{(total)}$	[mg/l]	0,092	0,020	0,360
pH	[-]	7,41	6,80	8,00
$P\text{-}PO_4$	[mg/l]	0,033	0,003	0,343
RAS	[mg/l]	73,1	10,0	372
RL	[mg/l]	122	44	304
SO_4	[mg/l]	21,6	4,4	75,0
Conductivity	[µS/cm]	169	94	345
NEL	[mg/l]	0,08	0,05	0,19
Temperature	[°C]	10,99	0,01	23,5

NL - total suspended solids
RL - dissolved substances
RAS - dissolved inorganic salts
NEL - non-polar extractable substances
$CHSK_{Cr}$ -chemical oxygen demand (chromium method)
$CHSK_{Mn}$ -chemical oxygen demand (manganese method)
BSK_5 - biochemical oxygen demand

Table 5.2.5.2.1-2 Raw water quality average concentration in the years 2010 - 2014

Parameter /Unit Year	2010	2011	2012	2013	2014
pH	7,458	7,45	7,342	7,358	7,45
Ca (mg/l)	15,31	15,67	14,19	14,92	12,88
Mg (mg/l)	4,00	4,14	3,93	4,50	3,73
$N\text{-}NH_4$ (mg/l)	0,203	0,182	0,196	0,188	0,183
Cl (mg/l)	9,733	10,94	10,06	11,06	10,07
SO_4^{2-} (mg/l)	18,64	18,79	16,56	20,29	17,78

Parameter /Unit Year	2010	2011	2012	2013	2014
N-NO_3 (mg/l)	1,389	1,262	1,044	1,381	1,219
BSK_5 (mg/l) - biochemical oxygen demand	2,09	2,042	2,183	2,258	1,858
$CHSK_{Cr}$ (mg/l) - chemical oxygen demand	18,75	18,75	19,92	20,33	20,83
NL (mg/l) - suspended solids	8,55	6,92	9,42	12,33	8,00
$P_{(total)}$ (mg/l)	0,091	0,098	0,100	0,105	0,083
RL (mg/l) - dissolved substances	115,83	124,33	119,66	120,33	124,83
P-PO_4 (mg/l)	0,036	0,030	0,031	0,031	0,026
RAS (mg/l) - dissolved inorganic salts	68,83	76,33	65,66	75,50	69,16
NEL (mg/l) – non polar extractable substances	<0,05	<0,05	<0,05	<0,05	<0,05
Temperature (°C)	11,51	11,17	10,61	9,44	11,21

5.2.5.2.2 WASTE WATER QUALITY

Existing Nuclear Power Plant* waste water quality - average values for years 2011-2015.

	BSK_5	$CHSK_{Mn}$	SO_4^{2-} $CHSK_{Cr}$		N-NH_4^+	N-NO_3^-	.	P-PO_4^{3-}	N_{inorg}	P_{total}NL	NEL*	RAS	pH
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	-
2011	2,38	17,96	57,58	124,29	0,04	11,98	12,17	0,183	0,34	18,08		437,71	8,31
2012	2,14	18,42	54,71	114,46	0,06	9,61	9,82	0,157	0,33	17,58	0,054	369	8,25
2013	2,15	14,80	51	141,36	0,06	10,23	10,45	0,156	0,29	16,40	0,050	410,72	7,99
2014	2,02	16,52	55,08	131,50	0,19	9,58	9,91	0,192	0,30	10,12	0,051	433,65	8,28
2015	1,89	16,82	50,07	117,38	0,16	8,47	8,78	0,206	0,34	12,63	0,061	403,41	8,20

BSK_5- Biochemical oxygen demand
$CHSK_{Cr}$, $CHSK_{Mn}$- Chemical oxygen demand
NL - Suspended solids
NEL - Non-polar extractable substances, * - based on minimum detection limit 0,05 mg/l
RAS - Dissolved inorganic salts

5.2.6 GEOLOGICAL, HYDROGEOLOGICAL, GEOTECHNICAL, SEISMIC CONDITIONS

5.2.6.1 GEOLOGICAL SITE CONDITIONS

We can generally evaluate that the foundation bed, formed mainly of slightly to moderately weathered sillimanit-biotitic paragneisses and migmatites, is suitable for the foundations of the new nuclear power plant buildings. For such a decision it is necessary to take into account performed earthworks (ground shaping, excavations) and other accesses to the natural rock mass. We assume that the relatively undisturbed natural ground in the area of previously intended units is located at approximately 501,5 m above sea level.

We shall note that earlier supplementary surveys focused on the area of previously considered units buildings and cooling towers. The above-mentioned description of geotechnical conditions is influenced by the very tight limitation of surveyed area.

Experiences from existing NPP showed that there is a random head of groundwater level in the area of building backfill.

On the Temelín Site* there are soils with low permeability. These soils will be probably used for earthwork and as a backfilling material. Site layout of buildings and underground structures (spatial arrangement and height zoning) will lead to creation of complicated rainfall-runoff conditions of these soils. The negative consequences of these facts and underestimated protection against underground water led to continuous problems with underground water in-leak into the basements of ETE1,2 buildings.

5.2.6.1.1 GEOLOGICAL CONDITIONS OF THE NEAR REGION

A) The **characterization of the surrounding area**

The surrounding area of Temelín Site* is situated in the southern part of the Bohemian massif, in the area which belongs to the moldanubian complex. The geological and tectonic development of this region has been influenced by the adjacent Alpine orogene since the Mezozoic Era.

The moldanubian complex in this area consists of a crystalline basement, which is represented by both lithofacial units – of the Monotonous and Varied series. A structure of the moldanubian crystalline complex was plastically and rupturally formed during several stages until the end of the Paleozoic Era, while older structures have been repeatedly activated and deformed.

Most of the spread rocks are biotitic, sillimanite-biotitic to cordierite-biotitic paragneiss and migmatites, sporadically with intercalated beds of quartzites, amphibolites, granulites and ortogneisses. These metamorfites are a product of complicated polyphase deformation, having nappe features of both Cadomian and Variscan metamorphic and deformation cycle.

Moreover, Variscan deep reactivation of an older basement has resulted in intrusion of granitoide massifs accompanied by intensive migmatization. In the northern part of the south Bohemian region many bodies of Central Bohemian pluton stroke through the mantle of moldanubian metamorfites, represented by melanocratic amphibolite-biotitic syenites. Some of the Moldanubian pluton – Sevetin granodiorite appears in bedrock and in a western range of Třeboň basin.

The consequent tectonical development of the south Bohemia territory was influenced by two significant fault systems: NNE-SSW and NW-SE directions. Both fault systems are now in the last stage of moldanubian metamorfites and had a significant impact on formation and development of platform cover in this region.

Significant tectonic activity of specified fault systems was shown mainly during the period of Stephanian C and Lower Autunian, and then in the period from Coniacian till Lower Santonian. Firstly continental permo-carboniferous sediments were created as a tectonic block at the longitudinal section of the Blanice furrow. Subsequently, the sediments of the Klikov formation settled in two centres, - at the České Budějovice and Třeboň basins in Upper Cretaceous period.

The slow upraise of the southern part of the Bohemian massif during the Santonian was accompanied by denudation and peneplenization and was finished in the Ottnangian Era, when a tectonically non distinctive depressed area reaching out of Senonian basins was formed. Fluvial - lacustrine sediments of Mydlovary formation were created in the basin during Late Miocene and after that, sediments of the Ledenice series of strata were created.

Arching and uplifting movements of some blocks (Blansky forest, Nove Hrady Mountains, Nova Bystrice highlands) represented a significant change in the river system formation in the Upper Pliocene: – water flow in the southern direction was interrupted and northward water extraction began. Rivers have played a dominant role in morphological formation of the landscape relief: the paleo-Vltava river on northeast part of České Budějovice basin, in northwest part the paleo-Blanice river and in the Třeboň basin the paleo-Luznice river. Strong denudations of Ledenice series of strata, as well as Miocene sediments in the basin, are consequences of paleo-rivers activity. Terrace systems (2 Upper Pliocene, 6-7 Pleistocene) were created as a result of river activity (the rivers Vltava, Blanice, Lužnice) aiming to north.

The current morphology of South Bohemia region, where the Site* is located, is a result of long-term geological development, in which tectonic, sedimentation and erosion played very important roles. The Alpine folding had a principal effect on the South Bohemian region, while single phases influenced tectonic activity of Hercynian and older fault systems in the Bohemian massif range.

Senonian, Paleogene, Miocene and Pliocene sediments originated in phases of such faults reactivating, represented by inverse and mainly vertical movements. There is without any doubt evidence that a depression of the whole south-east foreland, basin areas and adjacent peripheries nearly even fully down to Parathethyde sea level was a necessary condition for paleogeographic spreading of single series sedimentation. Contemporary sedimentation of covering formations was consequently influenced by tectonic activities of single fault systems. Tectonic activity during the Upper Pliocene and at the beginning of the Pleistocene had been gradually shifted from both basins area more to the south edge of the Bohemian Massif (into the "boundary" mountains area). This resulted in a significant limitation of vertical movements on the faults in the South Bohemian basins.

B) Geological conditions of the Site* vicinity

Site* vicinity, as an area about 5 km in radius, is from geological point of view built by metamorphosed rocks of the so called “Týn crystalline complex” (see Drawing No. 135 “Geological map of the Temelín NPP Site vicinity” included in Chapter 5.7 of Technical Requirements Document*).

Rock mass of the “Týn crystalline complex” represents tectonically very few disturbed block created by paragneisess in different stage of migmatitization, heterogeneous only in alternation of fine banded layers and solid rock layers. Rocks are stabilized by relatively high content of quartz. Typical joints are: NW-SE with dip of 65° - 85° to NE, W – E , with dip of 65° to N and NE - SW with dip of 80° to NW.

Lithological boundary with “Podolí crystalline complex” appears at the northern part of the Site* vicinity area. “Podolí crystalline complex” is predominantly built by migmatitic rocks as leucocratic migmatite, biotitic migmatite of flebite-stromatitic typ and biotitic gneissose granite.

A boundary is accompanied by so called „Vodňany mylonite zone“ about 1 km broad and of NEE – SWW direction. Zone is created by intensively tectonically disturbed rocks manifested by tectonic crumbling, mylonitization, cataclasis and jointing. Dip of the zone is about 30° - 40° to NNW.

The comprehensive study of the near region geology has been developed by the Owner* and this report is incorporated into the Initial Safety Analysis Report.

5.2.6.1.2 OVERALL CHARACTERIZATION OF THE CONSTRUCTION SITE

From a structural - geological viewpoint, the Temelín Site* area can be characterized as an integral geological block unevenly weathered on the surface, disrupted by few systems of discontinuities of a local importance.

A dominant structural-tectonical feature of the rock mass at the Temelín Site* is its quite well preserved planar structure – foliation in the NE-SW direction with declination to NW. Such a structure can be characterized as multiple changing of shale layers of migmatitized paragneiss and migmatites, with many penetrations of granitoide rocks. The planar folding structure has been broken by the fault tectonics with a majority of tectonic dislocations in mostly north-south direction.

The mentioned faults appear as a system of strike, sporadically and even mutually unrelated discontinuities bound to a rare existence of rigid rock bodies (especially granitoids), with occurrence of equalized tectonic stresses that caused complex mostly semi-plastic deformations of layers in the surrounding „softer“ gneiss. Rocks in these zones are considerably, even very considerably jointed, weathered, even heavy weathered, with frequent secondary alterations, however without any continuous and thicker filling of fractures (e.g. by dislocation clay). These syntectonic discontinuities are older than Upper Cretaceous, though some features indicate a possible influence by Pliocene - Pleistocene reactivation. These discontinuities however do not represent any regionally-geological lineaments (faults), which could negatively affect the continuity of the moldanubian block of the Site*.

Nevertheless, neotectonic uplift of the territory during the Pliocene and Lower Pleistocene Eras had an impact on a rock mass, particularly by foliation planes fractures, partial face slip alongside foliation, above all on thin striped and massive (very rich in quartz) gneiss, and by cataclasis of rigid types of rocks, mostly rich in quartz types of metamorfites. Usually only a small scope of lithological layers is concerned (exceptionally a few meters thick layers). An other features of this activation can be described as minor partial shifts inside the gneiss massif with an existence of slant striation, slickensides or fractures with mylonite. Tectonic features also accompanied sections of shear stress and shear-movements) Weathering stages of the rock mass
The description of particular rock mass weathering described in the original Site* surveys is very similar to the classification developed by the International Society of Rock Mechanics (ISRM), based on six weathering classes.
Pazderník (1982; 1984) separated 7 zones with various stage of rock weathering at the Site* of Temelín NPP. The following key can be used for the conversion of the original weathering grades

(See the Technical Requirements Document*, Chapter 5.8, Section 5.2.6 Synoptic table drills and Database of surveying objects) to the numbering mentioned in the Czech standard CSN EN ISO 14689-1:

Table 5.2.6-1 Comparison of weathering rock grades

ČSN EN ISO 14689-1		Grades in the geological logs	
0	Fresh Rock	6	Fresh Rock
1	Slightly Weathered Rock	5	Slightly Weathered Rock
2	Moderately Weathered Rock	4	Moderately weathered Rock
3	Highly Weathered Rock	3	Weathered Rock
4	Completely Weathered Rock	2	Intensely weathered Rock
5	Residual Soil	1	Decomposed Rock
		0	Eluvium

Weathering level according to currently valid Czech standard CSN EN ISO 14689-1 is classified as follows:

Table 5.2.6-2 Rock mass weathering stages

Term	Description	Grade
Fresh	No visible signs of rock material weathering; perhaps slight discoloration in major discontinuity surfaces.	0
Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering, and may be somewhat weaker externally than in its fresh condition.	1
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as a continuous framework or as core stones.	2
Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as discontinuous framework or as core stone.	3
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.	4
Residual Soil	All rock material is converted to soil. The mass structure and material fabric is destroyed. There is a large change in volume, but the soil has not been significantly transported.	5

Typical rock weathering profile at the Site* according O. Pazderník's reports is follows:
Relocated weathered rocks (deluvium) are considered as a top layer and it is the most widespread soil at the Site* (See A type soils).

The eluvial zone is the second zone that creates an almost continuous surface with average thickness 2 to 3 m, in some places up to approximately 5 m. From the geotechnical classification this zone is represented by residual soil, possibly shortly relocated eluvium with variable physical and mechanical properties. The eluvial zone gradually passes to completely weathered rock mass.

The third zone is located deeper, that consists of highly weathered and moderately weathered rock types. Discontinuity surfaces have usually deep red shadow caused by limonite. Rock mass is strongly jointed to small fragments and crumbled as per foliation and fractures, and is weak to moderately strength.

The progression of a contour eluvium base and prevailing weathering zone proves uneven effects of the weathering processes, depending on the tectonic failure of rock mass and litologic resistance of rocks against weathering. Apart from such weathering zones, sloping and vertical weathering zones were also found, where weathering proceeds along discontinuity planes, usually of schistosity. The depth of this zone ranges approximately from 5 to 15 m under the original ground level. The unimportant slightly weathered rock zone of the third zone has a thickness approximately from 2 to 5 meters, up to approximately maximum of 10 meters. fresh rock zone is located at a depth of approximately 20 meters or more under the original ground level. Slightly weathered rocks are present at that depth only in the immediate surroundings of important joints and moderately up to highly weathered rocks of broken up rock bodies.

Three the most important geological layers were defined at the Site* by O. Pazderník. Quaternary layers thickness, the depth of eluvium base and base of prevail weathered zone were established and inscribe in Geological log sheets (See the Technical Requirements Document*, Chapter 5.8, Section 5.2.6 Synoptic table drills and Database of surveying objects).

B) Rock strength
Rock strength classification in the original Site* surveys was based on the IRSM recommendation. Seven grades scale of strength class R1 up R7 were used. The span of each class was related to the value of rock uniaxial compressive strength in MPa.

Neither deviation in the number of class nor in marginal values was found after the comparison with table No. 5 mentioned in the Czech standard CSN EN ISO 14689-1. The class numbers are mentioned in the geological log sheets and they correspond with grades mentioned in the following table.

Table 5.2.6-3 Rock strength table

Grade	Strength Classification	Uniaxial Compressive Strength (MPa)
1	Extremely Weak	< 1
2	Very Weak	1 – 5
3	Weak	5 – 25
4	Medium strong	25 – 50
5	Strong	50 – 100
6	Very Strong	100 – 250
7	Extremely Strong	> 250

C) Rock Quality Designation value
Rock Quality Designation (RQD) in the original Site* surveys was defined as the sum of length of core pieces greater than 10 cm divided by the total core run length times 100. RQD value in percentage can be found as the column graph on the geological log sheets. Wording of the rock mass quality evaluation based on RQD value is based on the table set by Deere (1988).

Table 5.2.6-4 RQD classification

RQD (%)	Rock Quality
<25	Very Poor
23 – 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

D) Jointing of the rock mass
For evaluation of discontinuity spacing in the original Site* surveys was used the following criteria set. Discontinuity spacing value is mentioned in the geological log sheets as the column graph.

Table 5.2.6-5 Determination table of discontinuity spacing values

Grade	Verbal description of the intensity of jointing	Discontinuity spacing (cm)
1	Very low (massive rock mass)	> 200
2	Low	60 – 200
3	Medium	20 – 60
4	Strong	6 – 20
5	Very strong	2 – 6
6	Extreme strong	< 2

Spacing applied in the original evaluation (see previous table) correspondents to the data in the Czech standard CSN EN ISO 14689-1. The rock massive characteristics in the standard are evaluated as follows:

Table 5.2.6-6 Determination of discontinuity spacing value based on tab. 8 in CSN EN ISO 14689-1

Description	Discontinuity Spacing (mm)
Very wide spacing	> 2000
Wide spacing	2000 - 600
Moderate spacing	600 - 200
Close spacing	200 - 60
Very close spacing	60 - 20
Extremely close spacing	< 20

A dominant structural-tectonical feature of the rock mass at the Site* is quite well preserved planar fabric – foliation in the northwest – southwest direction with declination to northwest. Such a structure can be characterized as multiply changing of shale layers of migmatitized paragneiss and migmatites, with many penetrations of granite rocks. Planar folding structure has been broken by the fault tectonics; hereinafter the three systems of local dislocations are mentioned:

1st system: The most common discontinuities can be found in the direction north-south up to north-northwest – south southwest, usually vertical, and rough and closed. They are usually loose and edged away. They are tied with the rigid rock bodies where rock stress of the surrounding gneiss complex was readjusted. They usually reach the depth maximally 20 meters. They are showed close to the surface by heavy weathering of surrounding rocks. The intensity of weathering and jointing decreases with the depth. Fault-gouge or young hydrothermal filling have not been observed. The occurrence of this system dislocation was found in the area of previously intended units.

2nd system: This system is equal with gneiss complex foliation. Such discontinuity was also closed with dip among 40° a 60°. Disruption of surrounding rock is lower and less important with lower content to the depth than radial fissures.

3rd system: This system is represented by faults and fissures in the northwest – southeast direction. It is the least important.
We can state that the Site* is located on uniform, uneven weathered rock block. Present discontinuities are only of the local importance and they do not have a character of regional lineaments disturbing continuity of the rock unit of the Temelín NPP.

E) The stability of the foundation soil in the case of the static loading

A rock massive classification in the original Site* surveys was based especially on the foundation soil modulus of deformation value Edef. The value of the modulus of deformation was at that time determined based on the results of pressiometric tests. The value of pressiometric modulus Eop was recalculated to the modulus of deformation, determined by the field plate bearing test. The results of field plate bearing tests in the trench R3, drill logging results and microseismic logging have also been considered. The values of the deformation modulus of individual rock types and their weathering grades were derived from the results of the tests (See Table below). The derived values Edef. are inscripted in the geological log sheets in every single encountered layer. A contour map of the value Edef. = 100 MPa for the Site* was issued based on the test results, too.

A minimum value of the foundation soil modulus of deformation Edef. (MIN) = 100 MPa was considered for the foundations of the former VVER 1000 reactor buildings and turbine buildings, respectively Edef. (MIN) = 30 MPa for the foundations of the cooling towers.

Table 5.2.6-7 Derived data of modulus of deformation value E_{def}.

Rock category	Rock type code	Weathering stage	Weath. Code	$E_{def.}$ (MPa)
Quaternary	A2, A3, A4	-	-	8
	A5, A6	-	-	12
Pegmatitic granites	C0, C1, C2, C3 C9	Residual Soil Residual Soil, Completely Weathered	5 5,4	20
	C1, C2, C3 C9	Completely Weathered Highly Weathered	4 3	35
	C1, C2, C3 C9	Highly Weathered Moderately Weathered	3 2	150
	C1, C2, C3 C9	Moderately Weathered Slightly Weathered, Fresh	2 1,0	300
	C1, C2, C3, C4	Slightly Weathered Fresh	1 0	450
		Fresh	0	
Paragnesses and Migmatites	D0, D1, D2, D3, D6 D9	Residual Soil Residual Soil, Completely Weathered	5 5,4	15
	D1, D2, D3, D6 D9	Completely Weathered Highly Weathered	4 3	30
	D1, D2, D3, D4, D6	Highly Weathered	3	80
	D9	Moderately Weathered	2	150
	D1, D2, D3, D4, D6 D9	Moderately Weathered Slightly Weathered, Fresh	2 1,0	250
	D1, D2, D3, D4, D6	Slightly Weathered	1	400

F) Diggability of soils and rocks

Seven grades scale in terms of soil (or rock) ease of excavation was used in the Czech geotechnical practice. Soil and rock at the Site* of the Temelín NPP were classified as follows (See Geological log sheets in the Technical Requirements Document*, Chapter 5.8, Section 5.2.6 Synoptic table drills, too):

1. class: topsoil, loose (without rock fragments);
2. class: topsoil with rocks fragments; cohesionless soils – medium dense; cohesive soils - sandy, firm;
3. class: transported completely weathered rock with rock fragments; decomposed rocks (eluvium) extremely weak to very weak;
4. class: highly weathered rocks; moderately weathered rocks poor in quartz, foliated (especially type D1) or intensively fissured rocks; moderately weak/strong rocks;
5. class: moderately weathered migmatized or rich in quartz rocks (especially types D2, C); slightly weathered paragneisses poor in quartz or intensively fissured; predominantly strong rocks;

6. class: slightly weathered migmatized or rich in quartz rocks, low to medium fissured, predominantly very strong rocks; fresh rocks poor in quartz or intensively fissured (type D1);
7. class: fresh, rich in quartz rocks, low to medium fissured, predominantly extremely strong rocks.

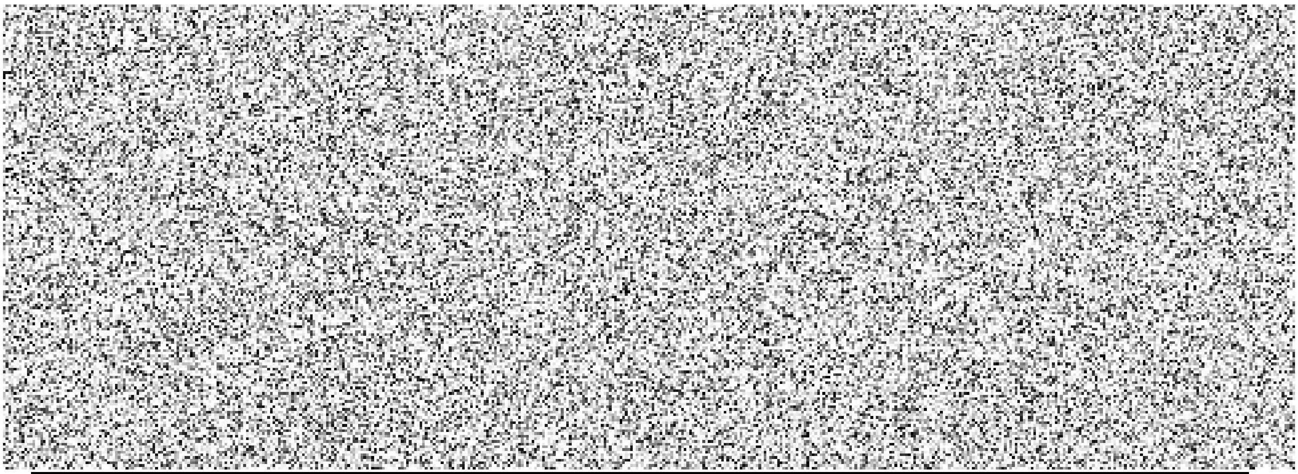
According valid Czech standard CSN No. 73 6133 (2010) "Road earthwork - Design and execution" only three classes (I to III) are defined. Class I - excavation can be made by common excavation mechanisms, Class II – for breaking of rocks is necessary to use special breaking mechanisms and Class III – for breaking of rocks is necessary to use blasting.

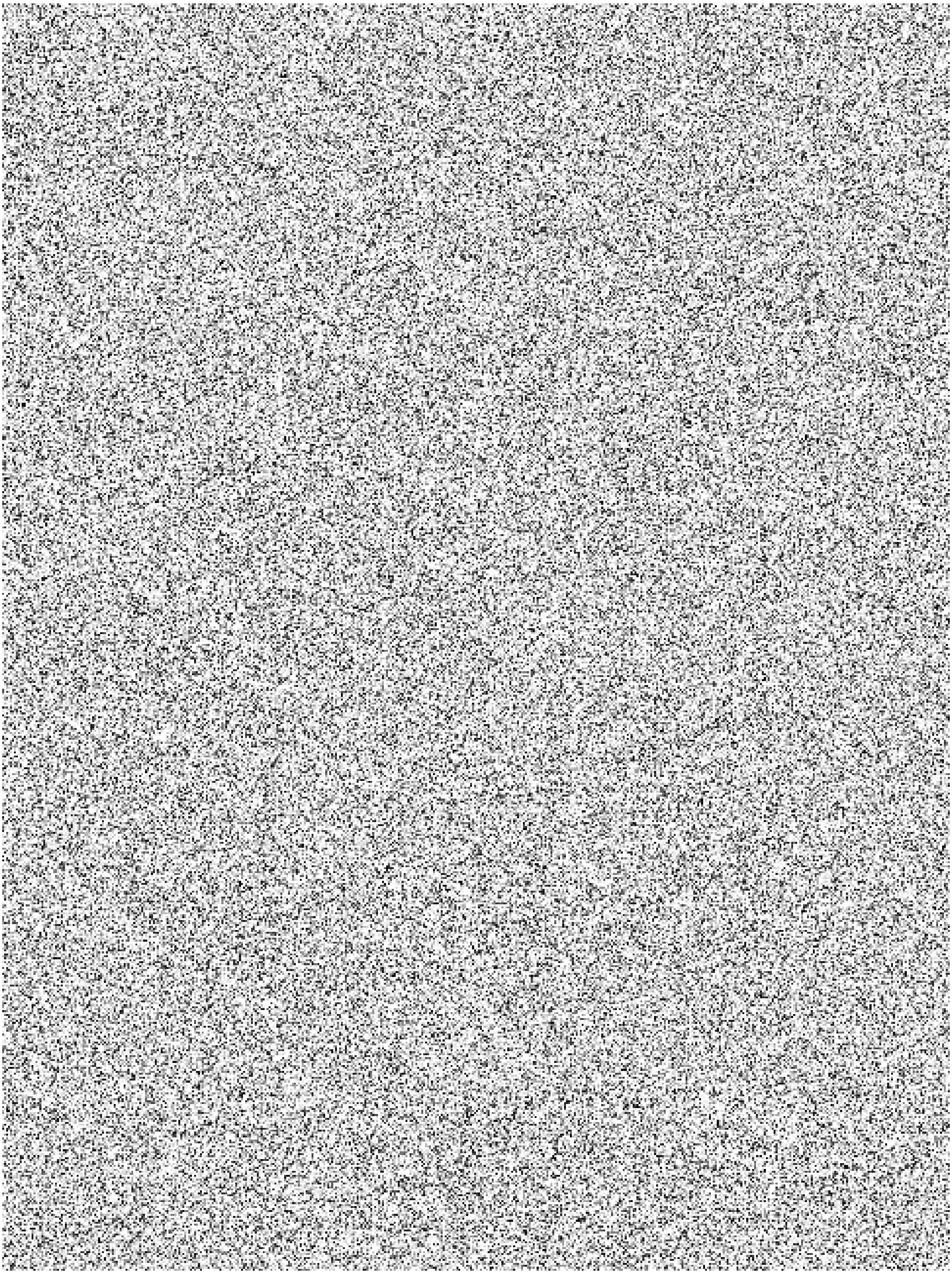
G) Geotechnical properties of soil and rocks
There is a review of materials physical and geomechanical properties at the foundation area presented. Those data were obtained by statistical evaluation of the soil and rock laboratory test results from the original Site* surveys.

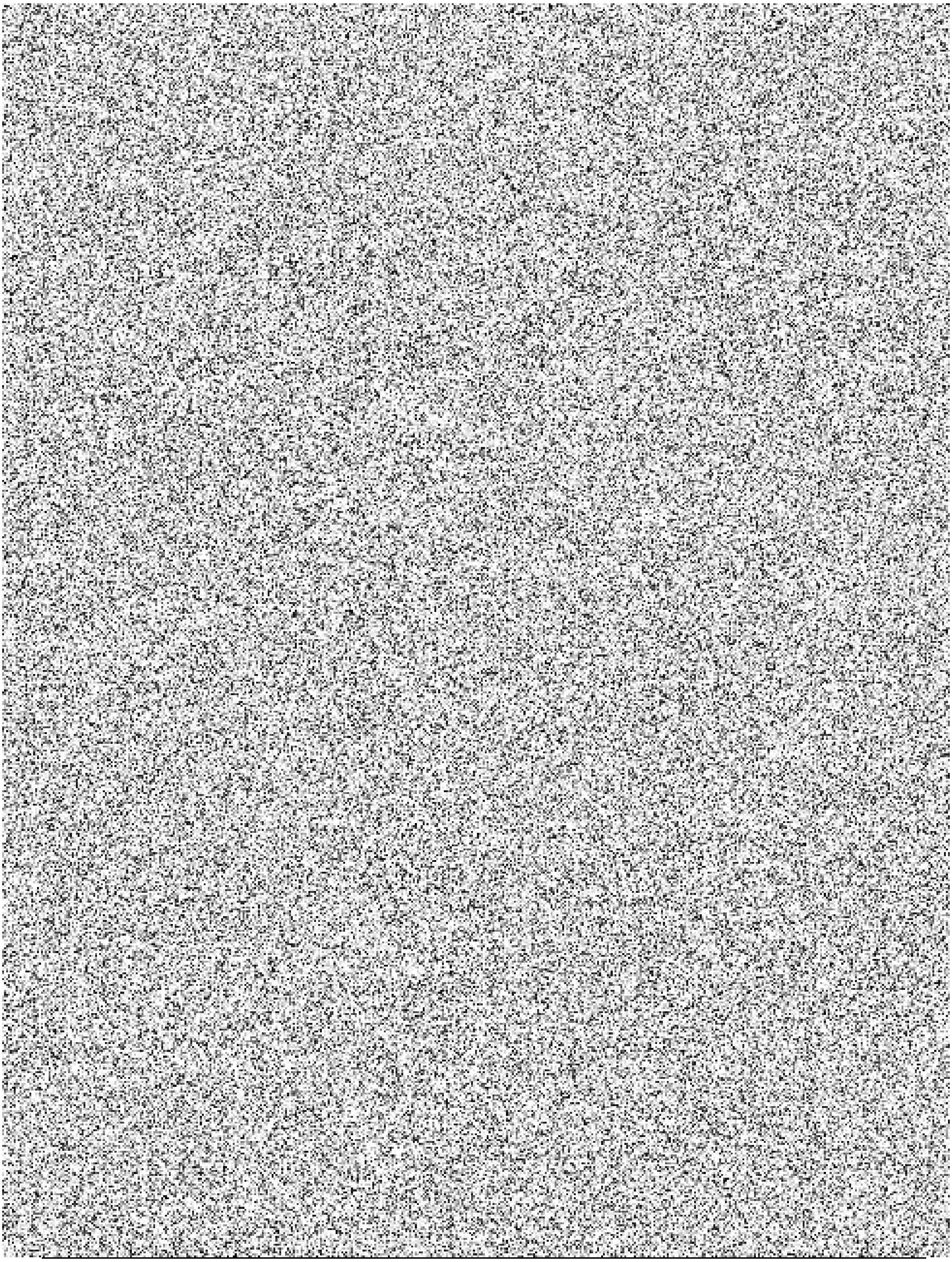
Table 5.2.6-8 Physical – mechanical properties of soil and rocks at the Site*

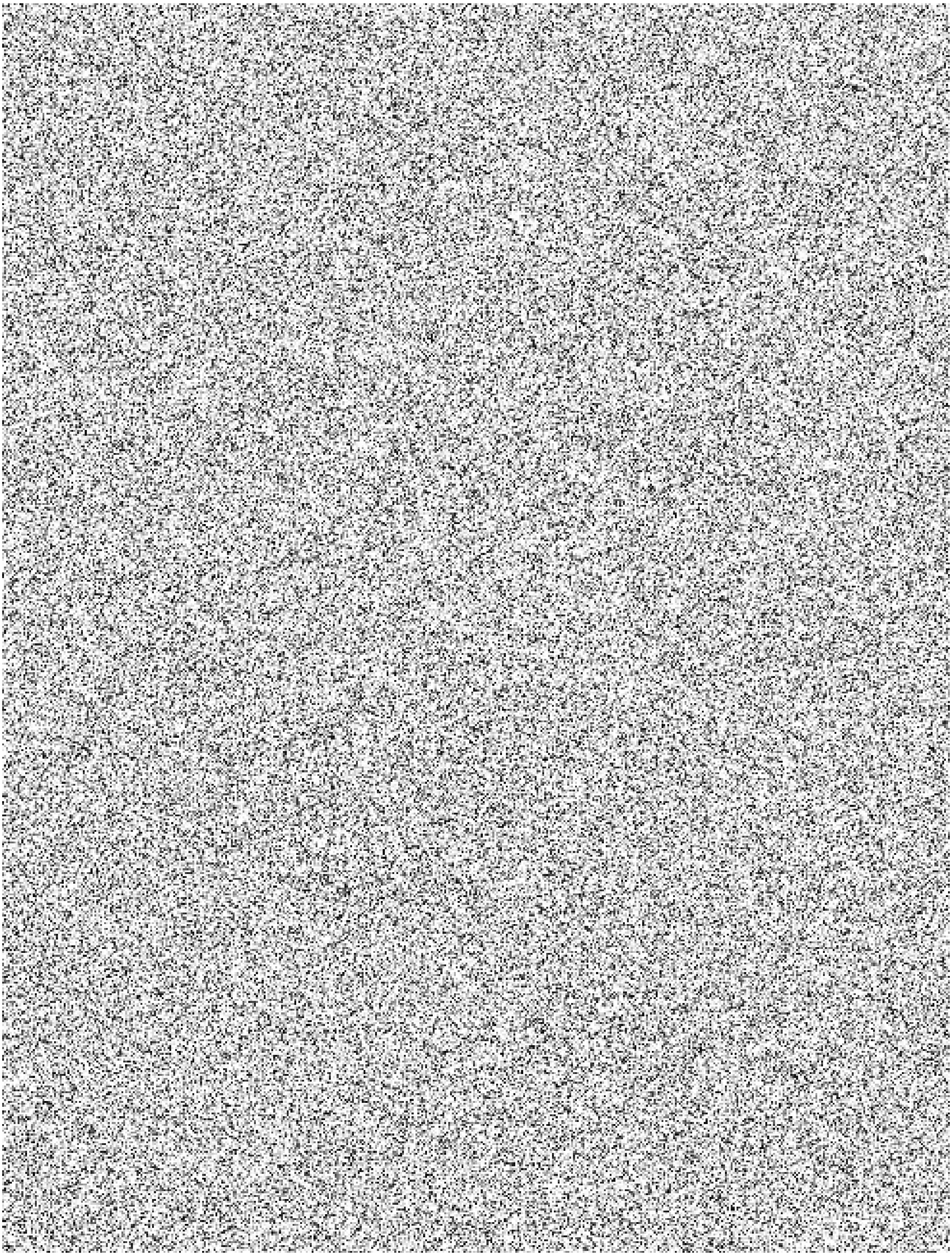
Physical properties		Unit	Quaternary soils	Eluvium	Highly weathered rocks	Slightly weathered / fresh rocks
water content	w	[%]	20	18	-	-
liquid limit	w_L	[%]	48	40	-	-
plastic limit	w_P	[%]	30	25	-	-
plasticity index	I_P	[%]	18	15	-	-
porosity	n	[%]	32,7	30,9	18,5	11,1
void ratio	e	[-]	0,486	0,447	0,227	0,123
natural bulk density	ρ_n	$[kg.m^{-3}]$	2000	2240	2270	2450
bulk density of dry rock	ρ_d	$[kg.m^{-3}]$	1850	1900	2200	2400
specific density	ρ	$[kg.m^{-3}]$	2750	2750	2700	2700
effective angle of internal friction	φ_{ef}	[°]	28	32	-	-
effective cohesion	c_{ef}	[kPa]	20	17	-	-
modulus of deformation	E_{def}	[MPa]	10	20	30-35	100-300
coefficient of intrinsic permeability	k	$[m.s^{-1}]$	1.10^{-9}	1.10^{-8}	-	-
consistency index	I_C	[-]	1	1,46	-	-

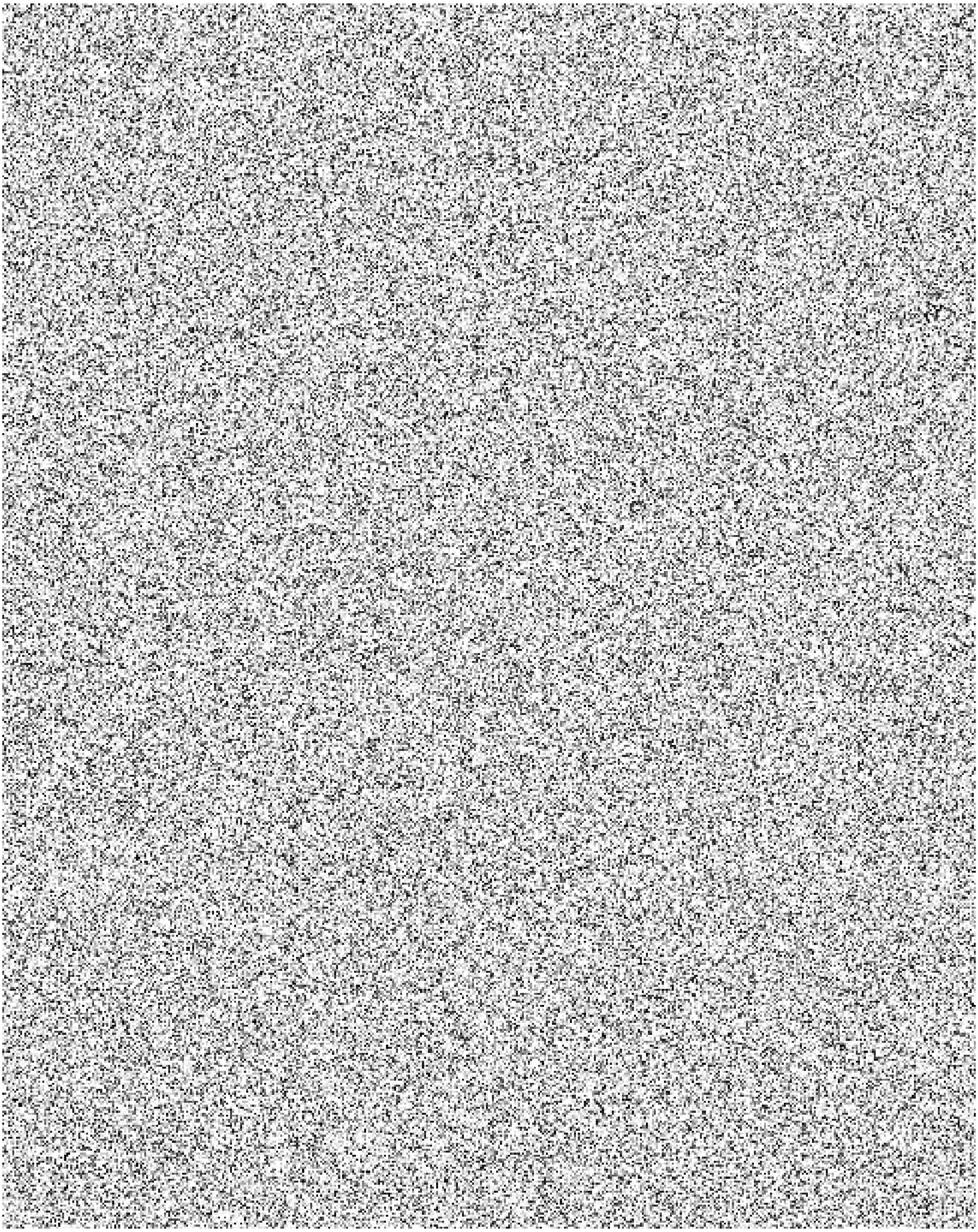
5.2.6.1.3 FOUNDATION CONDITIONS

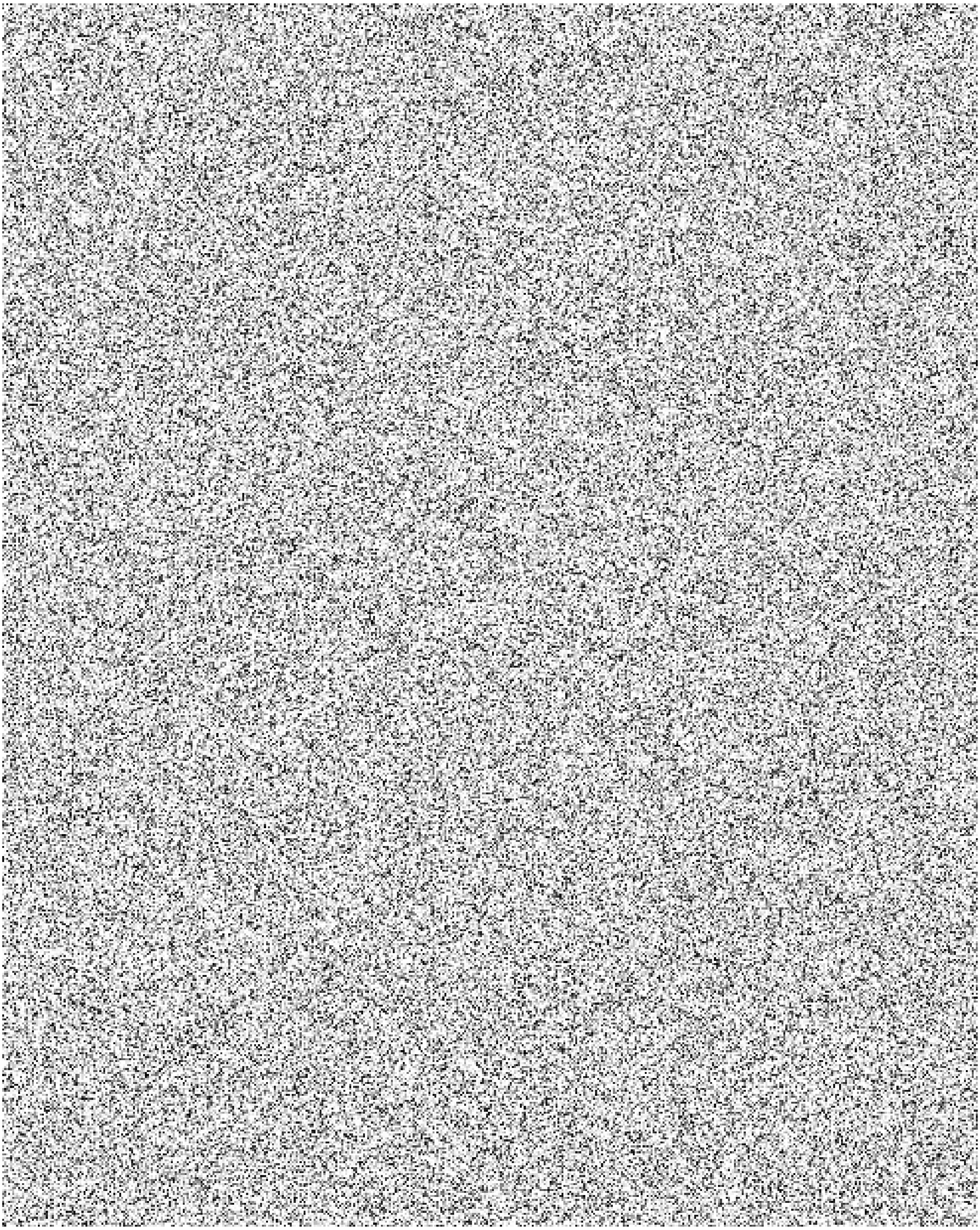




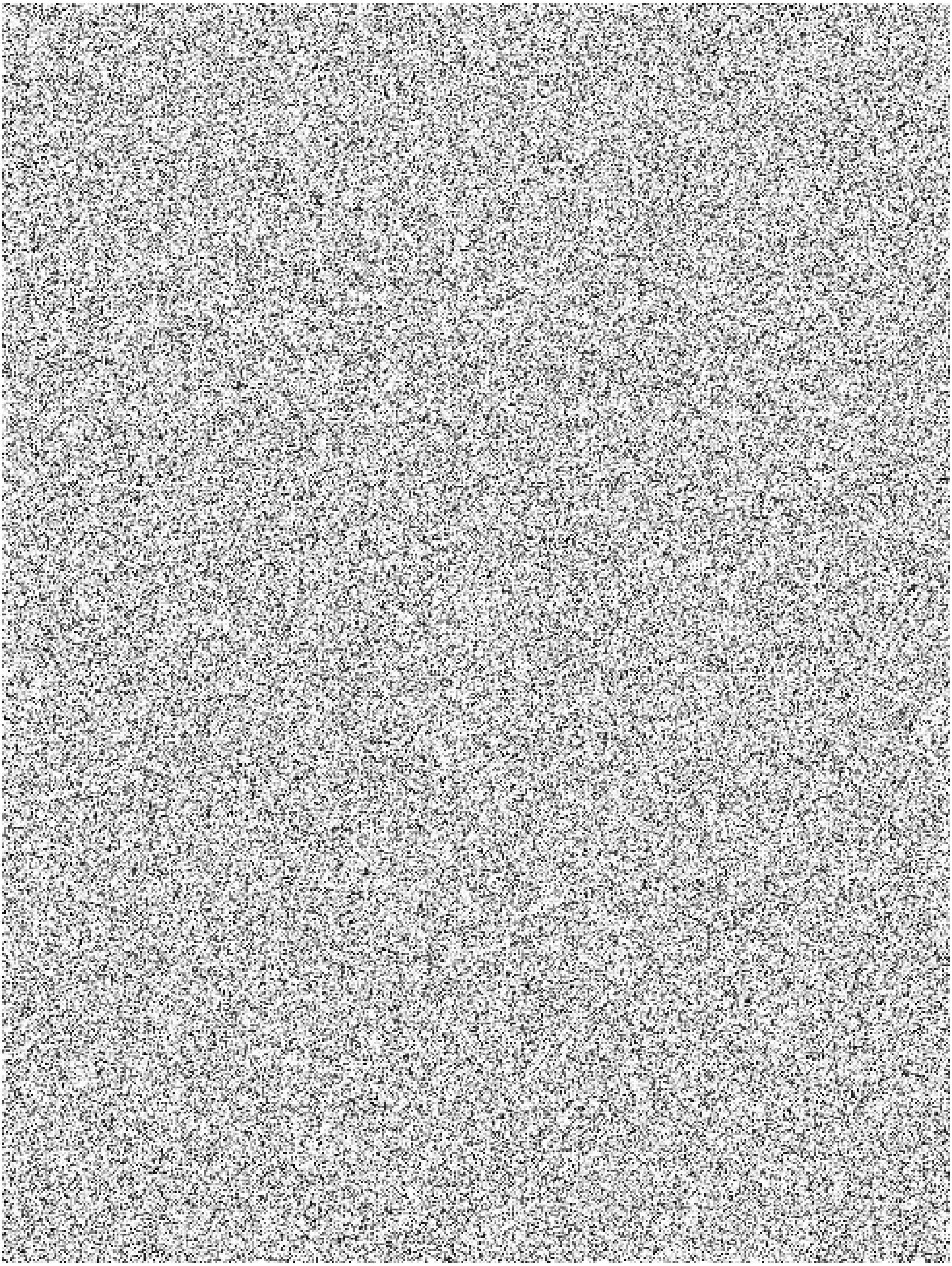


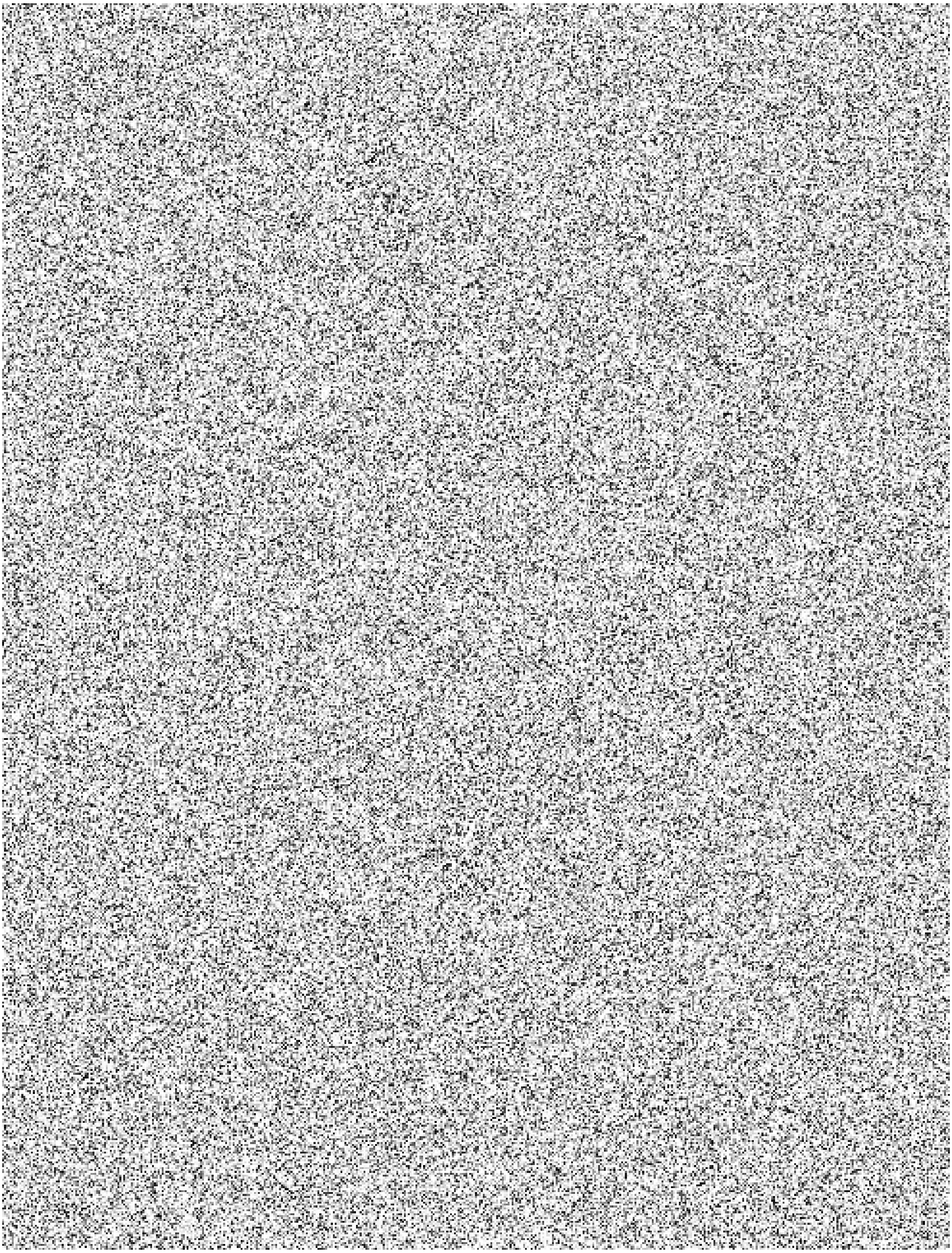


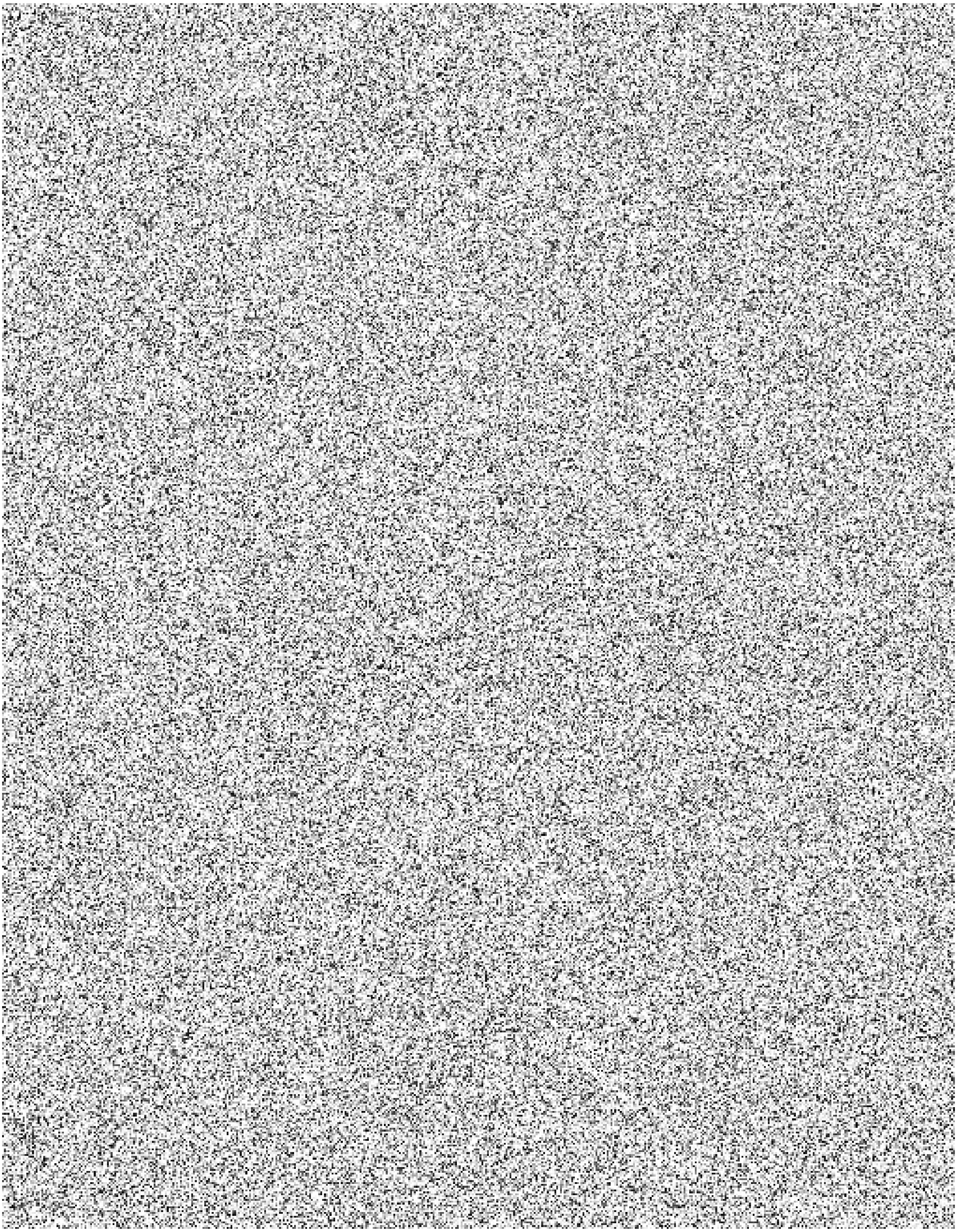


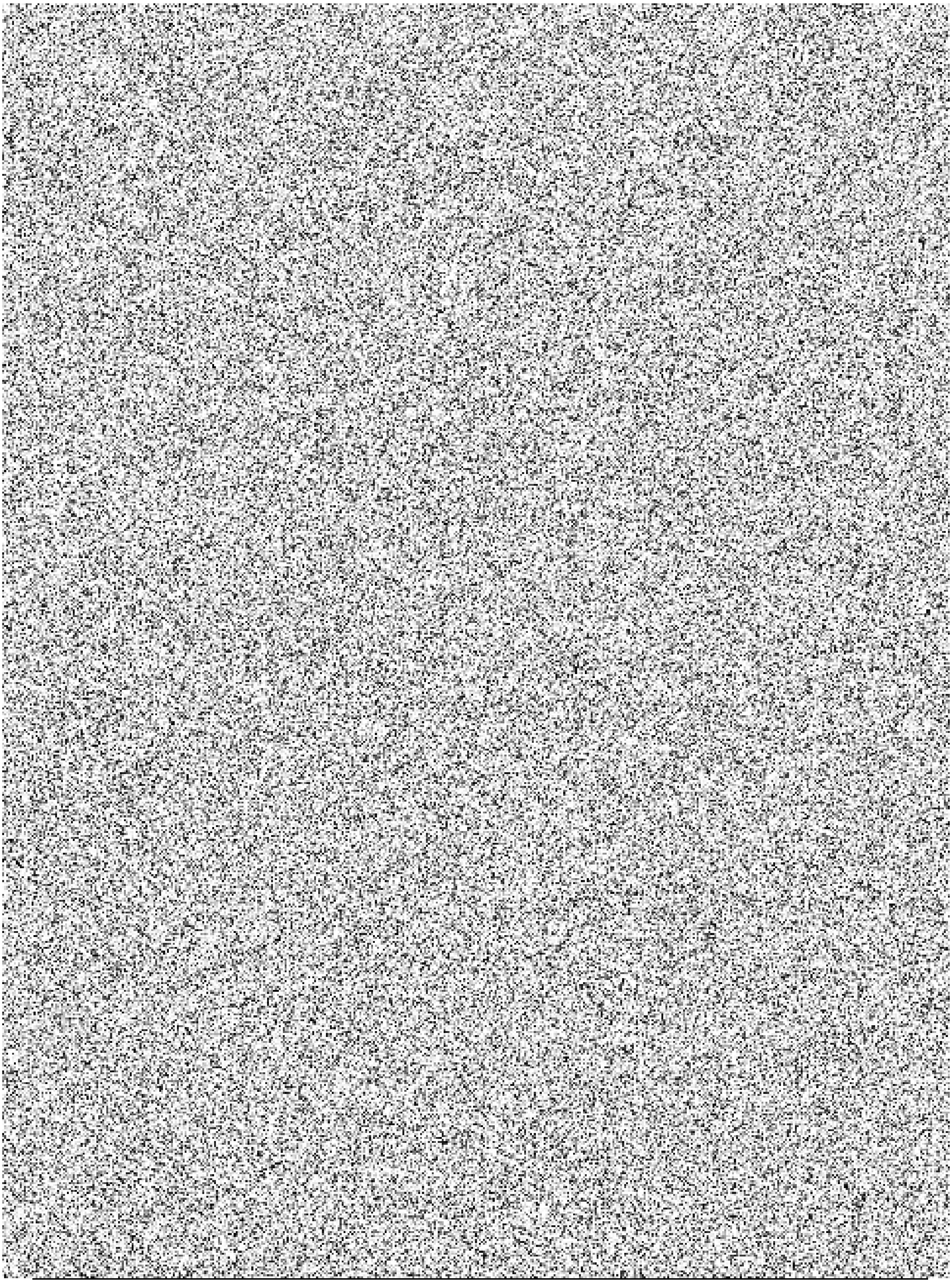


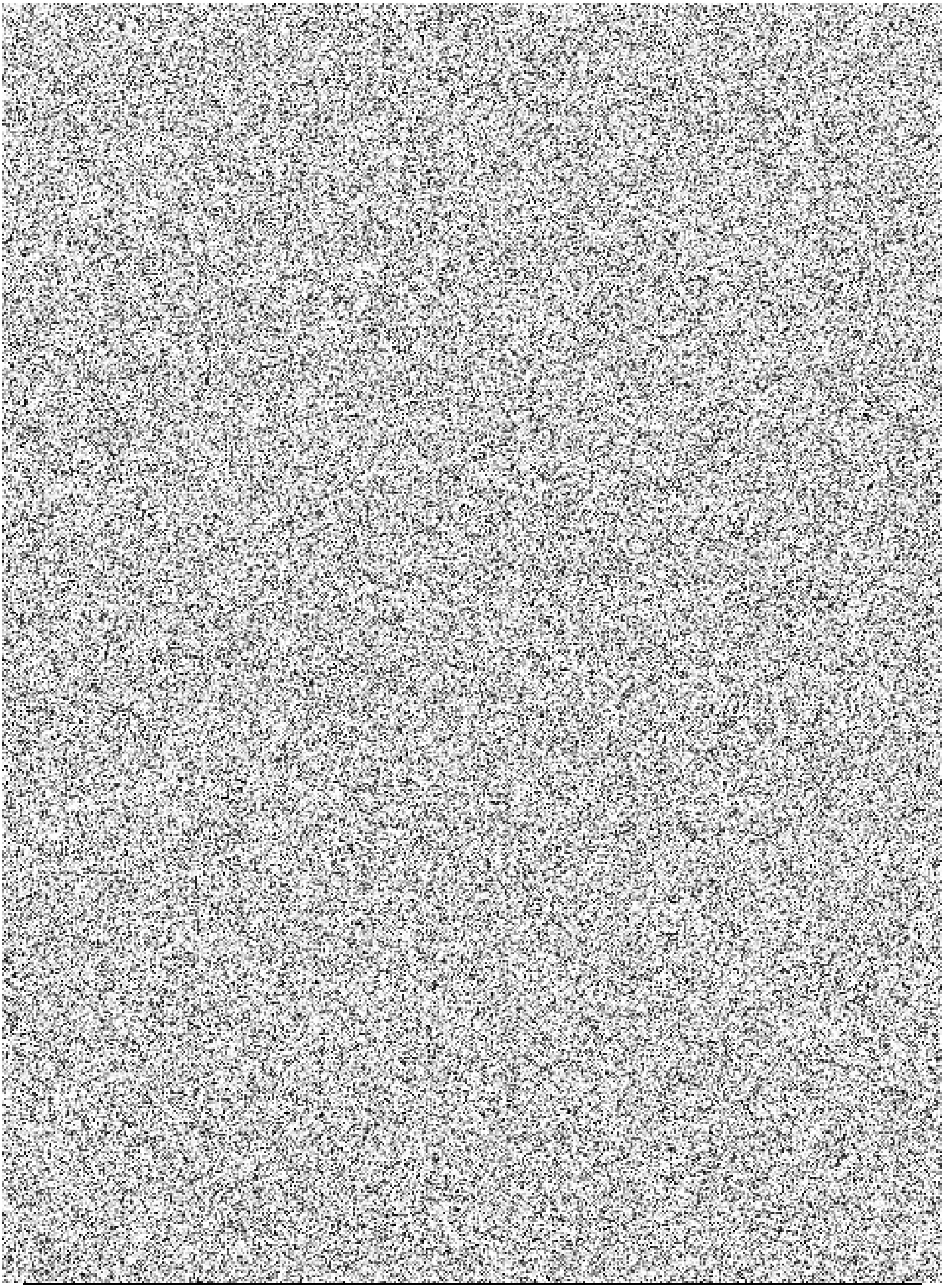
There is a quite monotonous solid rock mass, mainly (80 %) containing moderately and slightly weathered, strong and moderately jointed paragneisses on the foundation level of former unit

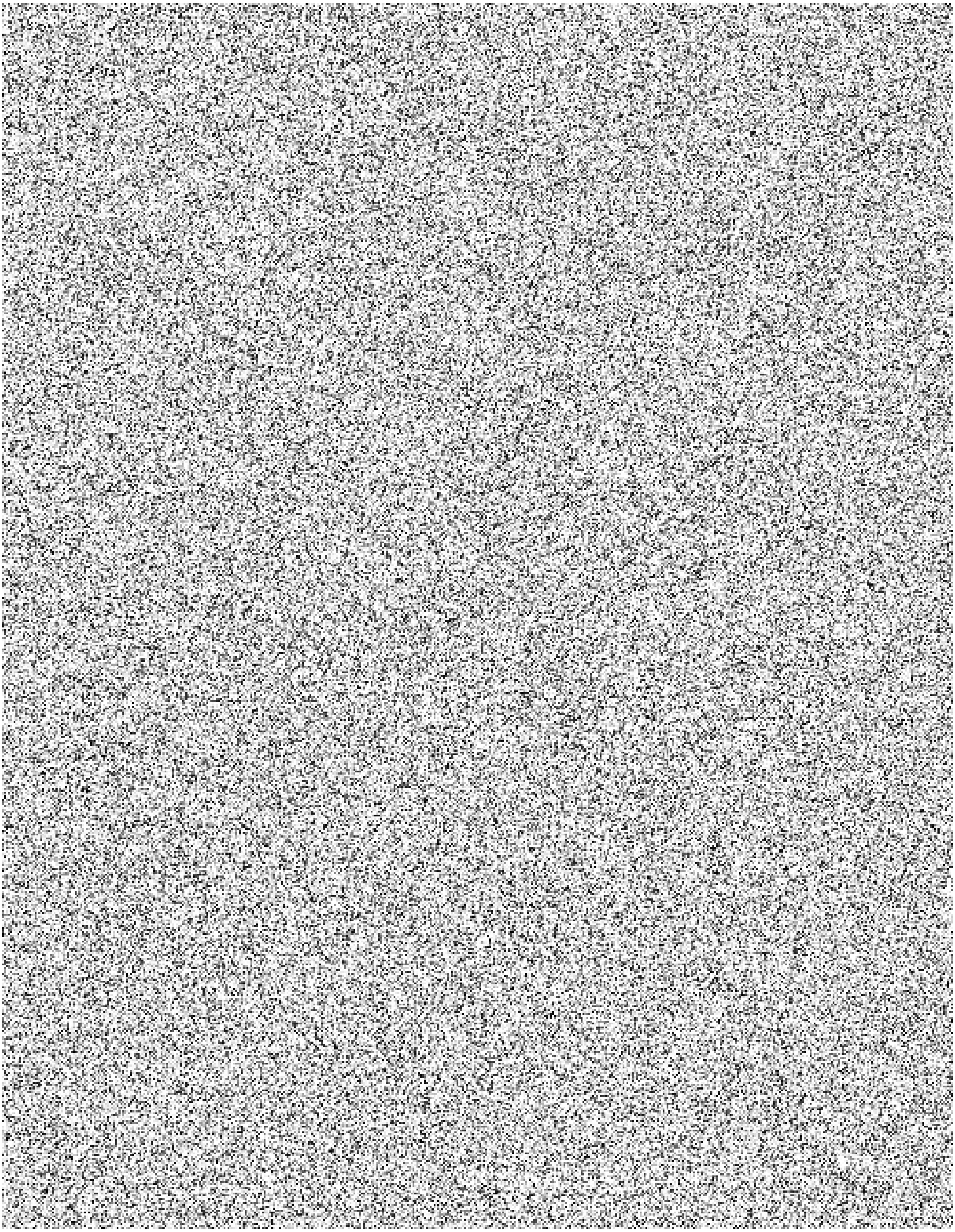


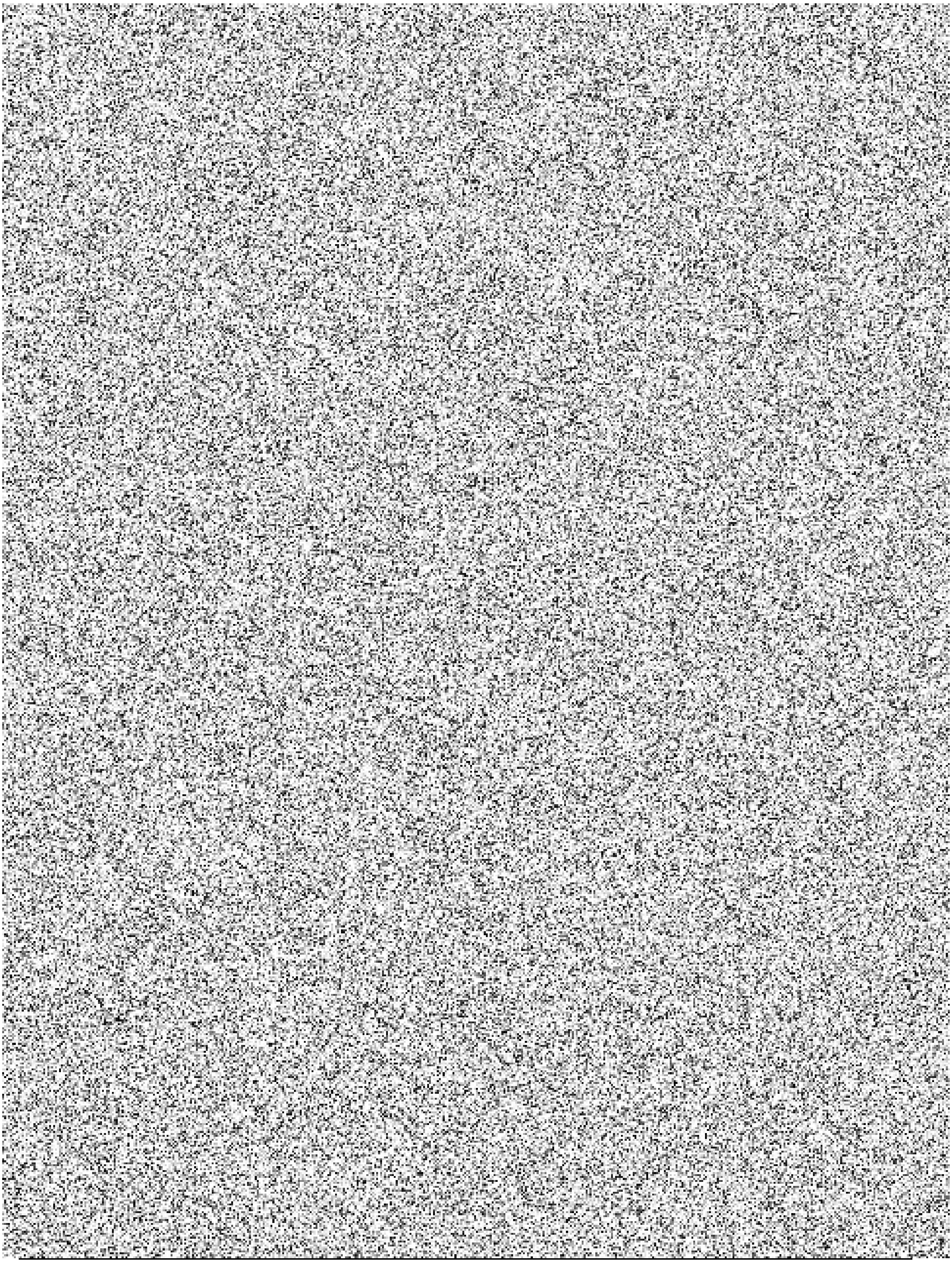


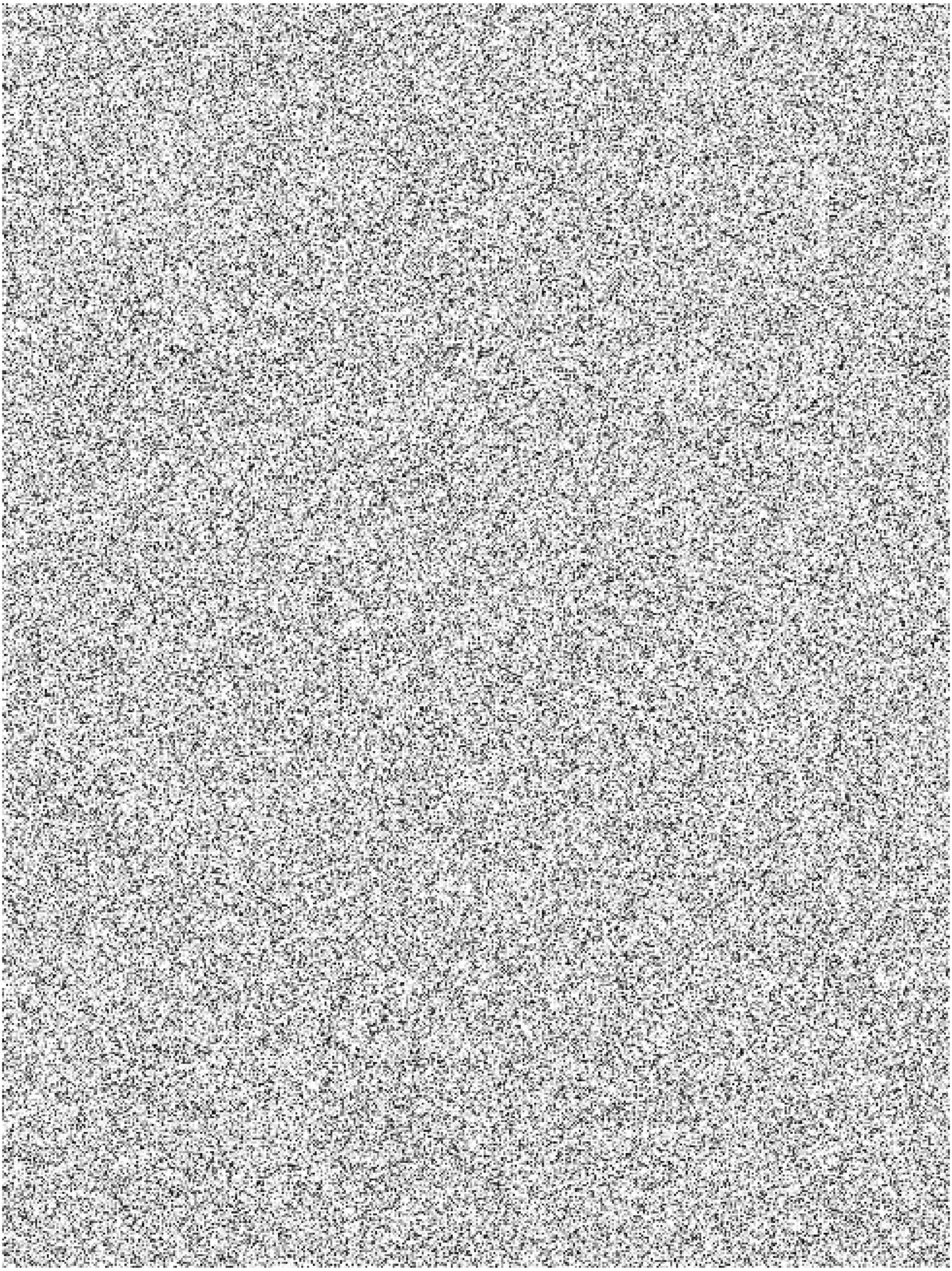






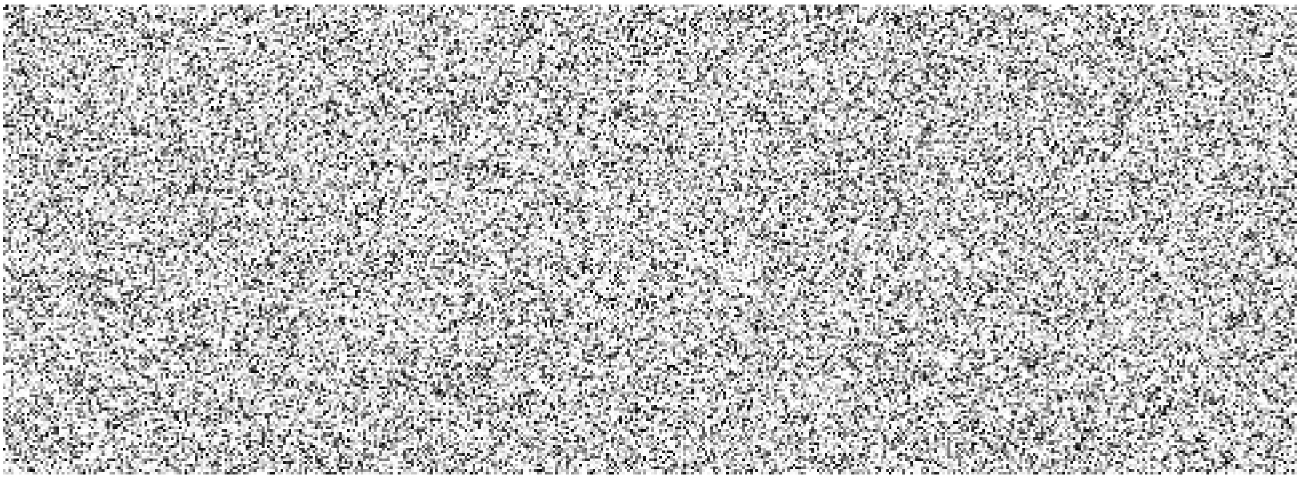




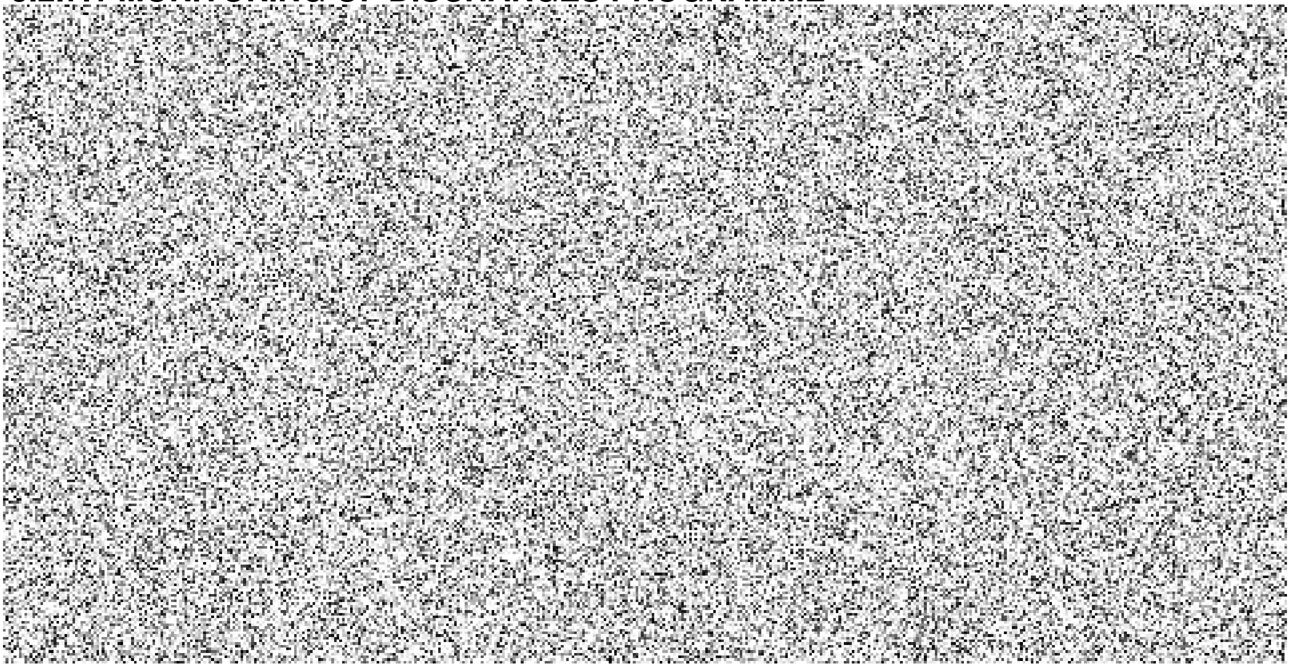


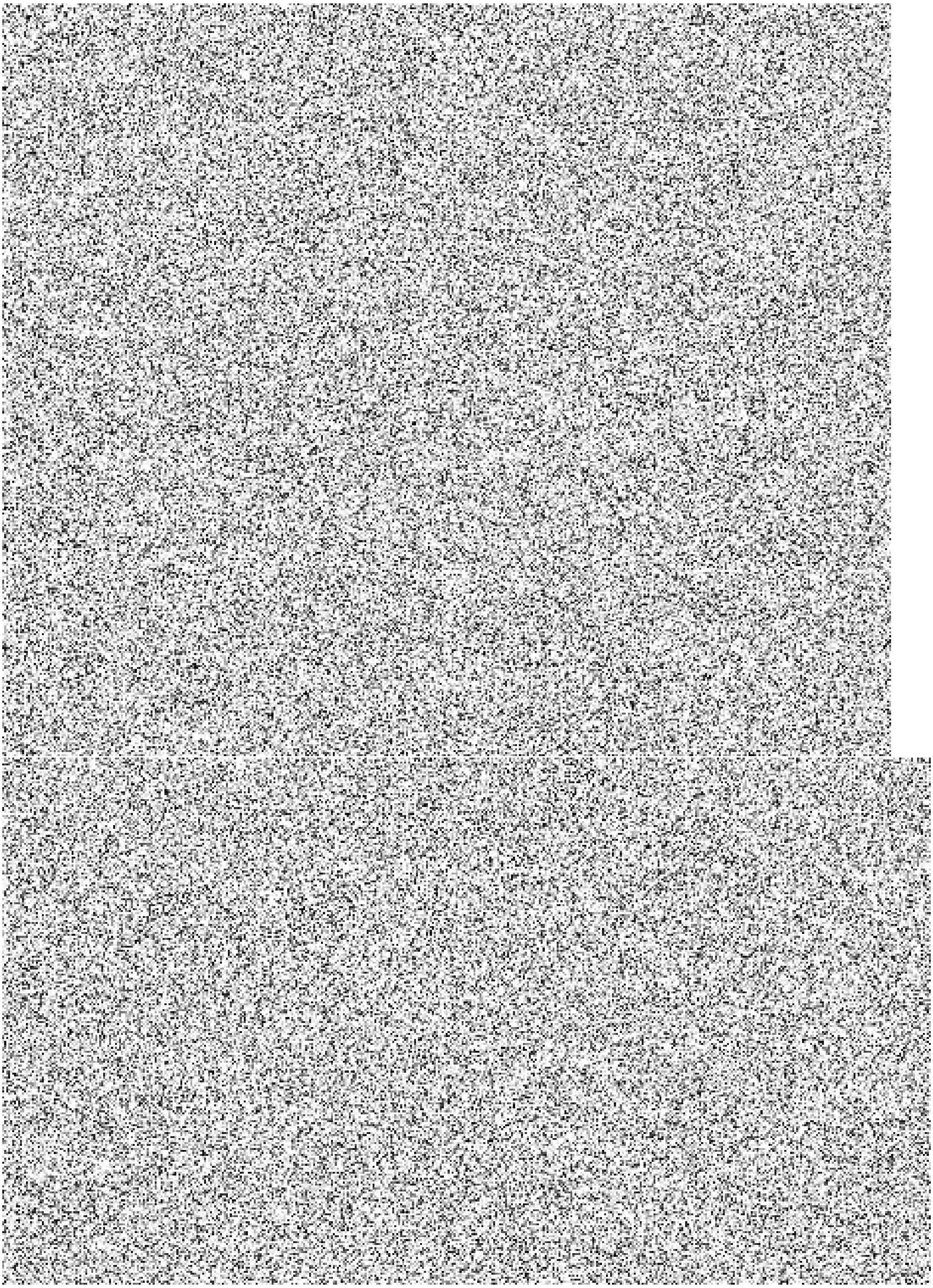
5.2.6.4 SEISMIC SITE CONDITIONS

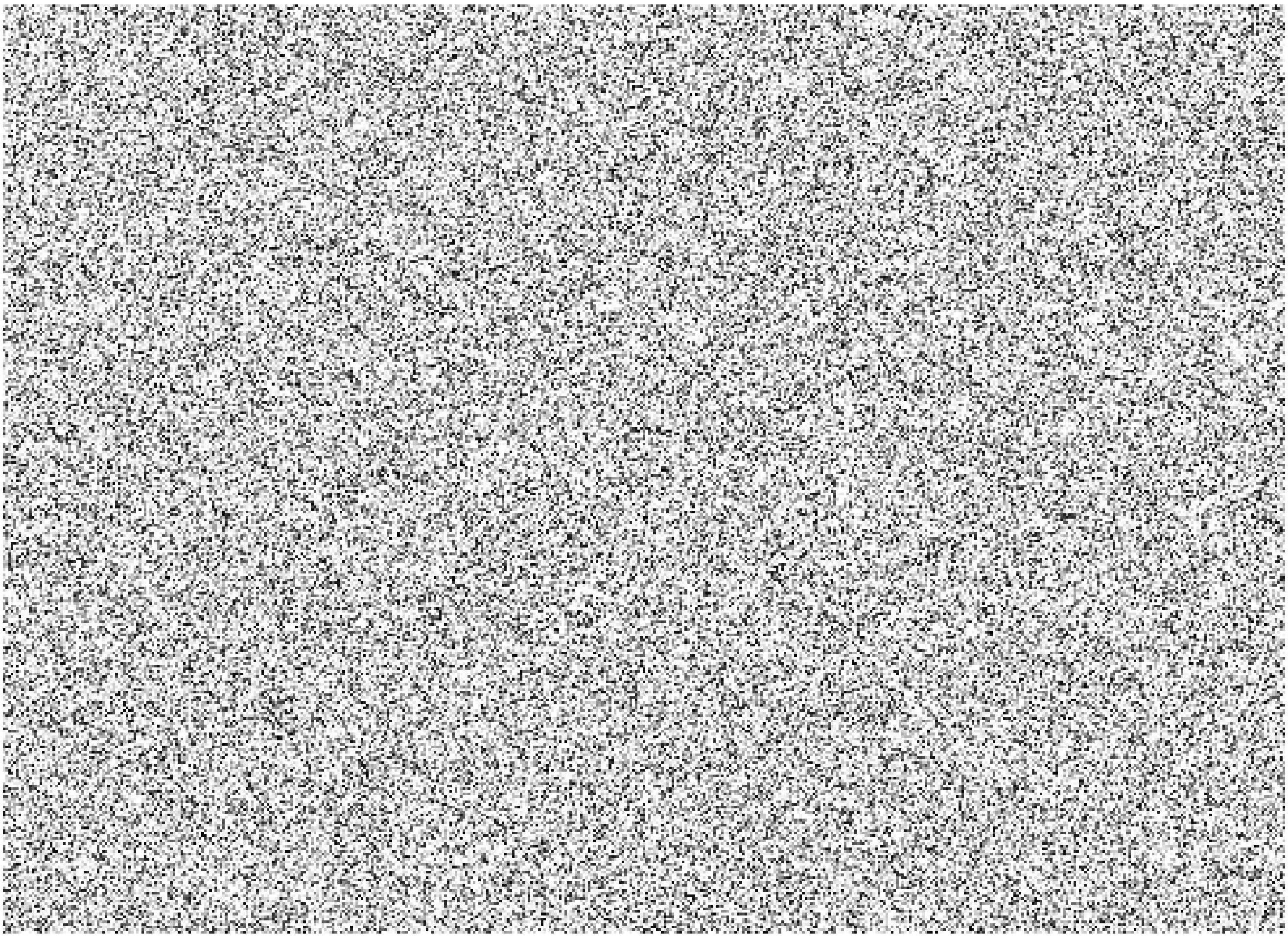
5.2.7 RADIATION SITUATION AT SITE



5.2.7.1 MONITORING OF DISCHARGES PROGRAMME







5.2.7.2 ENVIRONMENTAL MONITORING PROGRAMME

For a comprehensive monitoring and evaluation of the radiation situation in the locality the Environmental Radiation Monitoring Laboratory (LRKO) was set up in České Budějovice. This laboratory provides fulfillment of these following activities:

- sampling and evaluation of the radioactive discharges
- calculation of committed effective dose E(50) to the Representative Person* (see tab. 5.2.7.4-1 and 5.2.7.4-2)
- sampling and evaluation of various types of environment (water, crops, sediments etc.)
- participate in the Radiation Monitoring Network of the Czech Republic using 24 probes of the I. circuit of the teledosimetric system inside the Limited Access Area*, 8 fixed stations of the II. circuit of the teledosimetric system (6 of them in nearest villages), the alternative teledosimetric system (see below) and thermoluminescent dosimeters
- operation of the mobile groups that are mapping the radiation situation based on ground and aerial monitoring of the dose rate and surface contamination
- operation of teledosimetric system (mainly the outer circuits) for early identification of accident releases
- radiation data transfer to SÚJB etc.

Environmental monitoring of surrounding areas (outside the Site* fence) including measurement laboratory for this purpose shall be provided by the Owner*, see Licensing and Permitting, Safety and Quality Document*, Section 2.6.

By using of sampling, radiation control stations, the thermoluminescent dosimeters etc. presence of radioactive substances are measured and assessed in this manner:

- Atmospheric fallout
  Atmospheric fallout is sampled in two fixed stations (Litoradlice and Zvěrkovice) according to the approved monitoring programme to cover prevailing wind directions. In fallout the presence of fission and activation products is monitored by semiconductor-based gamma spectrometry.

- Aerosols and radioiodine gas
  Aerosols is sampled in all eight fixed dosimetric stations according to the approved monitoring programme to cover prevailing wind directions. In aerosols the presence of fission and activation products is monitored by semiconductor-based gamma spectrometry. Gaseous I-131 is sampled in fixed station in Týn nad Vltavou.

- Rainwater
  Rainwater is sampled in meteorological station in Temelín according to the approved monitoring programme to cover prevailing wind directions. In rainwater the presence of tritium is monitored by liquid scintillation spectrometry of beta radiation.

- Surface water
  Surface water is sampled from the Vltava River in selected profiles, which are affected by the liquid effluents from the Existing Nuclear Power Plant*, according to the approved monitoring programme. Furthermore, surface water is sampled from watercourses unaffected by liquid effluents. In samples the presence of tritium is monitored by liquid scintillation spectrometry of beta radiation, the presence of fission and activation products is monitored by semiconductor-based gamma spectrometry and presence of strontium is monitored by beta spectrometry. In the surface water a slightly increased amount of tritium was found for the whole period of observation.

- Drinking water
  Drinking water is sampled from wells located near the Vltava river and surroundings, which are affected by the liquid effluents from the Existing Nuclear Power Plant*, according to the approved monitoring programme. Furthermore, the drinking water is sampled from unaffected wells. In the drinking water the presence of tritium is monitored by liquid scintillation spectrometry of beta radiation, the presence of fission and activation products is monitored by semiconductor-based gamma spectrometry and presence of strontium is monitored by beta spectrometry. A slightly increased amount of tritium was found in the drinking waters for the whole period of observation.

- Groundwater
  Groundwater is sampled from drill holes (in area of the Existing Nuclear Power Plant*, nearby interim spent fuel storage and also in Site* vicinity) at time intervals according to the approved monitoring programme. In the groundwater the presence of tritium is monitored by liquid scintillation spectrometry of beta radiation, the presence of fission and activation products is monitored by semiconductor-based gamma spectrometry and presence of strontium is monitored by beta spectrometry. A slightly

increased amount of tritium was found in the groundwater for the whole period of observation.

- Milk
  Milk is sampled from farms in the site vicinity according to the approved monitoring programme. In the milk the presence of activation and fission products is monitored by semiconductor-based gamma spectrometry and presence of strontium is monitored by beta spectrometry.

- Gamma dose equivalent rate monitoring
  Values of gamma dose equivalent rate are continuously measured at selected places of site vicinity by thermoluminescent dosimeters at time intervals according to the approved monitoring programme.

- Field gamma spectrometry
  Values of surface gamma activity of artificial radionuclides are continuously measured at selected places of site vicinity by field gamma spectrometry at time intervals according to the approved monitoring programme.

- Agricultural crops
  Agricultural crops are sampled at specified places of site vicinity at time intervals according to the approved monitoring programme. In the samples the presence of activation and fission products is monitored by semiconductor-based gamma spectrometry.

- Fish
  Fish are sampled at specified places of site vicinity (mainly Vltava river) at time intervals according to the approved monitoring programme. In the samples the presence of activation and fission products is monitored by semiconductor-based gamma spectrometry.

- Sediments
  Sediments are sampled at specified places of site vicinity at time intervals according to the approved monitoring programme. In the samples the presence of activation and fission products is monitored by semiconductor-based gamma spectrometry.

- Soil
  Soil is sampled at specified places of site vicinity at time intervals according to the approved monitoring programme. In the samples the presence of activation and fission products is monitored by semiconductor-based gamma spectrometry.

No burden requiring any corrective measures or regulatory action caused by the Existing Nuclear Power Plant* for the entire period 2001 – 2022 was registered. The most significant effect of the Existing Nuclear Power Plant* on environment is tritium contamination in groundwater, surface and drinking water. It is expected that the Plant* will also cause similar effects, therefore tritium discharges and releases should be carefully assessed and minimized as low as possible.

5.2.7.3 TELEDOSIMETRIC SYSTEM (TDS)

The teledosimetric system includes measuring probes, data connections and software for continuous monitoring of a gamma dose equivalent rate, thereby finding and transmitting information to the operator about a possible release of radioactive substances, their rate and direction. The TDS stations are usually located at a level of approx. 2.5 m above the surrounding terrain and are freely accessible to the surrounding air so that the system can immediately respond to the presence of radionuclides in the atmosphere. Measured data are automatically transmitted every minute to the central information radiation monitor system and measurement laboratory (LRKO) in digital form where they are evaluated.

TDS consists of two circuits - TDS I and TDS II, furthermore, the alternative teledosimetric system (Skyras system) is present in Existing Nuclear Power Plant* surroundings. The TDS I circuit includes 24 stations located within the Existing Nuclear Power Plant* Limited Access Area*. The stations are distributed in an approximate oval shape so that measurements can cover the entire area and at the same time, so that the stations are not shaded, e.g., by buildings. The TDS I circuit is powered from its own switching station and has category III/I critical loads, i.e., they have a secured power supply, even in case of an emergency situation.

The TDS II circuit includes 8 stations (6 of them situated in the nearest surrounding settlements, 1 next to the Existing Nuclear Power Plant* and 1 station in the area of the LRKO in České Budějovice). The TDS II power supply is provided from the switching stations near the station buildings. In case of failure of the network power supply, the unit is able to ensure operation of a respective station for approx. 2 hours. The TDS II circuit stations are situated in the following villages: Týn nad Vlavou, Zvěrkovice, Litoradlice, Nová Ves, Sedlec, Bohunice, České Budějovice and next to the Existing Nuclear Power Plant*. A new alternative teledosimetric system (Skyras), which ensures alternative monitoring of a radiation situation in the Existing Nuclear Power Plant* and its surroundings, was built in 2016.

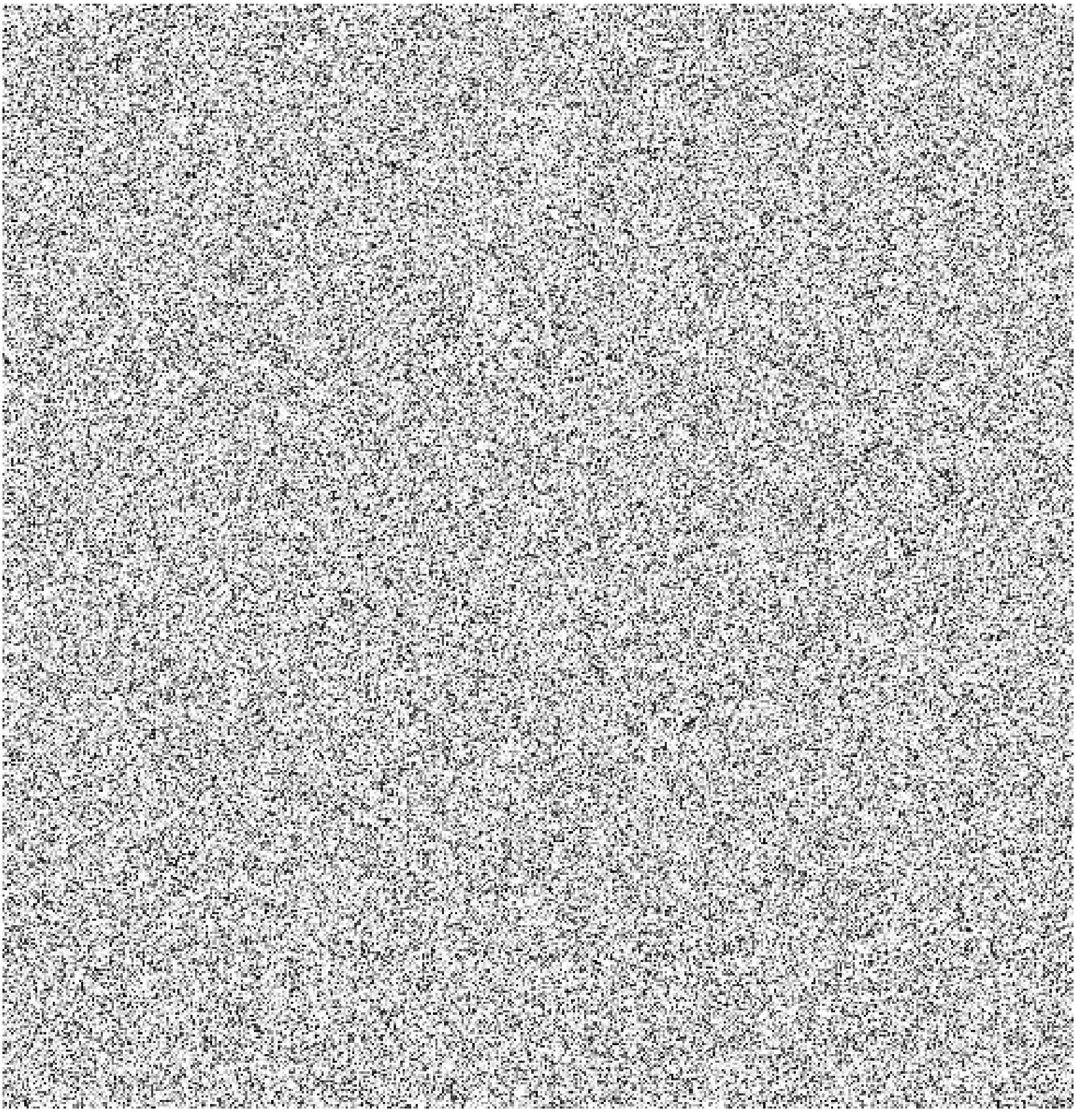
It includes:

- export detectors of dose rate with radio transmission (6 pcs) for distribution in the locality,
- portable detectors of dose rate with radio transmission (8 pcs) for monitoring during activity of rescue units and monitoring groups in the Existing Nuclear Power Plant* surroundings.
- stationary and mobile meteorological stations with dose rate detectors,
- stationary detectors of the system in the surrounding villages, distributed uniformly in 16 zones in ZHP.

Stationary detectors of the circuit are situated in nearest villages. The export detectors and the system detectors are powered by (long-life) batteries, i.e., they are independent of external power supplies. The basic period of data transmission is 1 hour, this period shall automatically decrease to 10 minutes in case of an increase of the dose rate above the prescribed limit. The measured data is displayed in information system of radiation control and available in the radiation control room, in the backup control rooms in the emergency control center and the backup emergency center.

The same technology is also installed at the NPP Dukovany as the part of the alternative teledosimetric system (ATDS) system. If required, it is therefore possible to use the NPP Dukovany export and portable detectors as well as the NPP Dukovany mobile base station in the NPP Temelín locality. Thus, the NPP Dukovany ATDS means can be added in the Skyras system in the Temelín NPP.
It is expected that the Plant* shall have similar TDS inner circuit situated in the Limited Access Area* of the Plant* compatible with external circuits of the Existing Nuclear Power Plant*.

5.2.7.4 EXPOSURE OF REPRESENTATIVE PERSON



Tab. 5.2.7.4-2: Effective dose and committed effective dose E(50) [nSv] to Representative Person* calculated by RDETE for the years 2018-2022 from discharges into the atmosphere.

		Age groups [years]		
	Year	0 - 5	6 - 15	15 - 70
[nSv]	2018	9	11,	10
	2019	17	13	11
	2020	16	13	11
	2021	18	14	12
	2022	24	18	14

5.2.8 EMERGENCY PREPAREDNESS AT THE SITE

Czech Republic has established a crisis management system, which includes a system of (radiation) emergency preparedness, established by the Czech Atomic Act* (no. 263/2016 Coll.) In this Act an emergency preparedness, internal and external emergency plans, emergency planning zones, responsibilities of a permission holder (i.e. the operator of nuclear power plant) for emergency preparedness and in case of a radiation accident are defined. The Czech Atomic Act* also states:

- The State Office for Nuclear Safety (SÚJB) approves the so-called Internal Emergency Plan and its amendments.
- In case of a radiation incident, eventually a radiation accident, permission holder (licensee) must notify SÚJB and locally relevant Authorities* and transmit to SÚJB specified data and information.
- The SÚJB manages the radiation monitoring network. Using the network and evaluation of the radiation situation provides data for a decision on the introduction of measures to reduce or avert an exposure in case of a radiation accident.

The term emergency preparedness (according to Decree No. 359/2016 Coll. called "radiation extraordinary event management") stands for:

1) providing analysis and evaluation of radiological abnormal occurrence, this analysis shall assess radiological impact of abnormal occurrence,
2) preparedness to respond to radiological abnormal occurrence,
3) response to radiological abnormal occurrence and
4) recovery the state after abnormal occurrence.

Management of response to radiological abnormal occurrence is divided mainly among operator, relevant fire and rescue service and other emergency and rescue services. Responsibilities on response are mainly defined in emergency plans which serve as basic document to manage such situations.

The emergency plans are for the purpose of better management divided as follows:

- The internal emergency plan – for purpose of emergency planning inside the Existing Nuclear Power Plant* area (see term nuclear installation grounds stated in Czech Atomic Act*, §4, j)
- The external emergency plan – for purpose of emergency planning outside the Existing Nuclear Power Plant* area but inside the emergency planning zone

- The national radiation emergency plan – for purpose of emergency planning outside the Existing Nuclear Power Plant* emergency planning zone throughout the whole state

The abnormal occurrence means in the case of the emergency planning "harmful effects of forces and phenomena caused by human activity, natural causes and accidents that threaten life, health, property or the environment and requiring rescue and relief work." In case of nuclear power plants, the abnormal occurrence is important to its safety, which ultimately can lead to a threat of nuclear, radiation, fire, physical, technical or environmental safety of nuclear power plants or personnel security. All nuclear facilities in Czech Republic have to fulfill emergency preparedness under special legislation (Decree No. 359/2016 Coll.). The emergency preparedness system for nuclear power plants involves all parts of the integrated rescue system. This system also precisely defines and declares all their powers and responsibilities. Part of the emergency preparedness system is the nationwide Radiation Monitoring Network (RMN), which was established in April 1986. This network is managed by SÚJB. The Ministry of Finance, Defense, Agriculture and Environment and Ministry of the Interior participate in this network. The data obtained from the RMN are published regularly on the SÚJB website. The basic part of RMN is Early Warning Network (EWN), which is used to quickly detect deviations from a normal radiation situation, whether their cause is triggered by events in the Czech Republic or elsewhere. EWN measuring points are equipped with dose rate detectors, with continuous recording and data transmission. Parts of the EWN are teledosimetry systems located in the vicinity of the Existing Nuclear Power Plant*.

To reduce the exposure of persons during radiation accidents the emergency plans include, among other, so-called protective measures, which are specified in Decree No. 422/2016 Coll. as amended:

- **urgent protective measures** – sheltering persons, iodine prophylaxis, evacuation
- **follow-up protective measures** - resettlement, regulation of consumption of food and water, which is contaminated by radionuclides and regulation of using contaminated fodder

The emergency planning zone (EPZ) of the Existing Nuclear Power Plant* was established to ensure the implementation of urgent protective measures in accordance with the Decree No. 359/2016 Coll. Temelin EPZ is divided into two concentric circle zones with radius of 5 and 13 km. The external zone is divided into 16 circular arcs of 22.5 degrees so that the axes of these arcs correspond to directions of the wind starting from 0 degrees. Approximately 30,000 inhabitants live in this EPZ.

The protective measures during radiation accidents are performed whenever they are justified by greater benefit than the cost of the action and damages caused by them. Averted doses, as a scale for implementation of the protective measures, are set in Decree No. 422/2016 Coll. The protective measures must be optimized in form, scope and duration in order to bring as much as reasonably achievable benefits.

In case of declaration of the evacuation (after sheltering in shelters), the Existing Nuclear Power Plant* personnel are evacuated by the main or the backup Limited Access Area* entrance by evacuation buses using specific routes (see figure 5.2.8-1):

- Route 1: 2nd class road number 105 from the Existing Nuclear Power Plant* through Hluboká nad Vltavou to České Budějovice

- Route 2: 2nd class road number 147 from the Existing Nuclear Power Plant* through Týn nad Vltavou, Dolní Bukovsko to České Budějovice
- Route 3: 2nd class road number 159 from the Existing Nuclear Power Plant* through Bohunice, Albrechtice nad Vltavou, Tálín, Žďár to České Budějovice
- Route 4: 2nd class road number 141 from the Existing Nuclear Power Plant* through Křtěnov, Temelín, Vodňany to České Budějovice

Route selection is based on assessment of current meteorological and radiological situation. Number of persons in the Limited Access Area* of the Existing Nuclear Power Plant* is typically between 900-1,300 people in the main working hours. During outages this number can in short-term exceed 1,500. Even this short-term increase has no significant effect on the transport capacity of 2nd class roads, which connect Site* area to the road network.

The Internal Emergency Plan:
This emergency plan contains a set of planned measures to recognize, suppress and eliminate the consequences of possible abnormal occurrences and describes in particular the creation of technical-organizational and personnel conditions for determination of formation of the abnormal occurrence. Moreover, this plan describes management and implementation of interventions, methods to limit exposure of employees and other persons. The author of the Internal Emergency Plan is the licensee (operator of the plant). In case of radiation accident (the highest level that have effects beyond the plant), the licensee primary measure is notification of relevant regional authorities and municipalities with extended powers and warn the population throughout the emergency planning zone. The warning of population is ensured by sounders followed by radio and television broadcasting. Subsequently, recommendations on preparing for the evacuation of people living in the inner part of the 13 km emergency planning zone are issued. It is expected that the Plant* will have its own Internal Emergency Plan.

The External Emergency Plan:
The External Emergency Plan follows the Internal Emergency Plan and it is applied throughout the emergency planning zone, which was established by decision of SÚJB, as a surface area of 20 km radius centered inside the area of the Existing Nuclear Power Plant* (see fig. 5.2.8-1). Implementation of protective measures in the emergency planning zone is being considered in cases where the made forecasts of radiological impacts and monitoring results indicate that part of the population may exceed the exposure guideline values established by Decree No. 422/2016 Coll. The author of the External Emergency Plan is Fire and Rescue Service of region. The first plan is stored on the Regional Office of "Jihočeský kraj" and the second copy is stored on operating and information center of the Fire and Rescue Service.
It is expected that the External emergency Plan will be common for every nuclear facility on Site* (ie. The Existing Nuclear Power Plant*).

The National Radiation Emergency Plan:
The National Radiation Emergency Plan follows The External Emergency Plan. This plan is the basic document of the Czech Republic to deal with radiation emergency situations and is intended for planning and management operations of integrated rescue system. In addition, this plan is a binding document for all municipalities, administrative offices, both natural and legal persons located in the region. The author of the plan is SÚJB. The content of the National Radiation Emergency plan are information and operational data, specific action plans, maps, diagrams, lists of forces and equipment to help, their deployment methods and principles of effective implementation of the rescue and relief works.

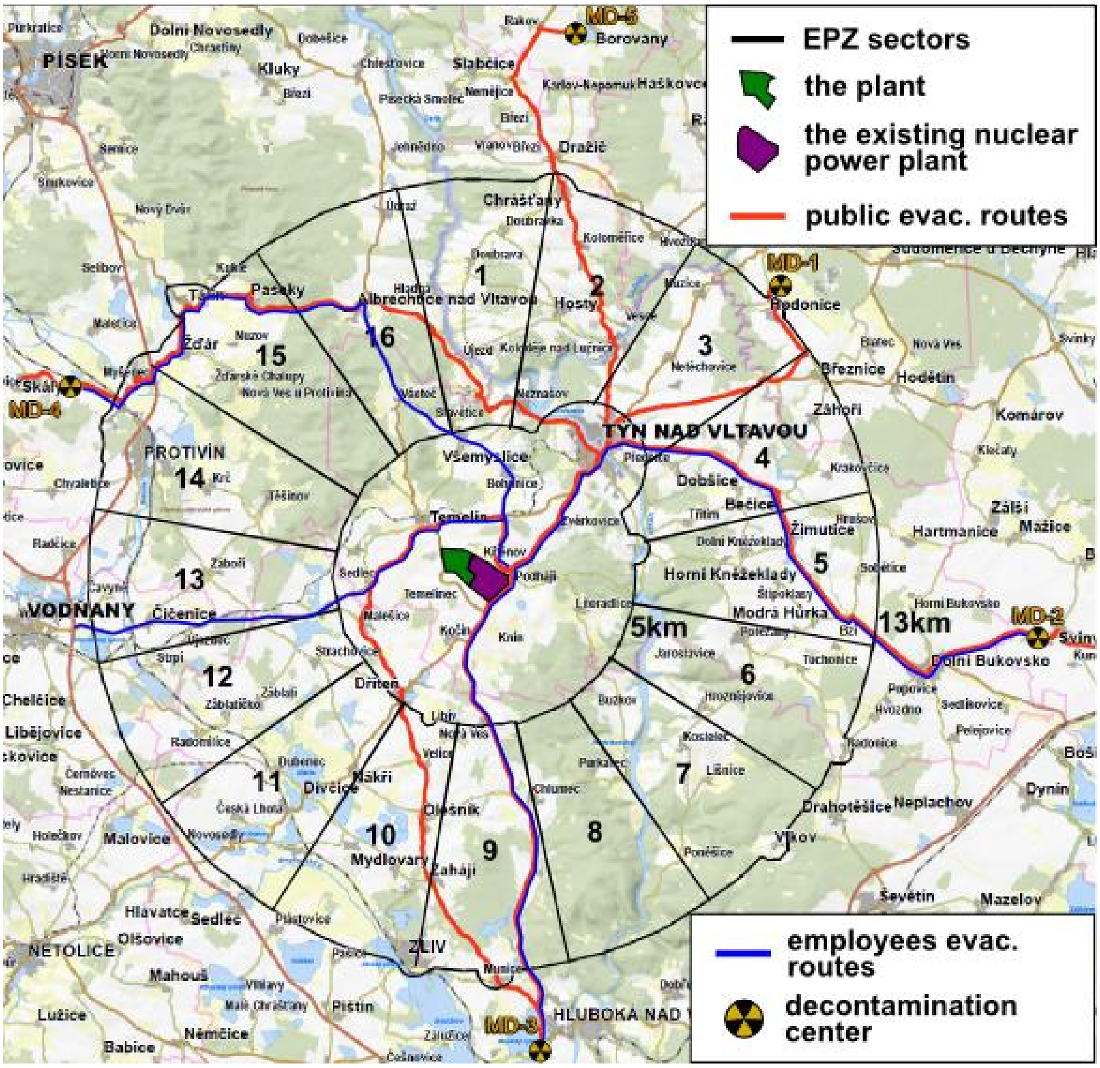
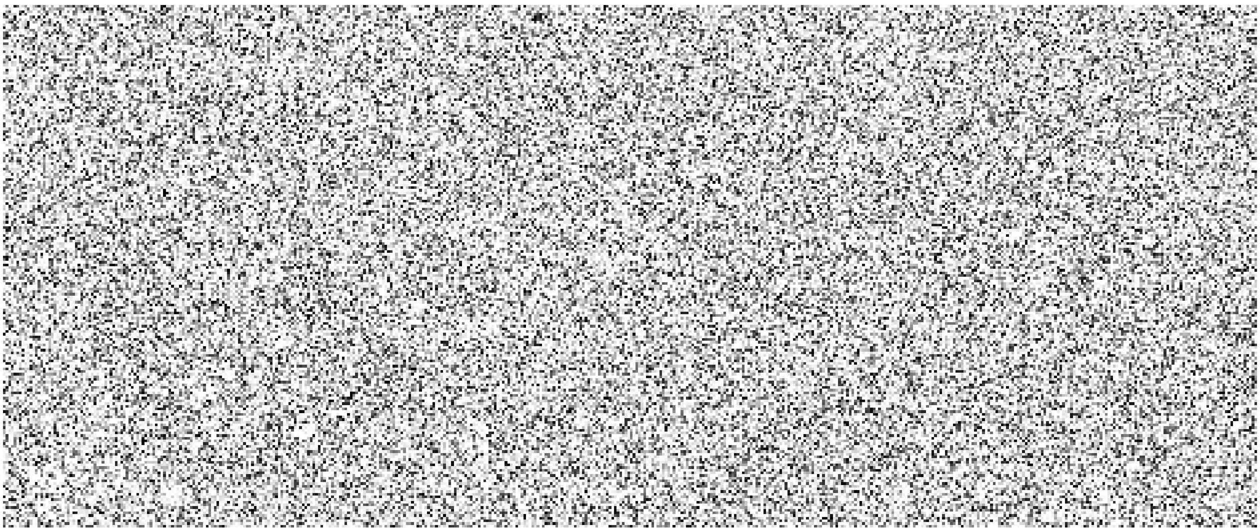
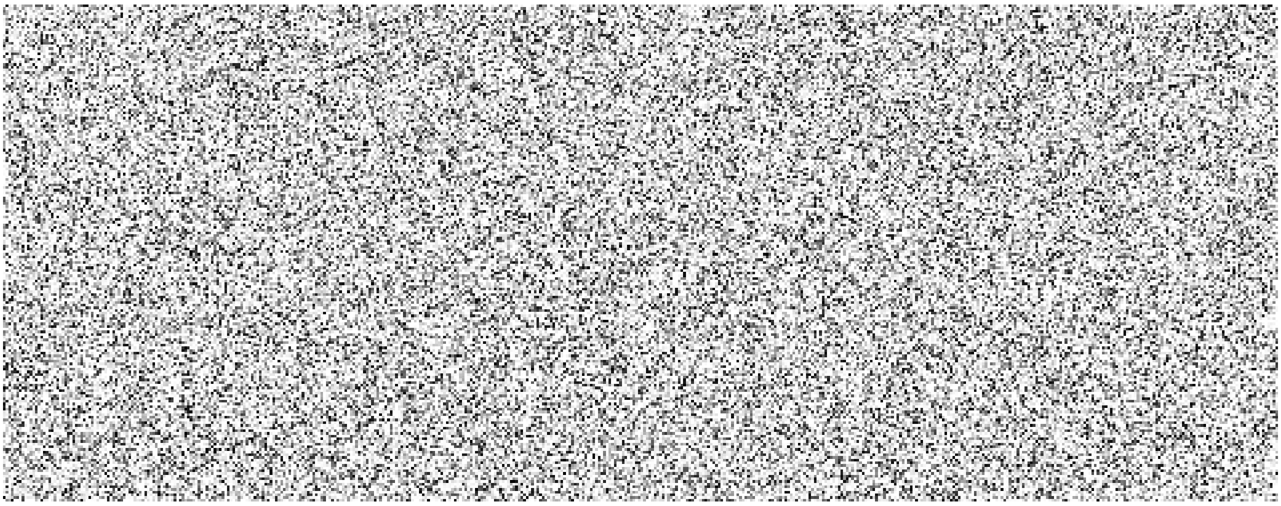


Fig. 5.2.8-1: Emergency planning zone of the Existing Nuclear Power Plant*.

5.2.9 CONSTRUCTION AREAS





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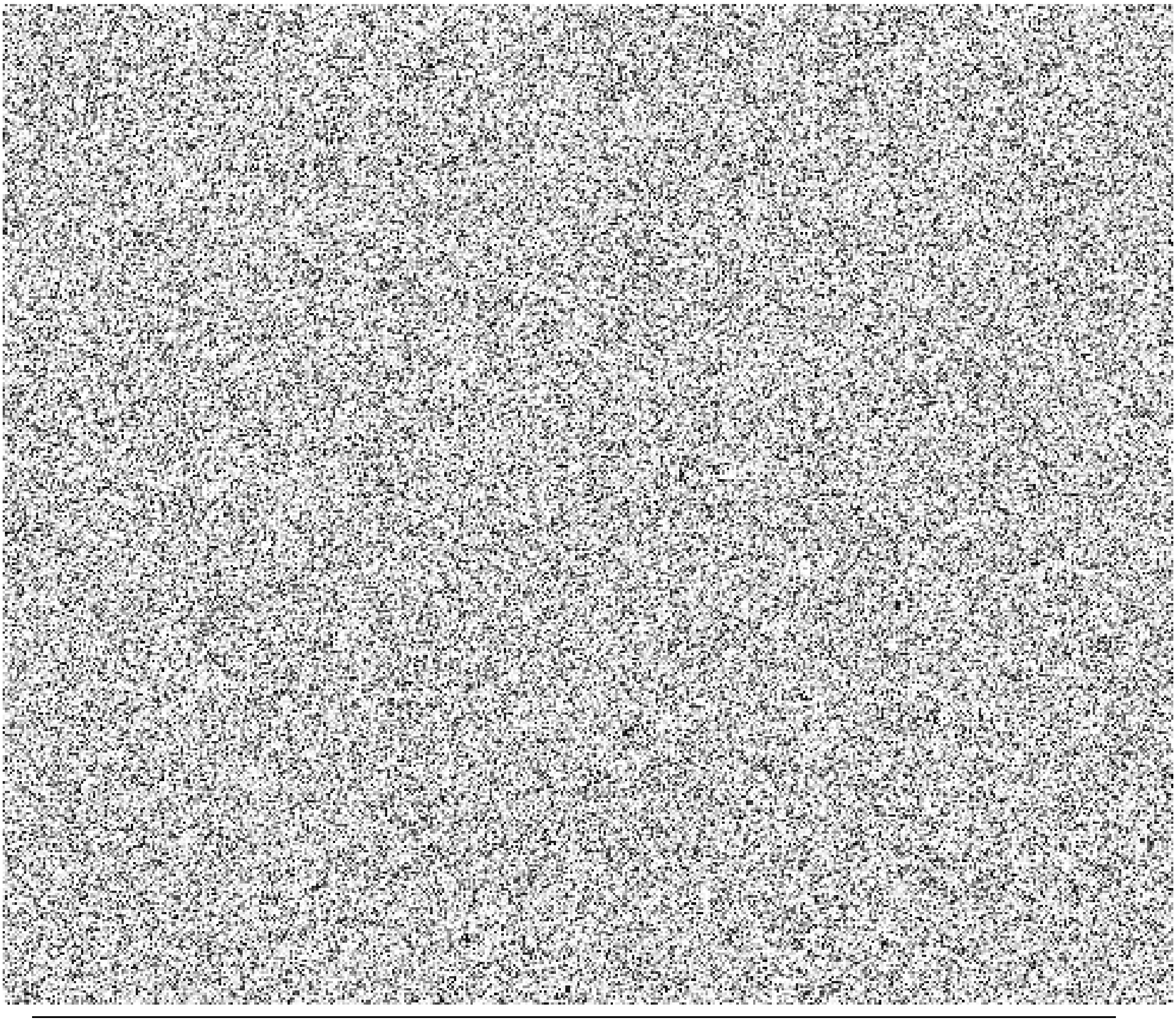

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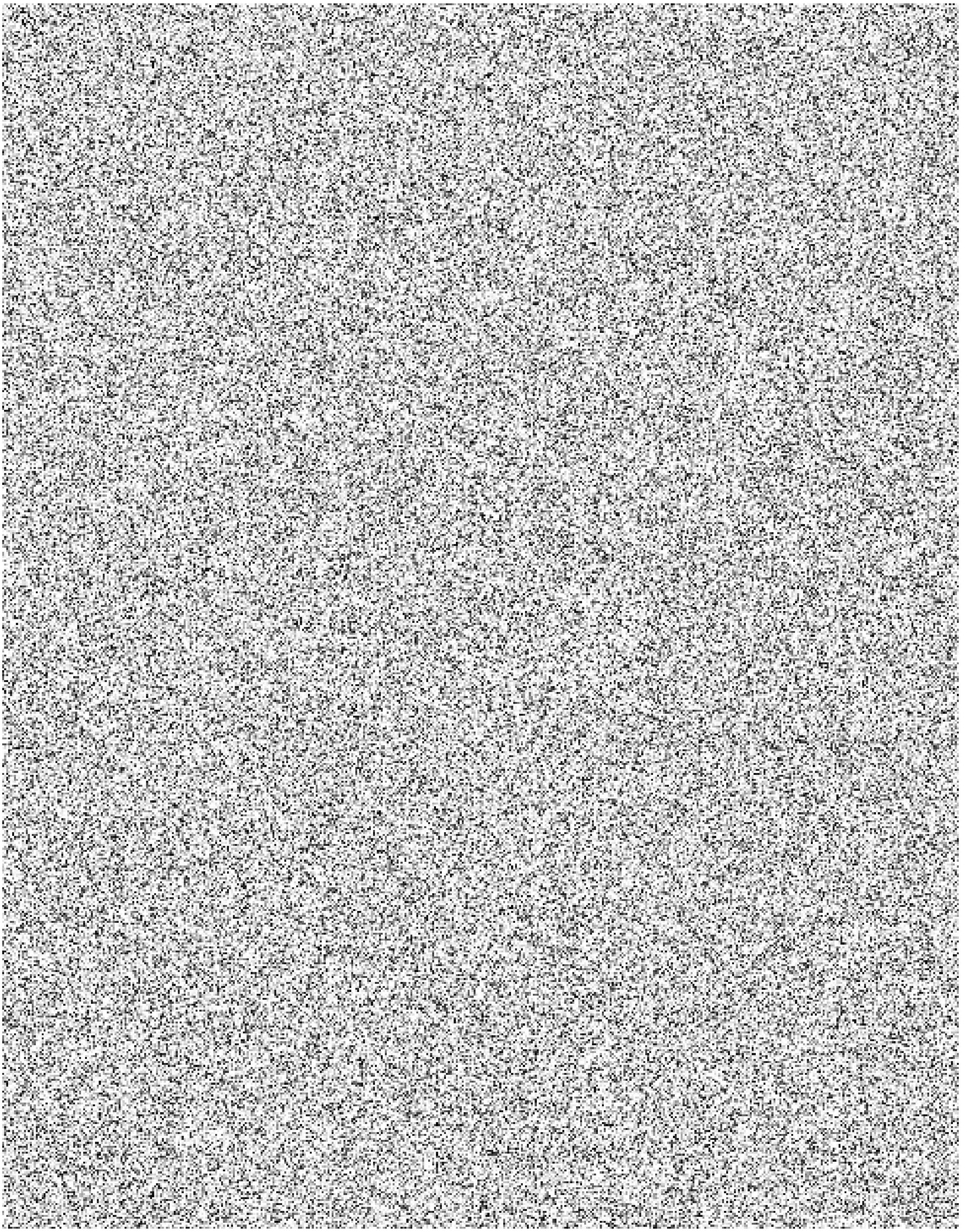

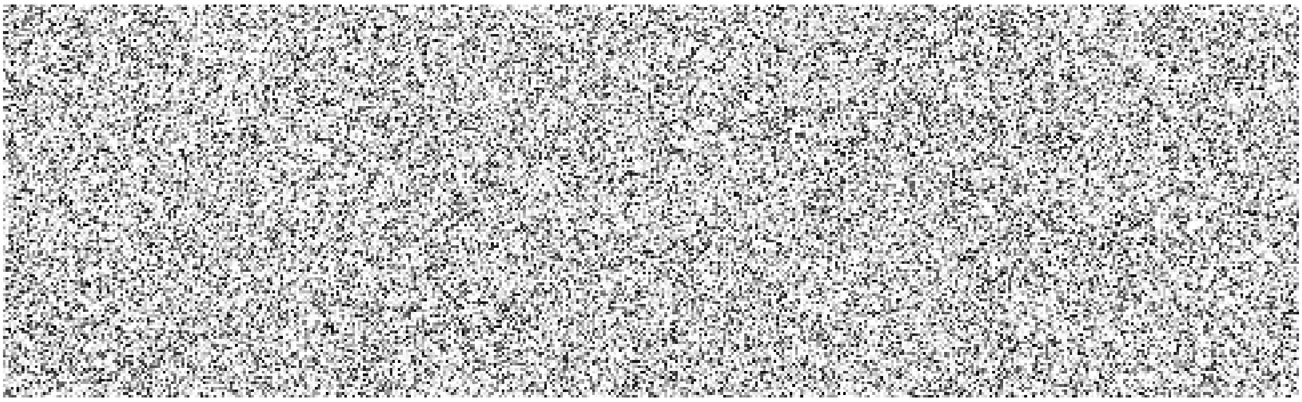

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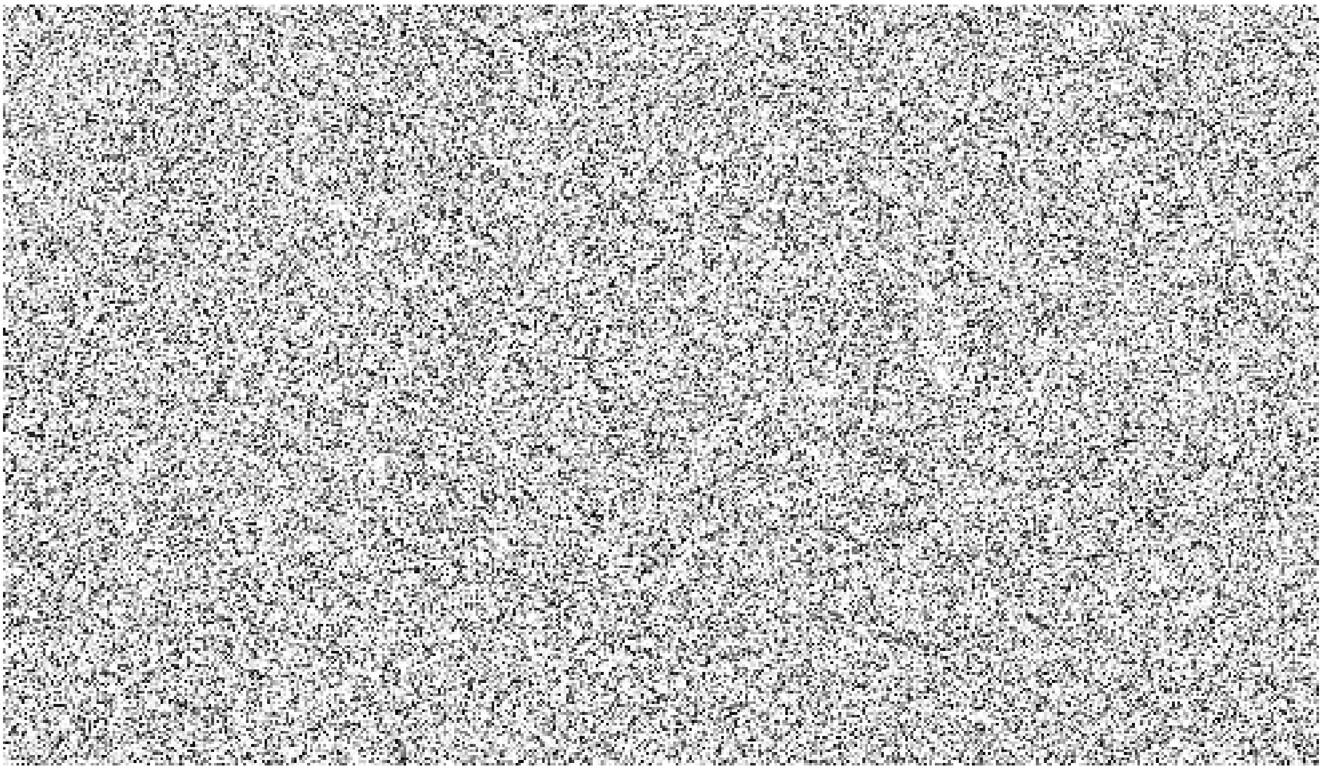

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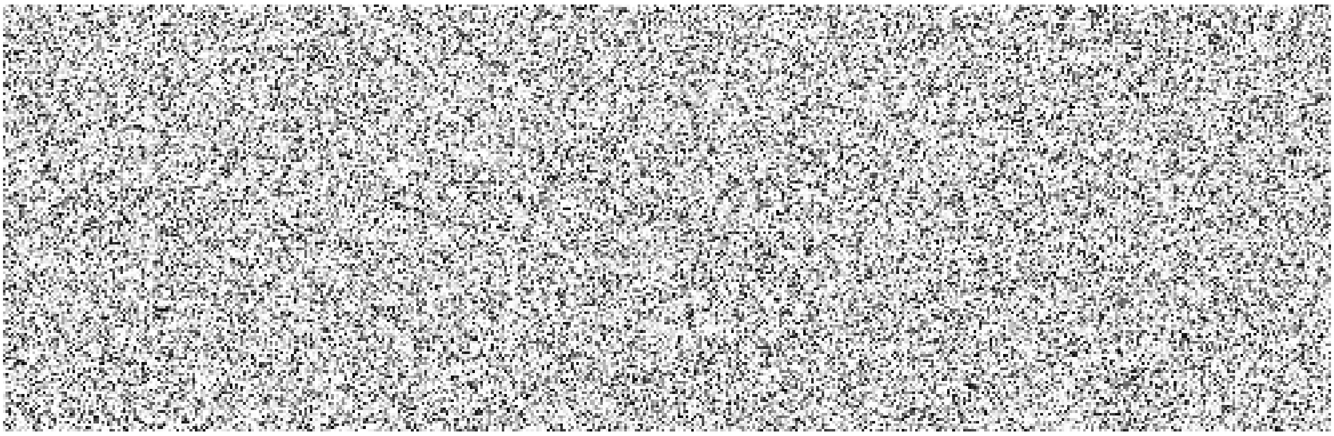
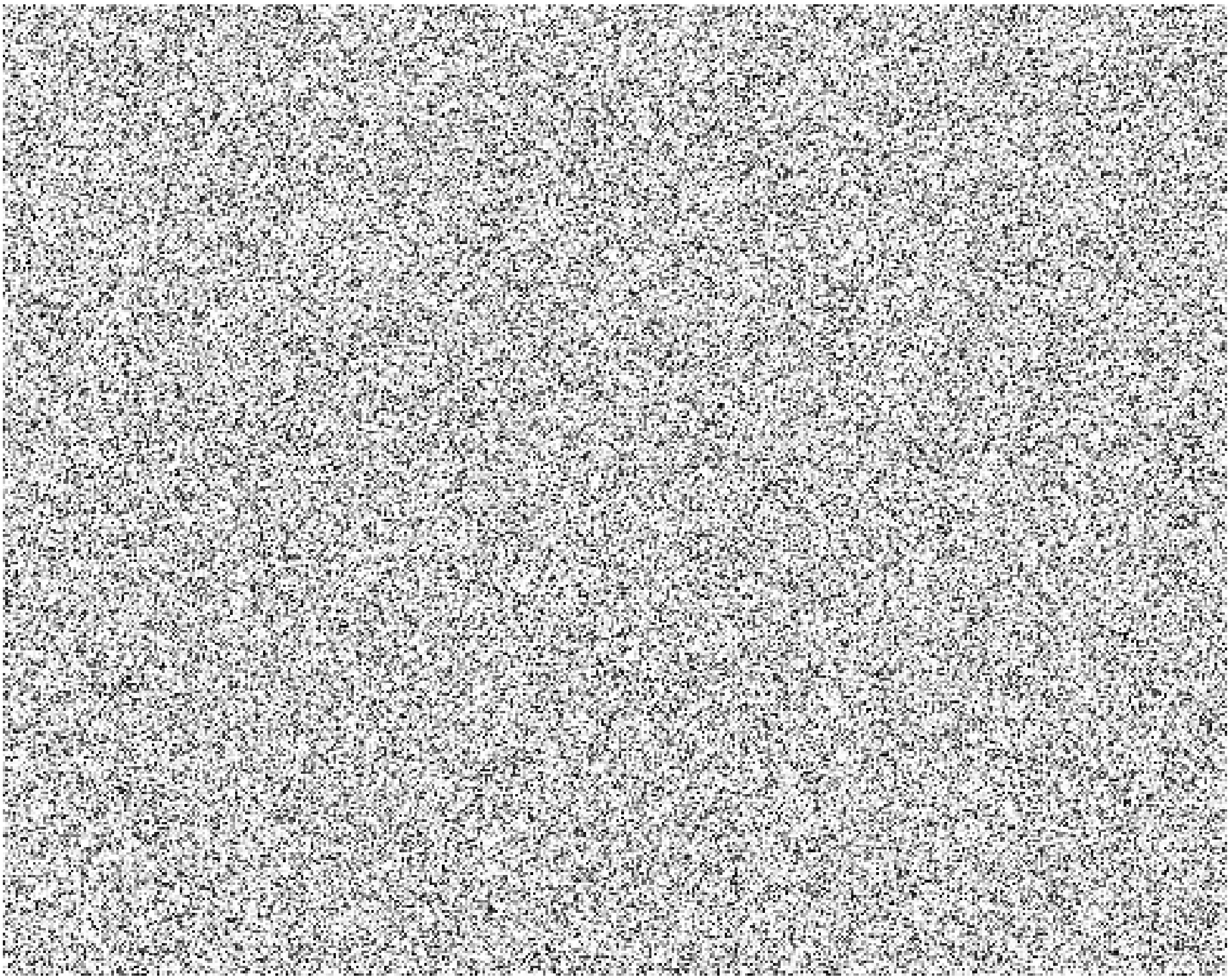
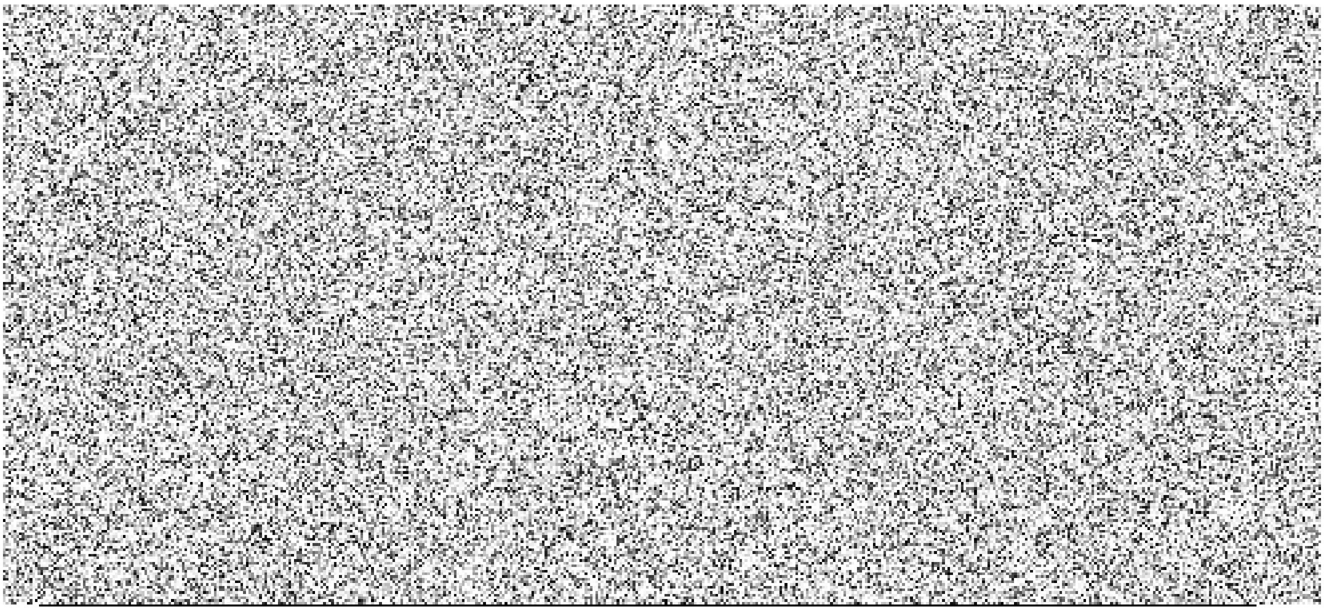
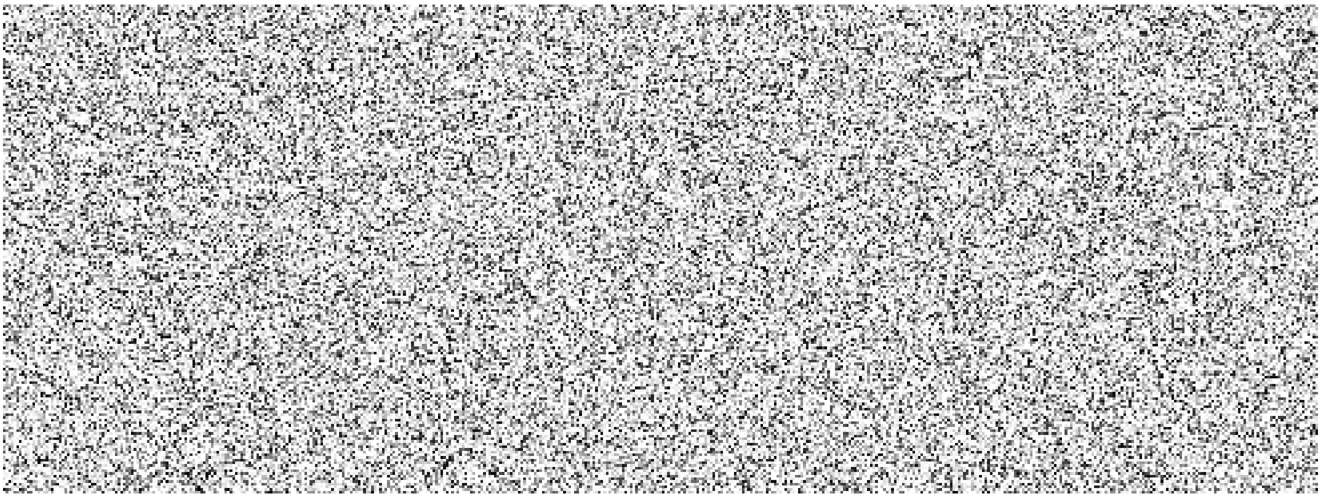




5.2.10 ON SITE FACILITY AREAS

5.2.10.1 ON SITE FACILITY AREA C





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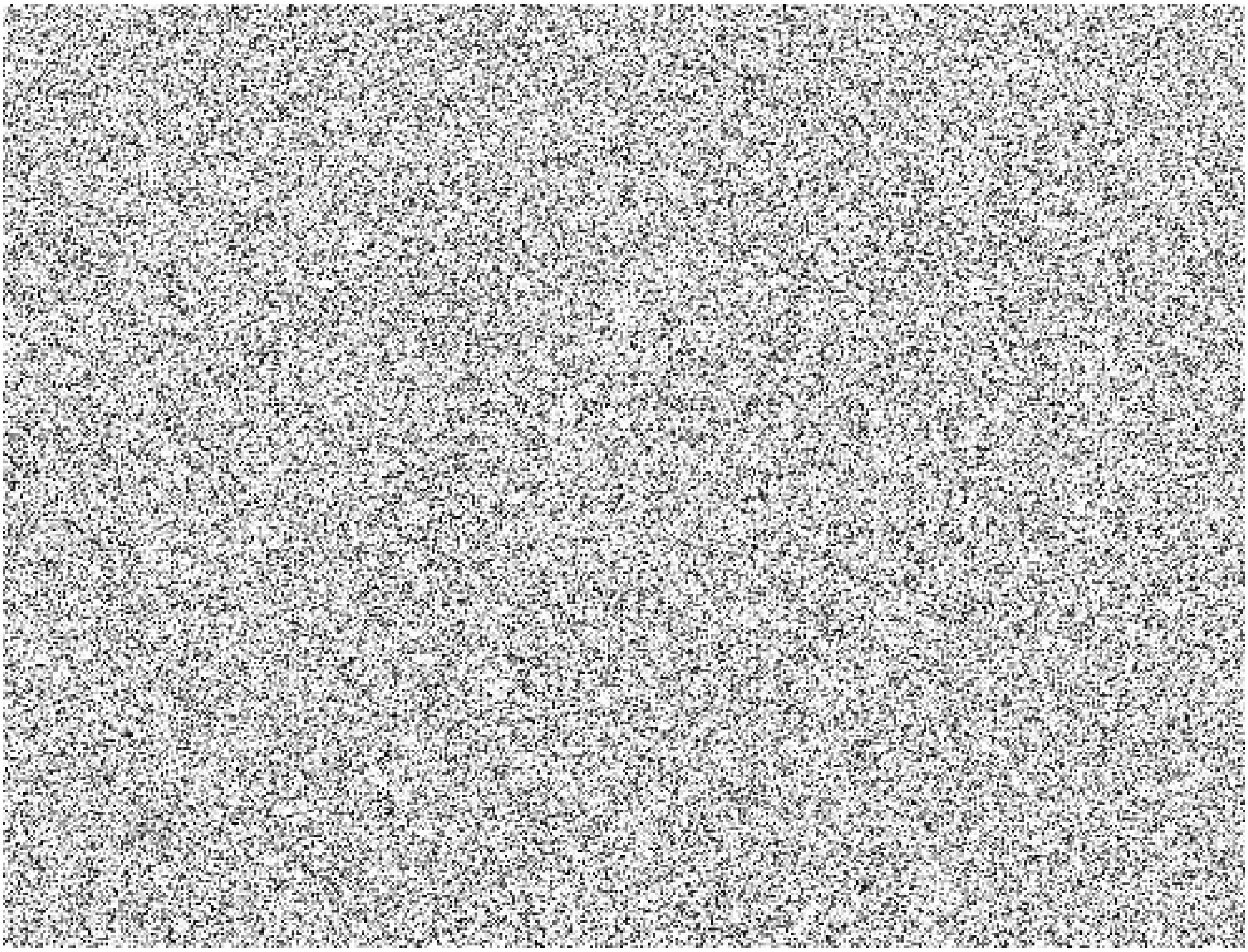

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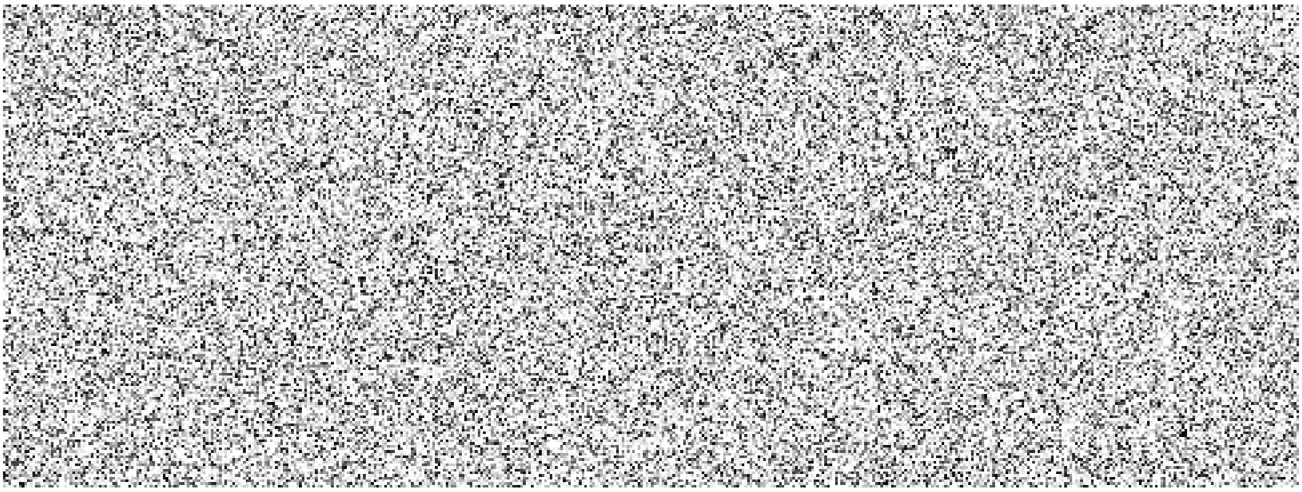

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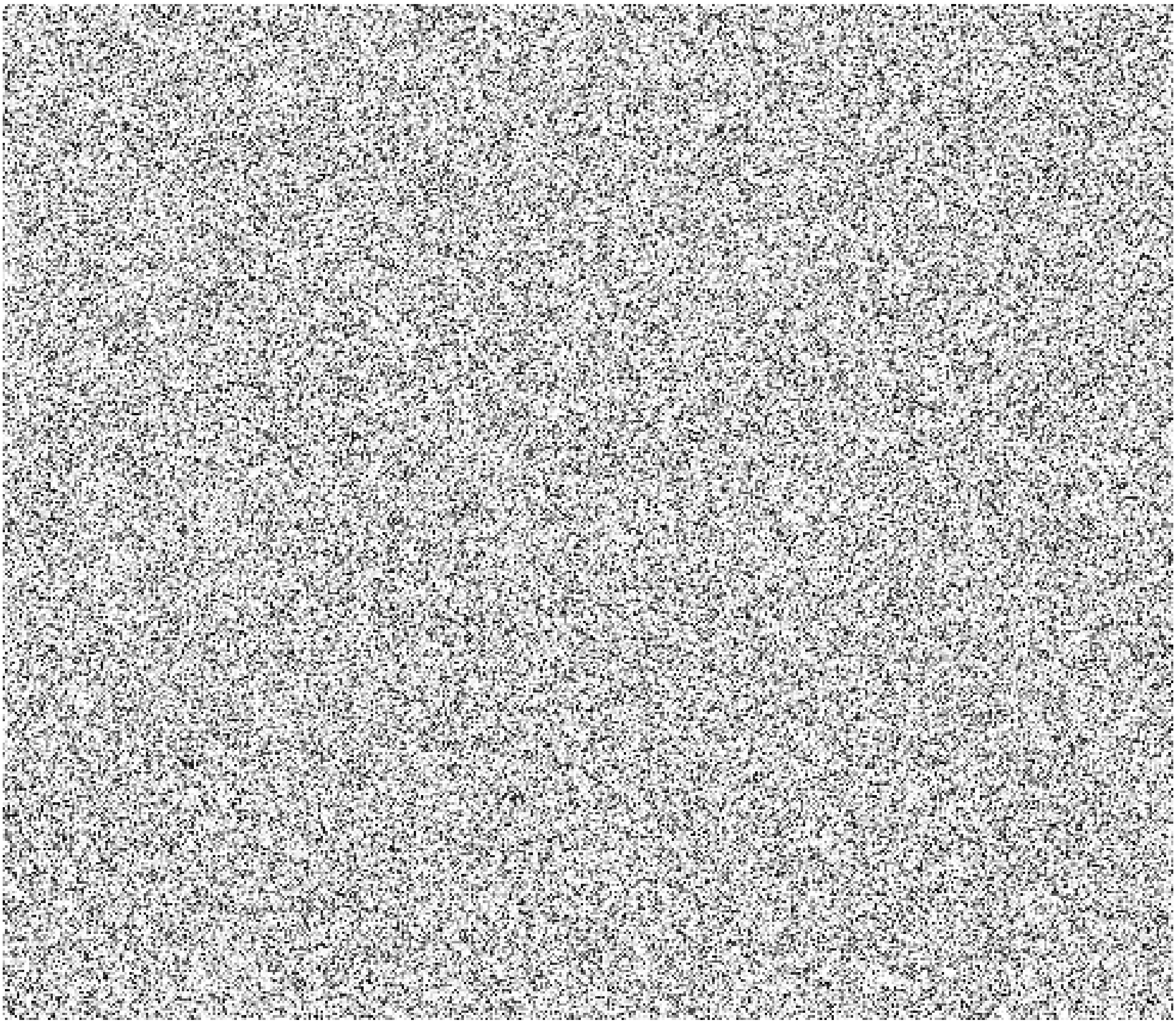

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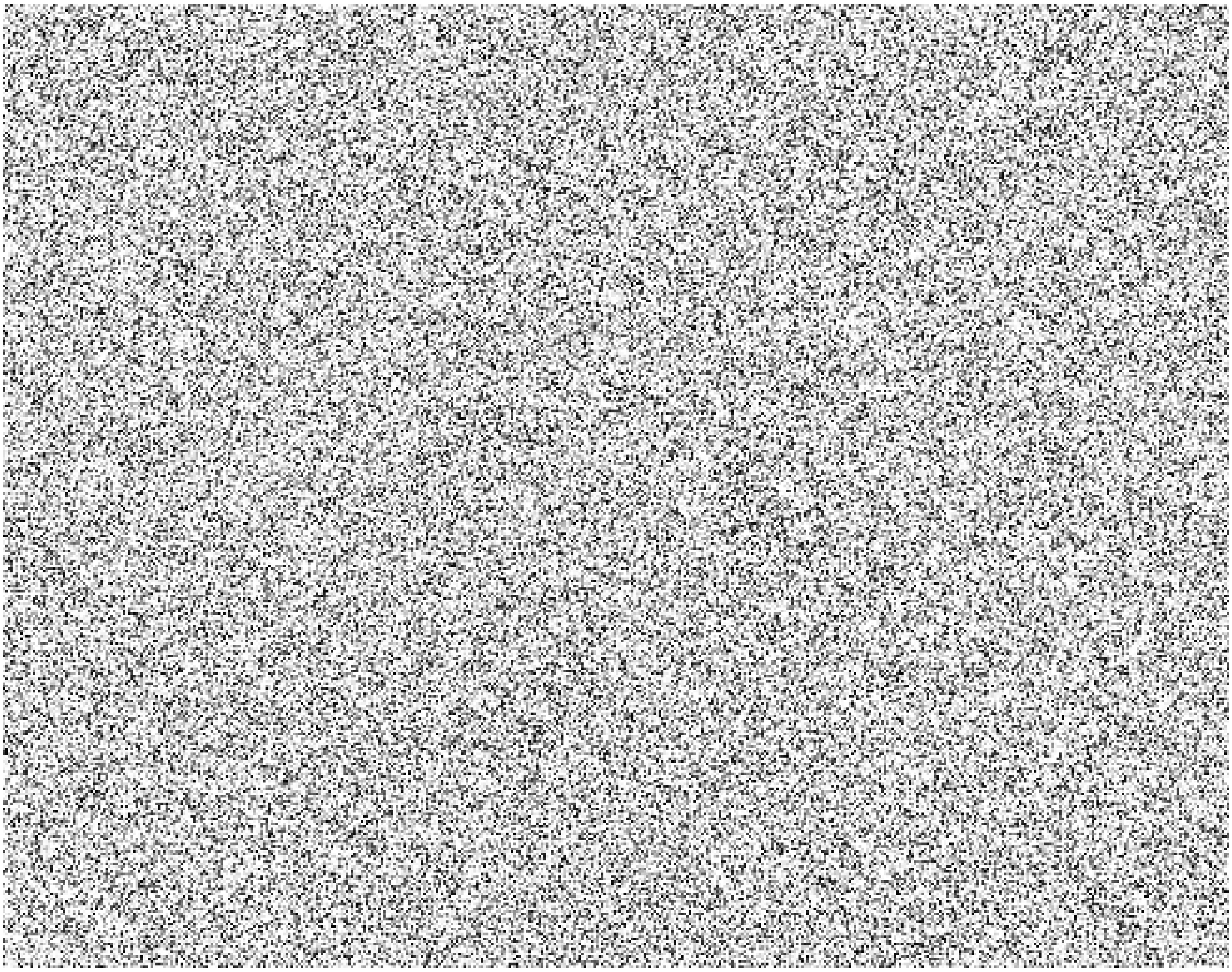

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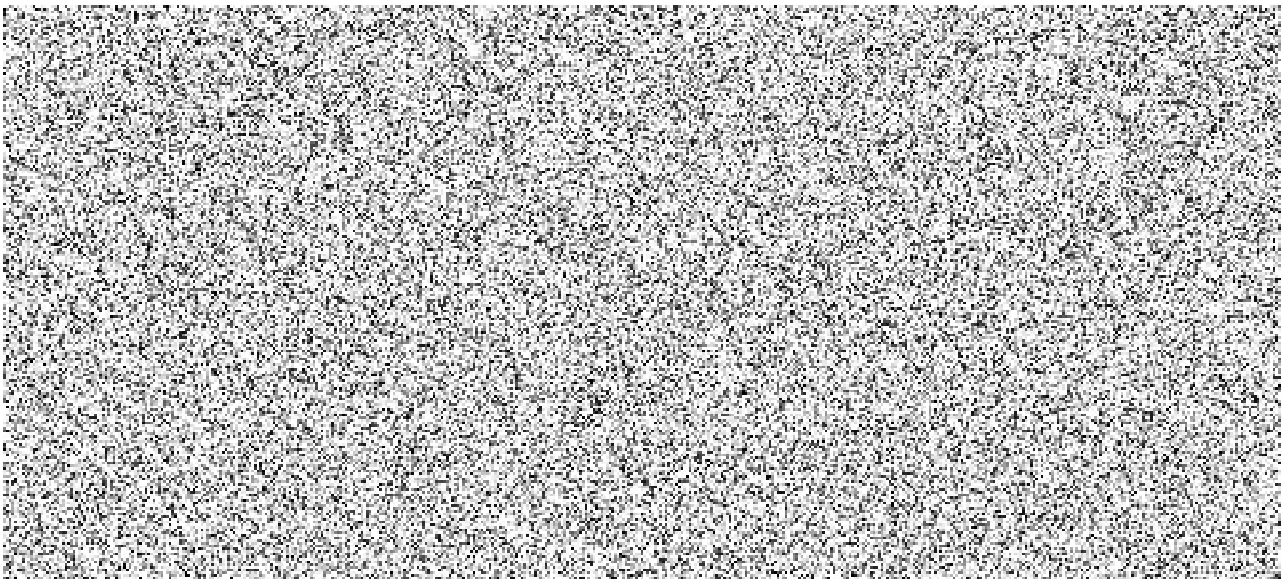
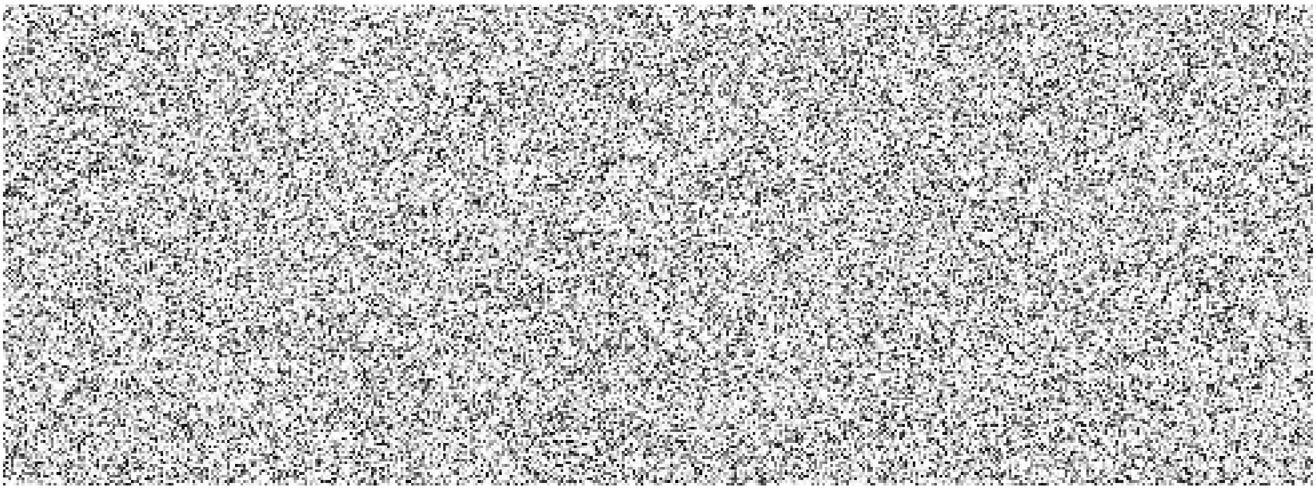
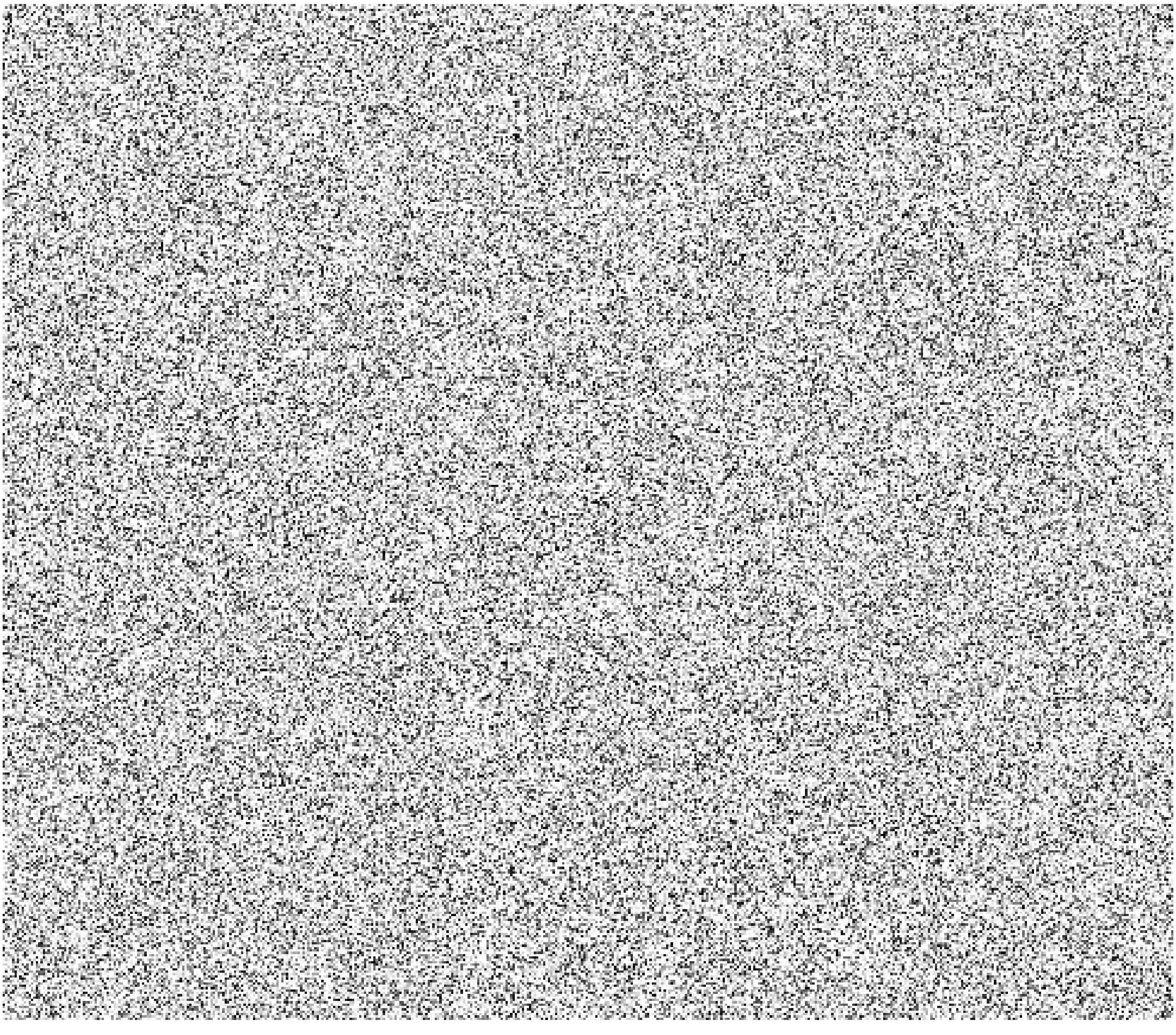
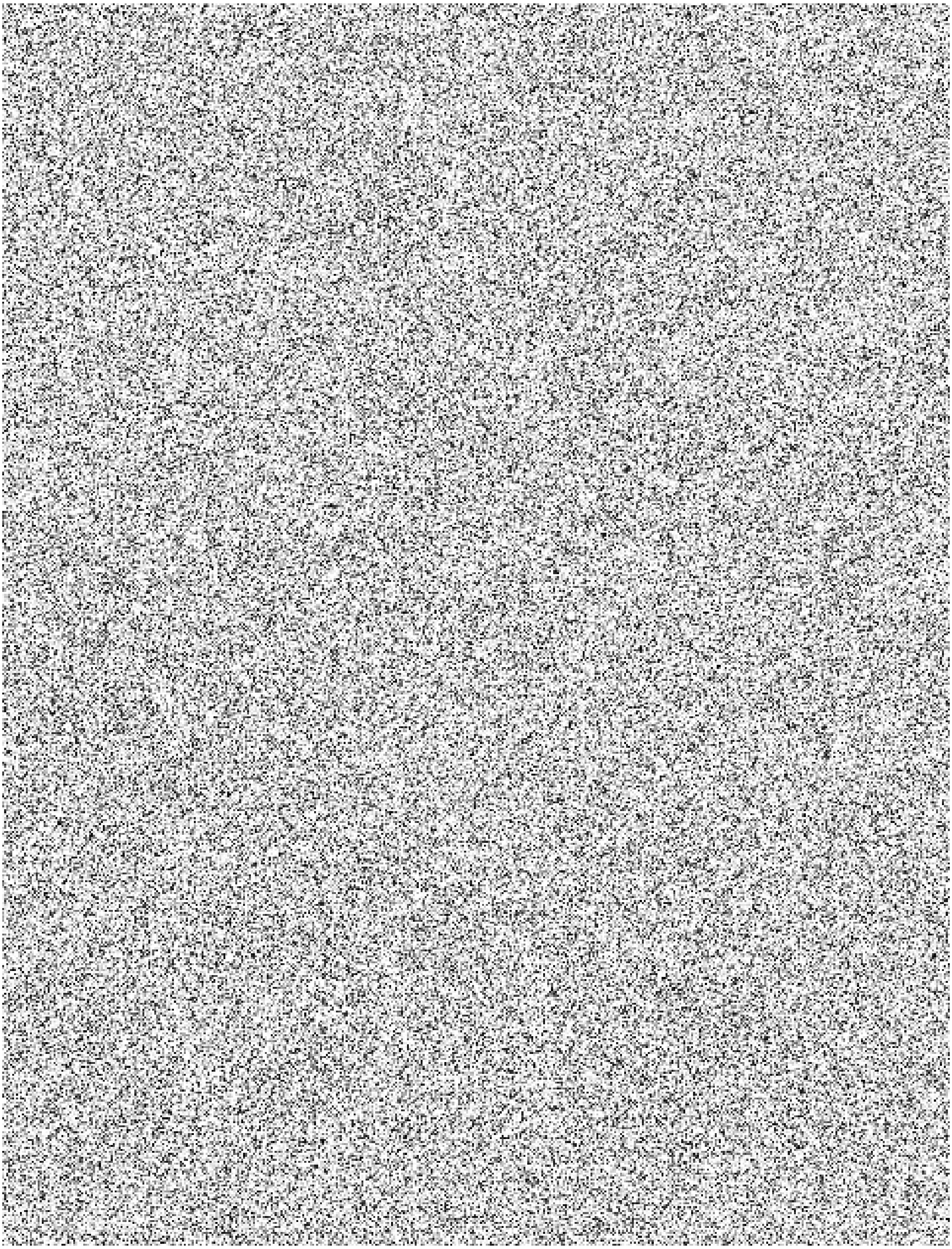
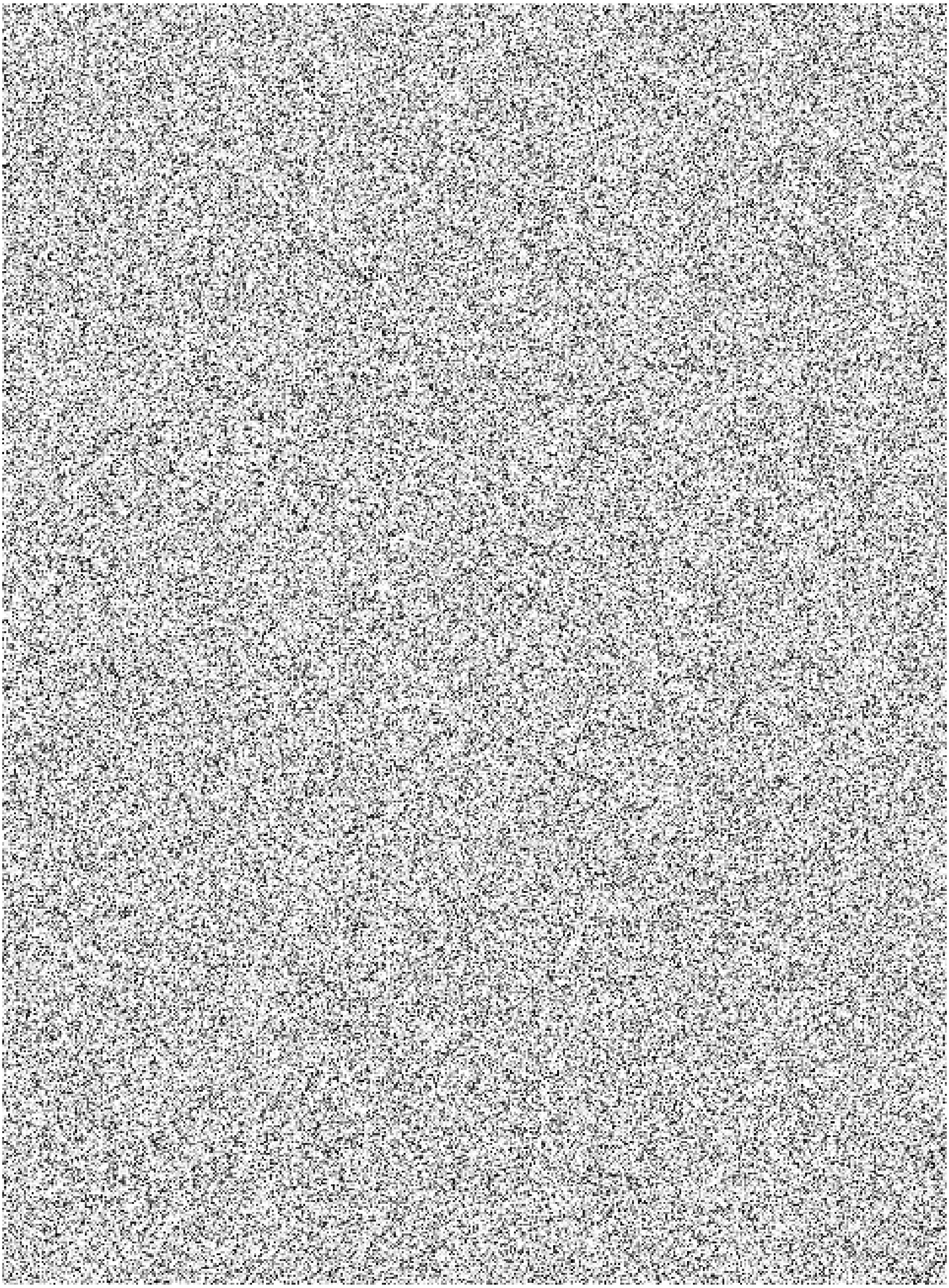


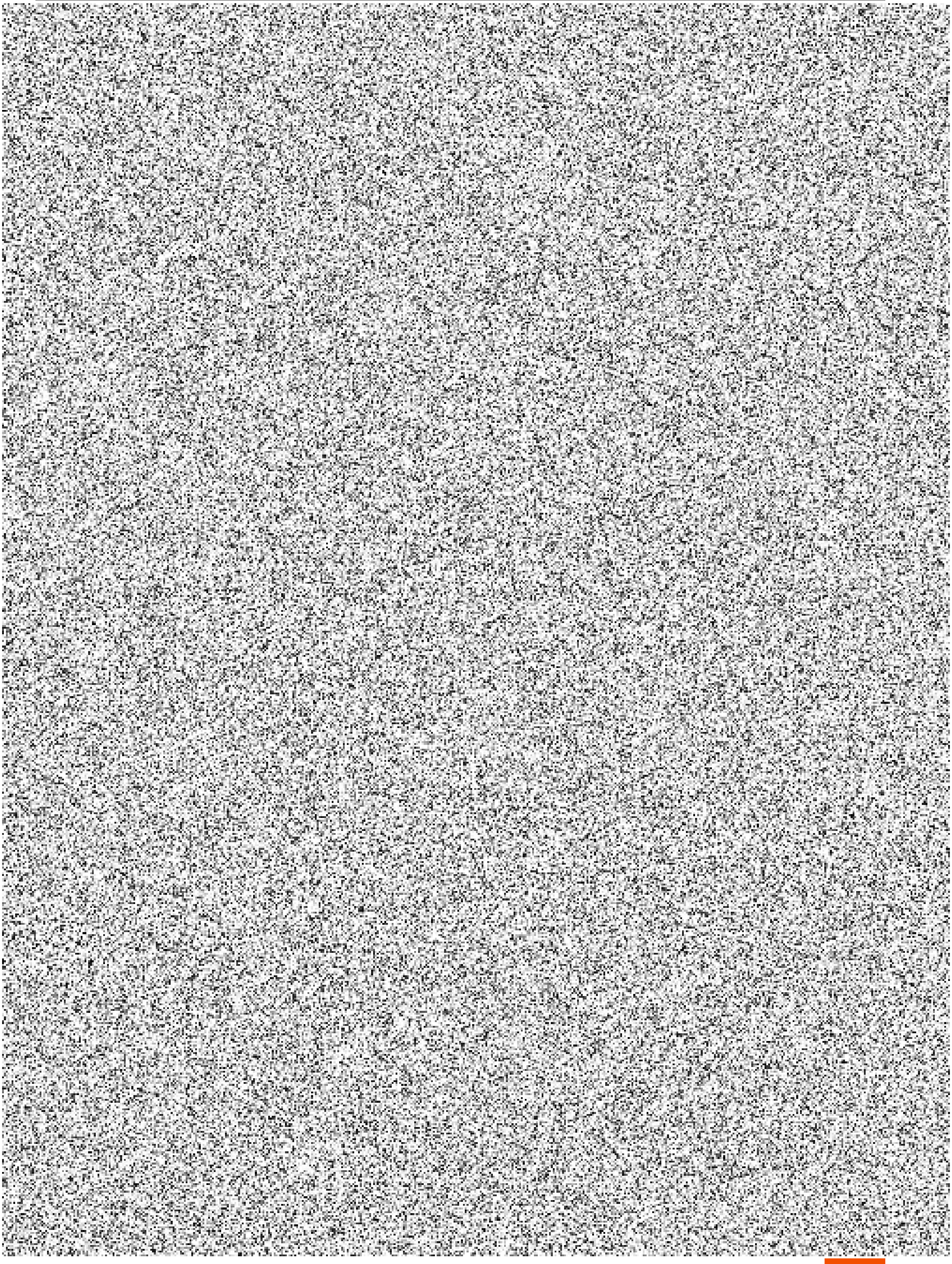


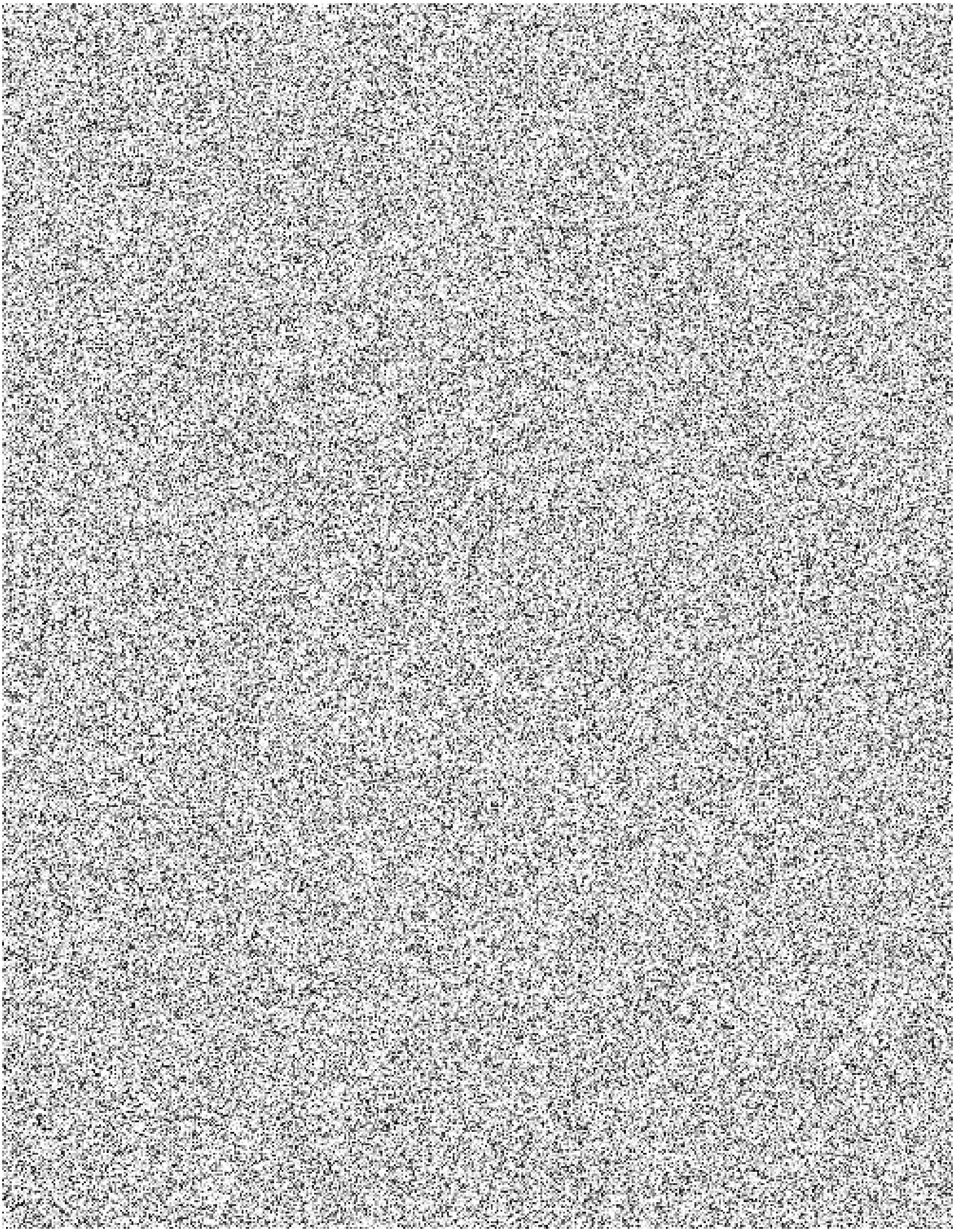
5.2.11 CIVIL STRUCTURES AND TECHNICAL INFRASTRUCTURE ON THE SITE

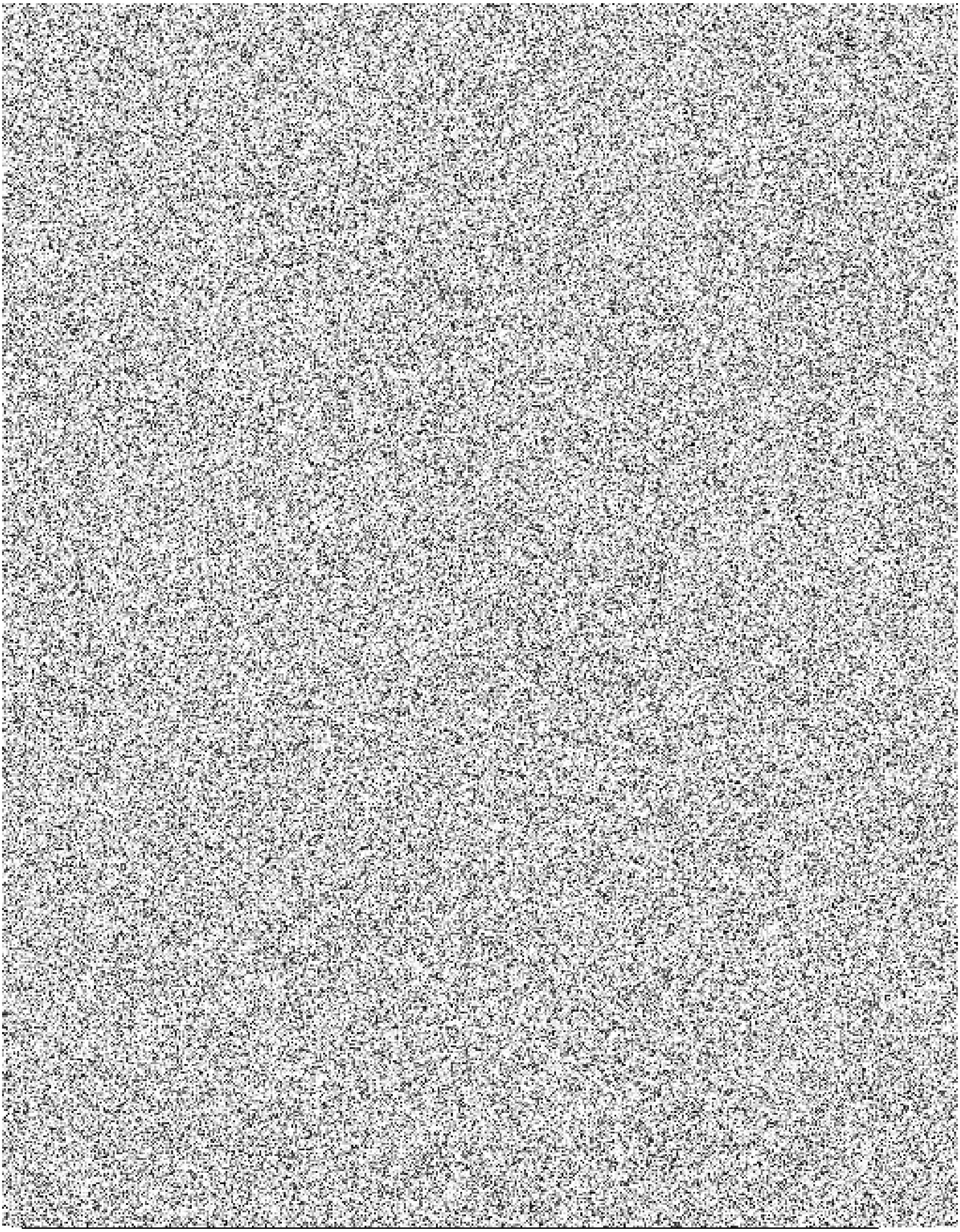


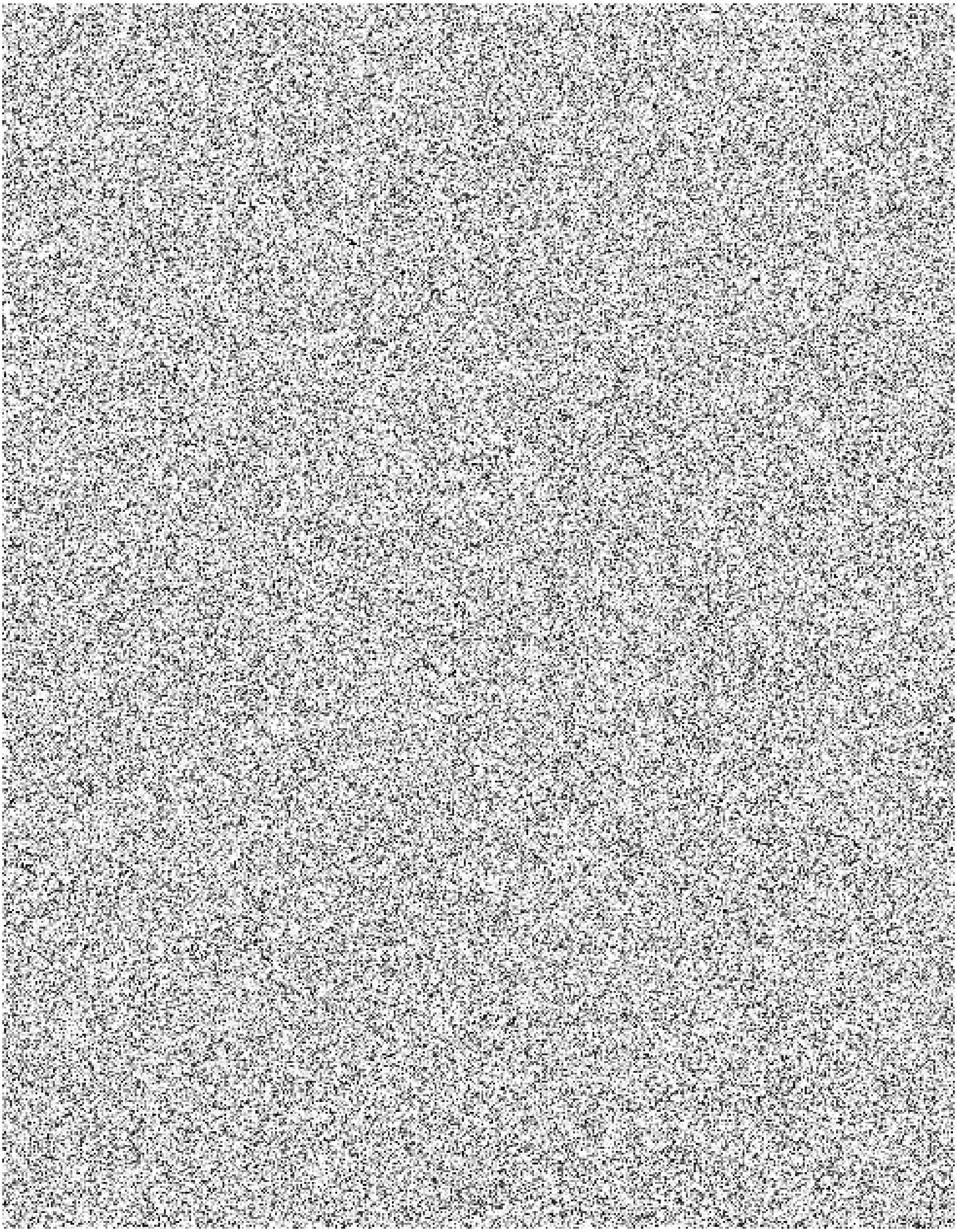


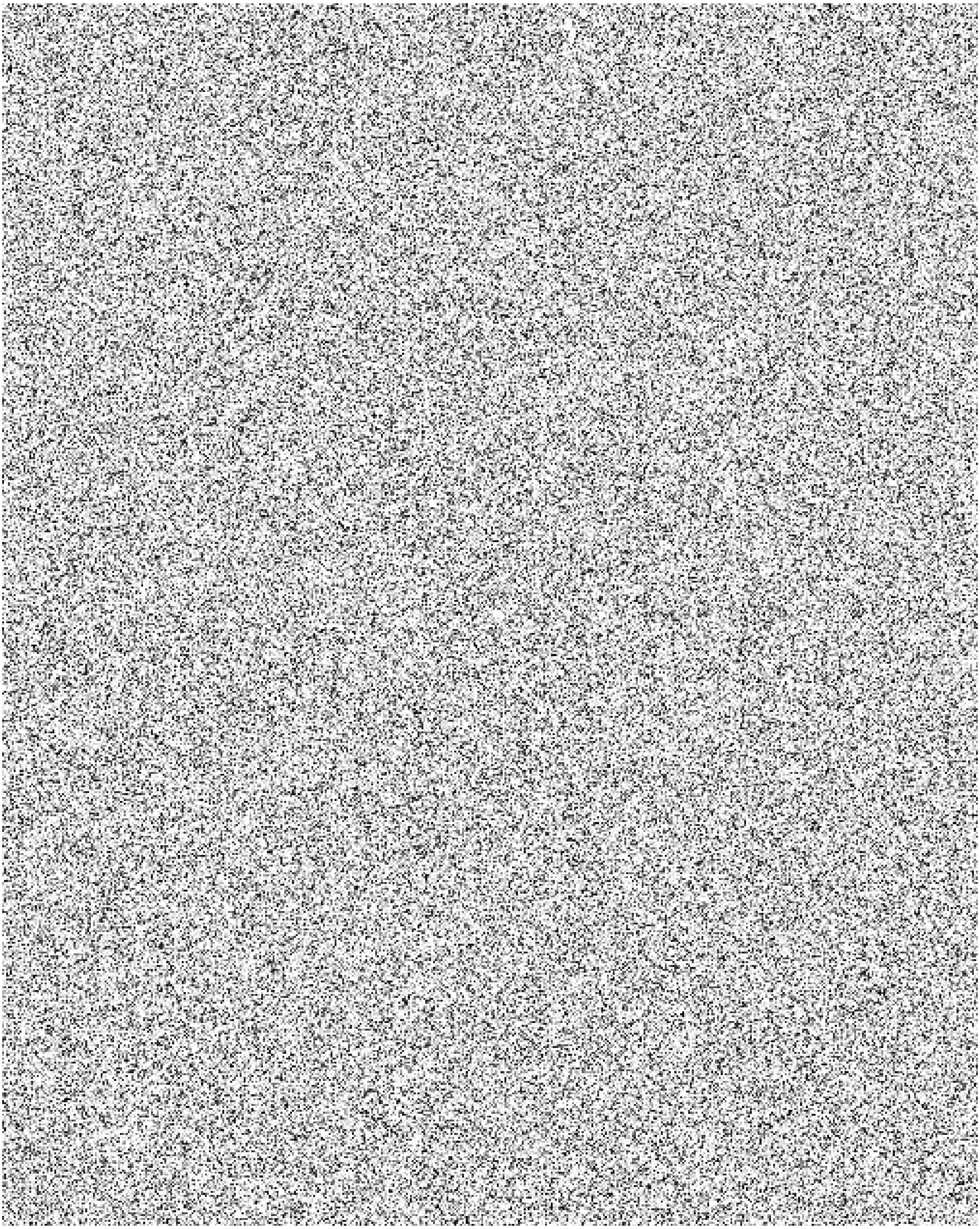


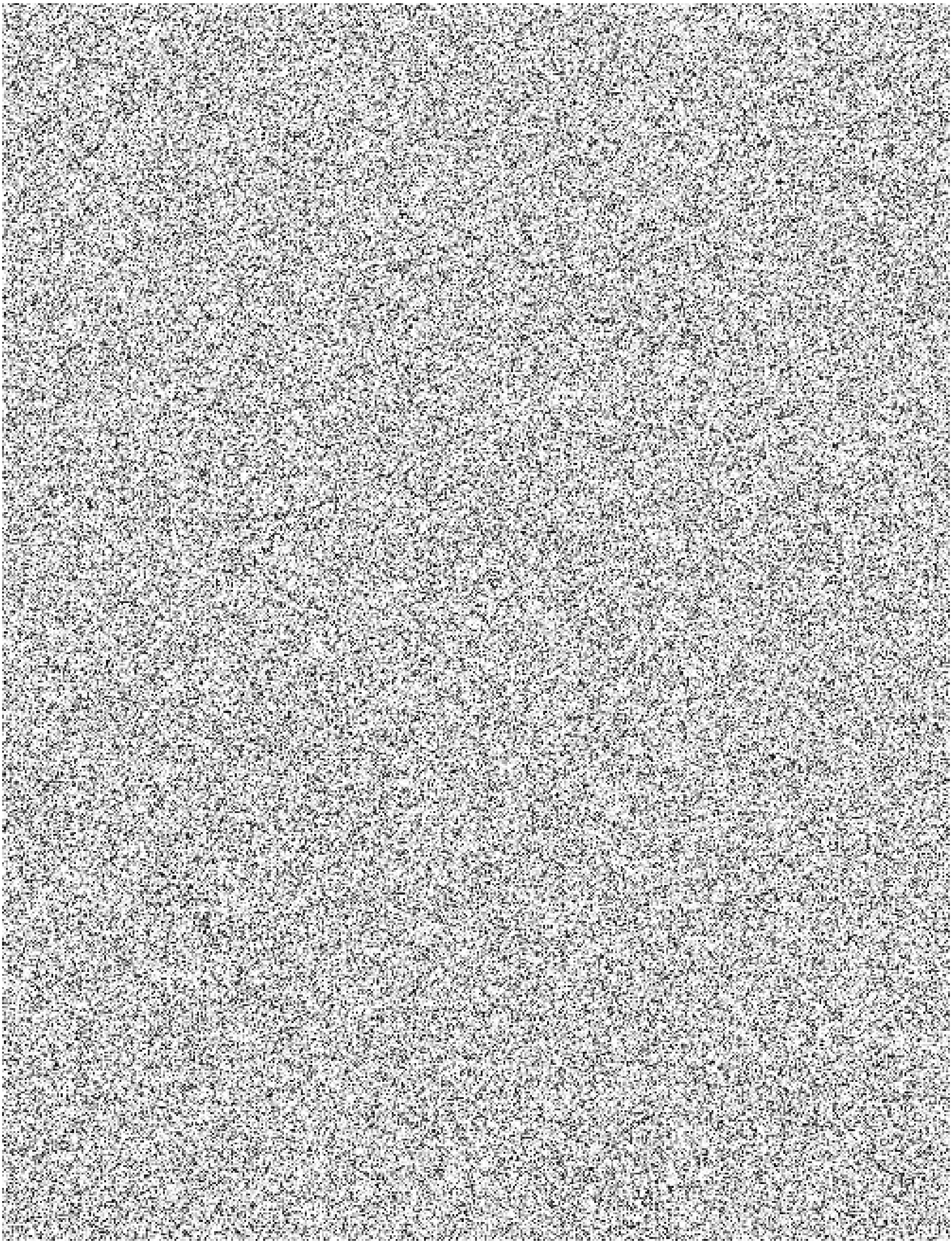


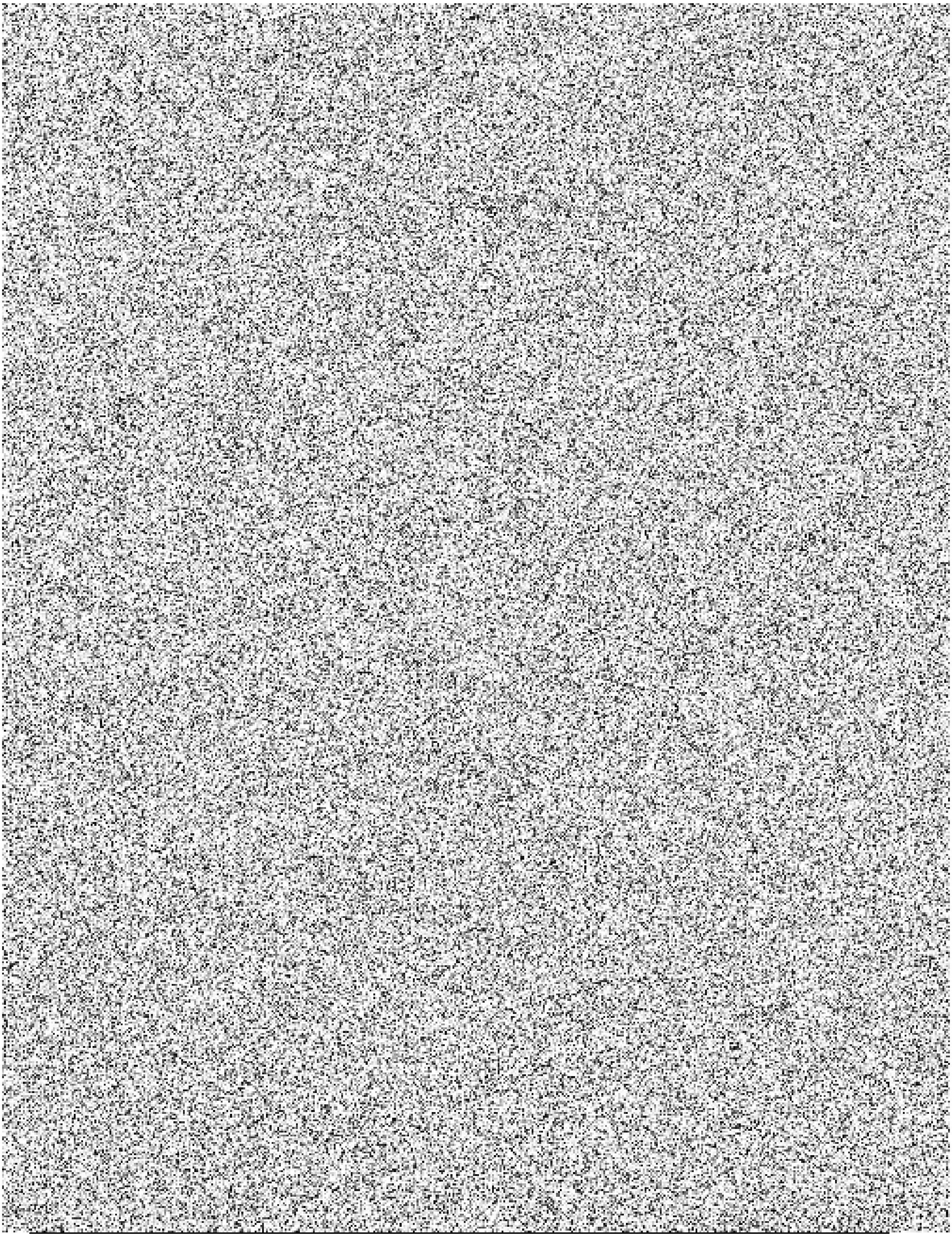


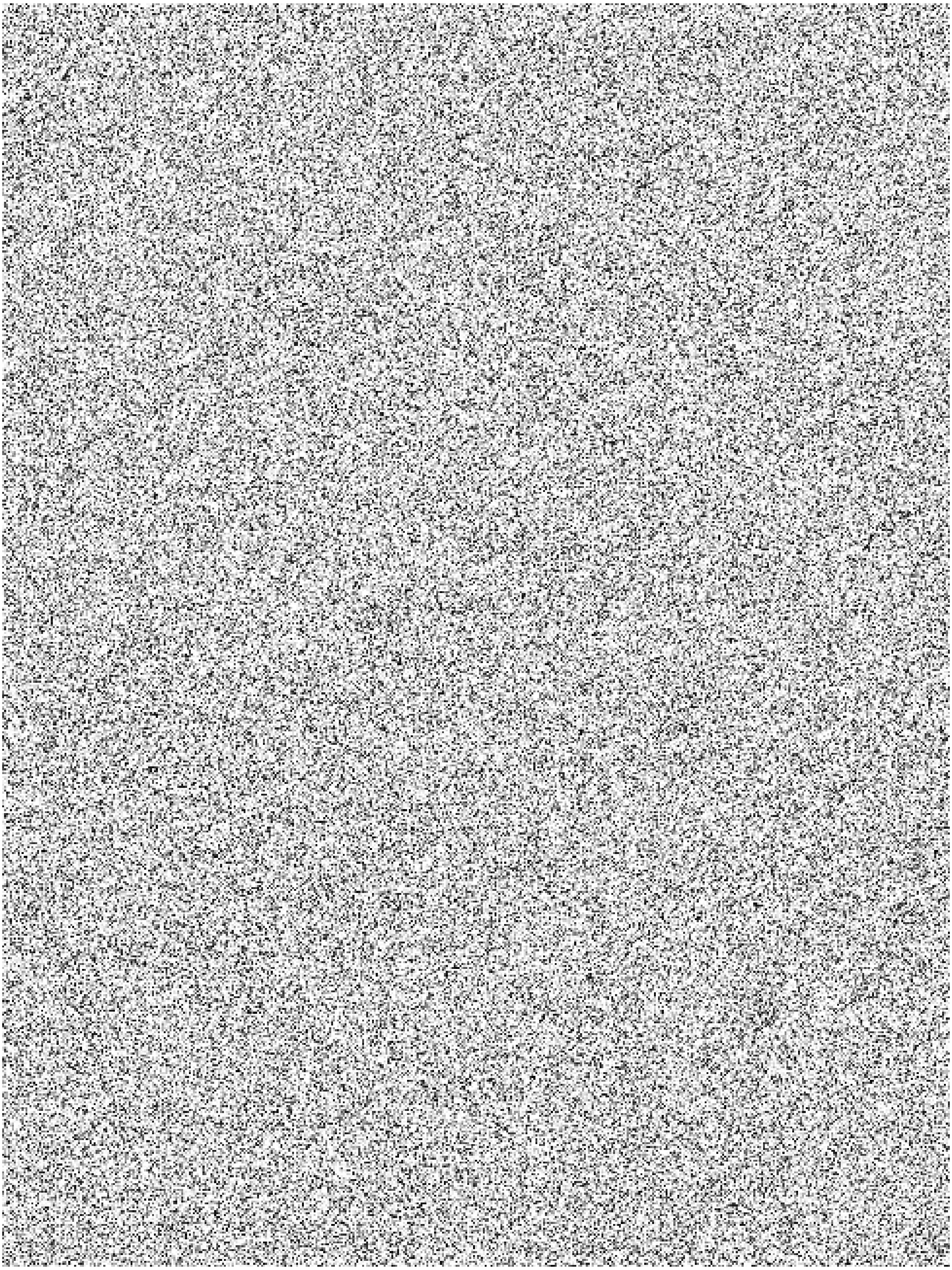


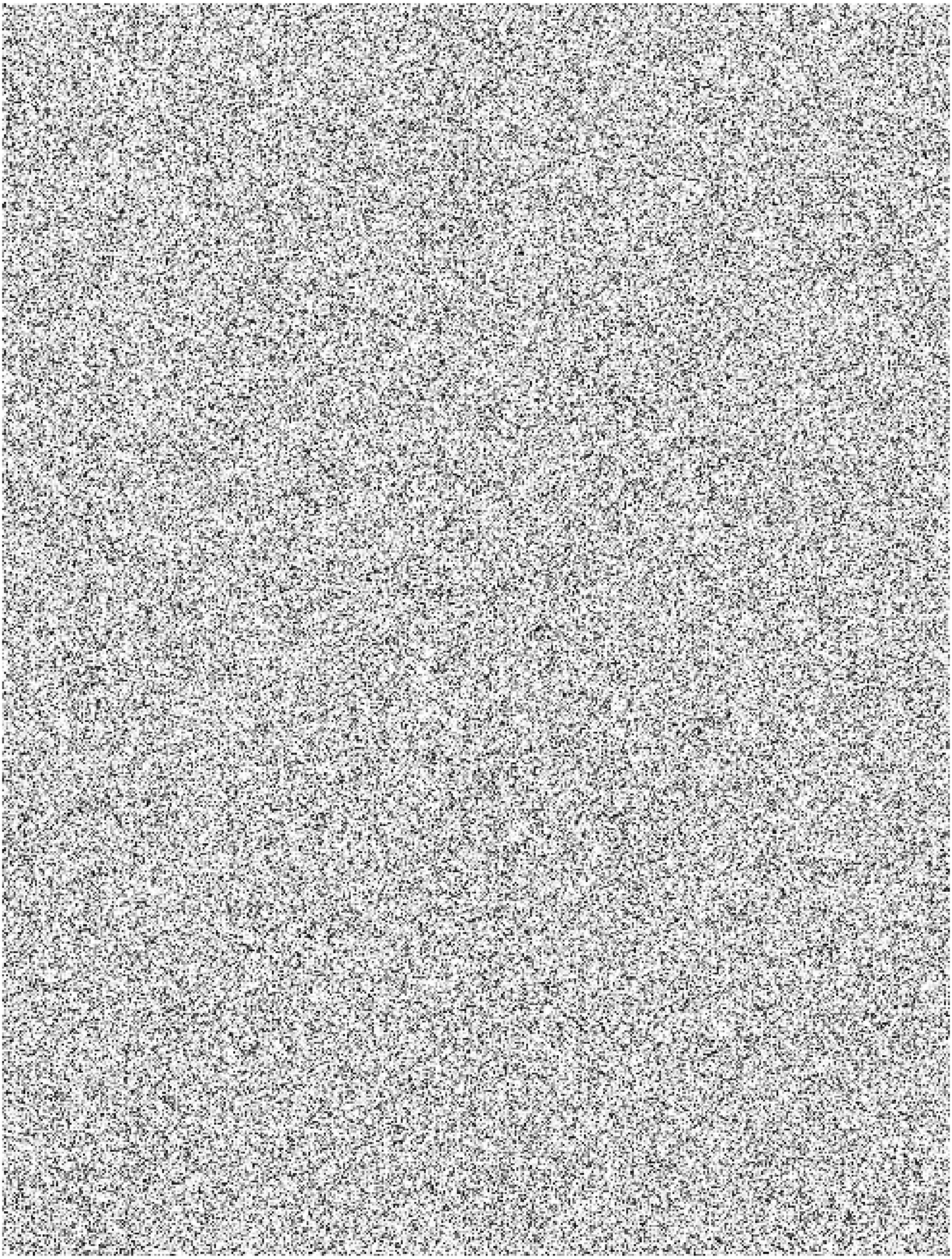


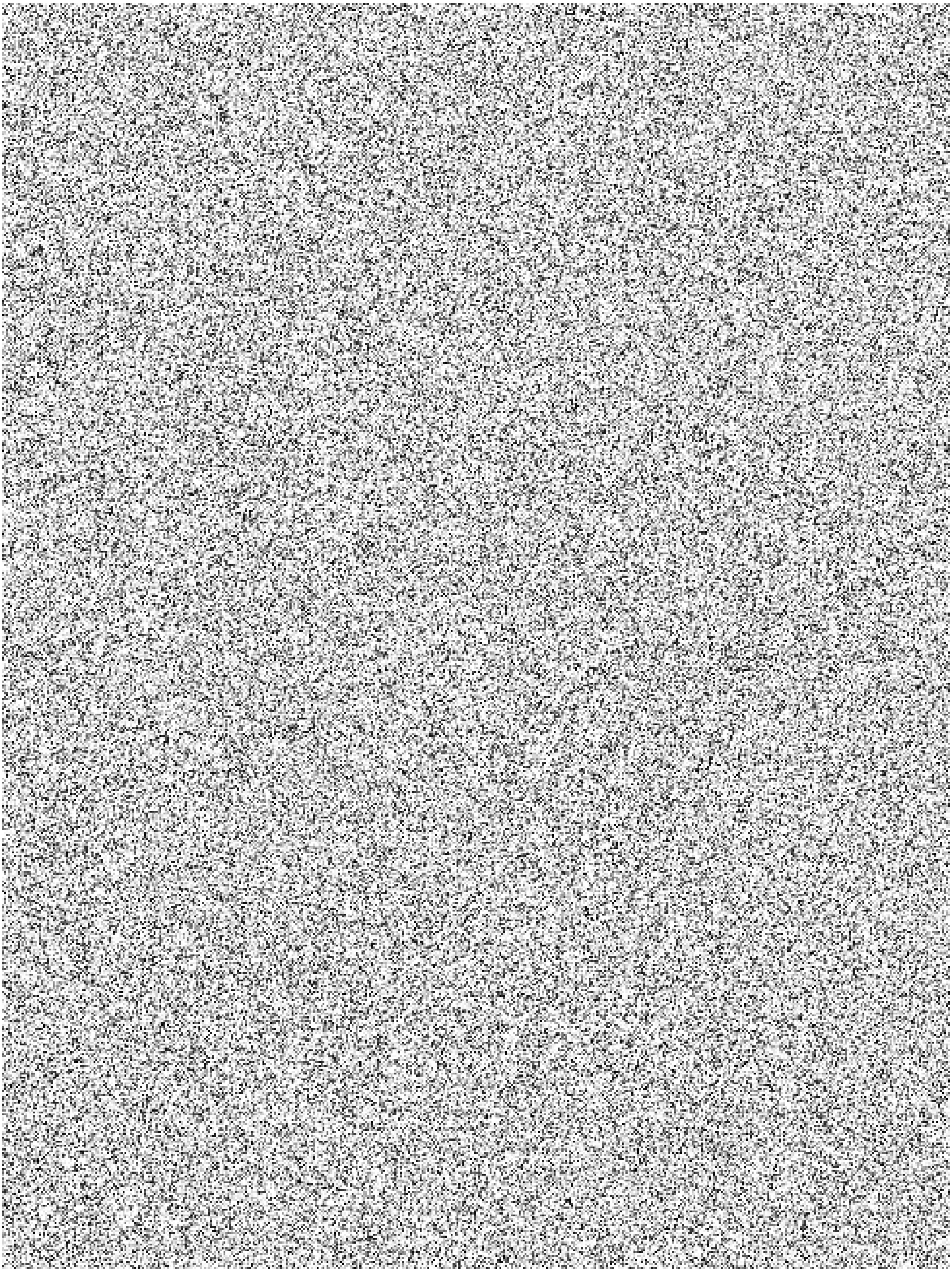


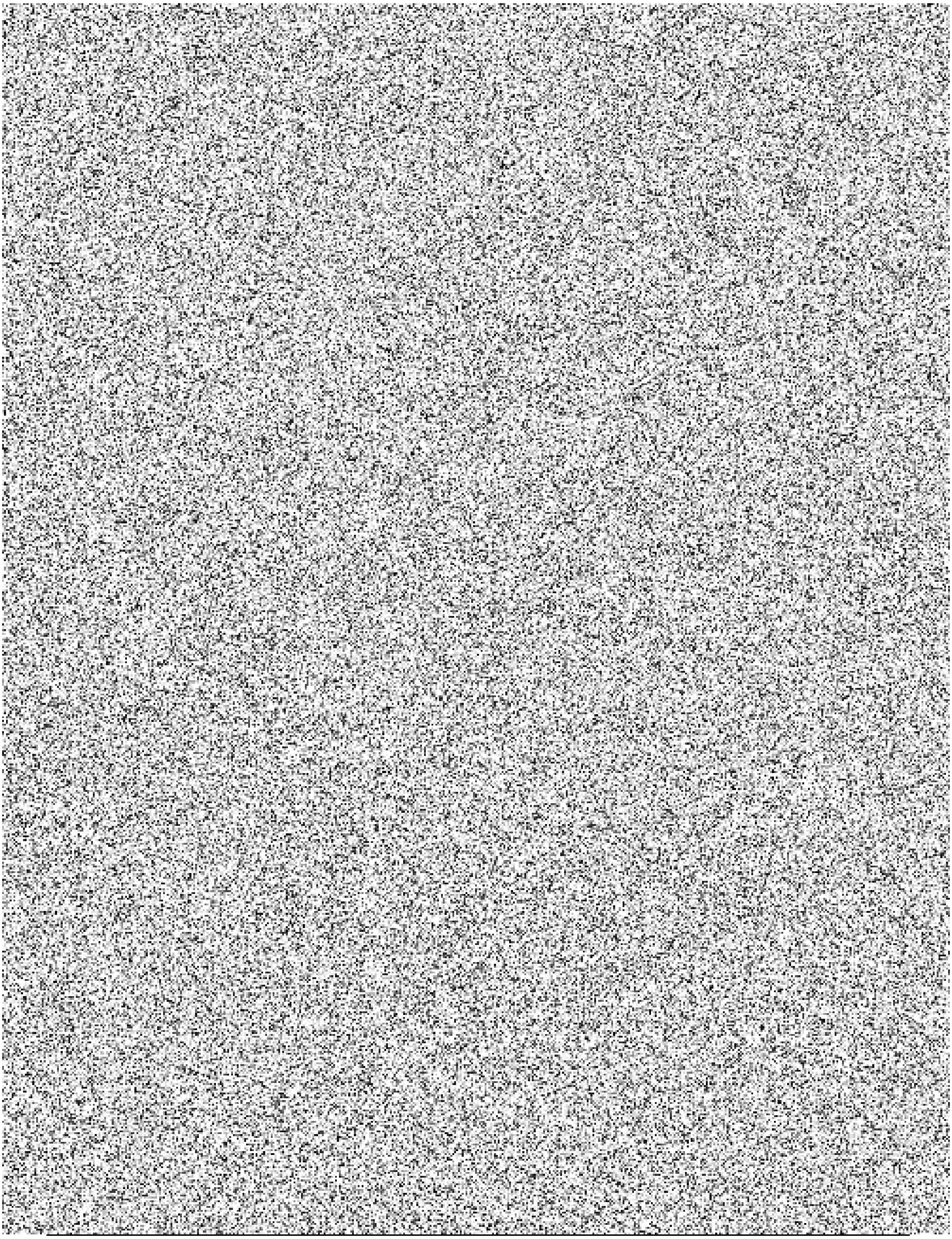


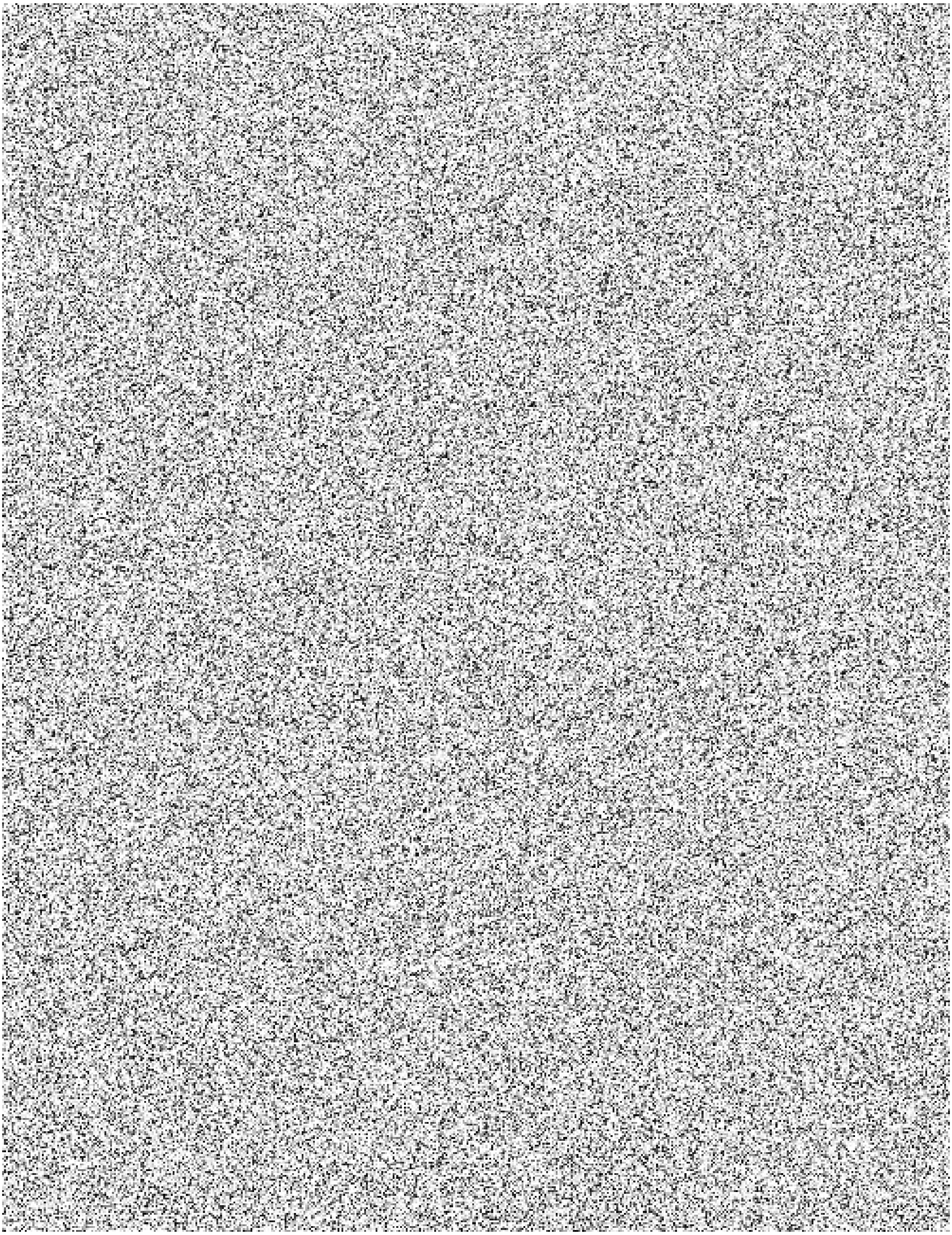


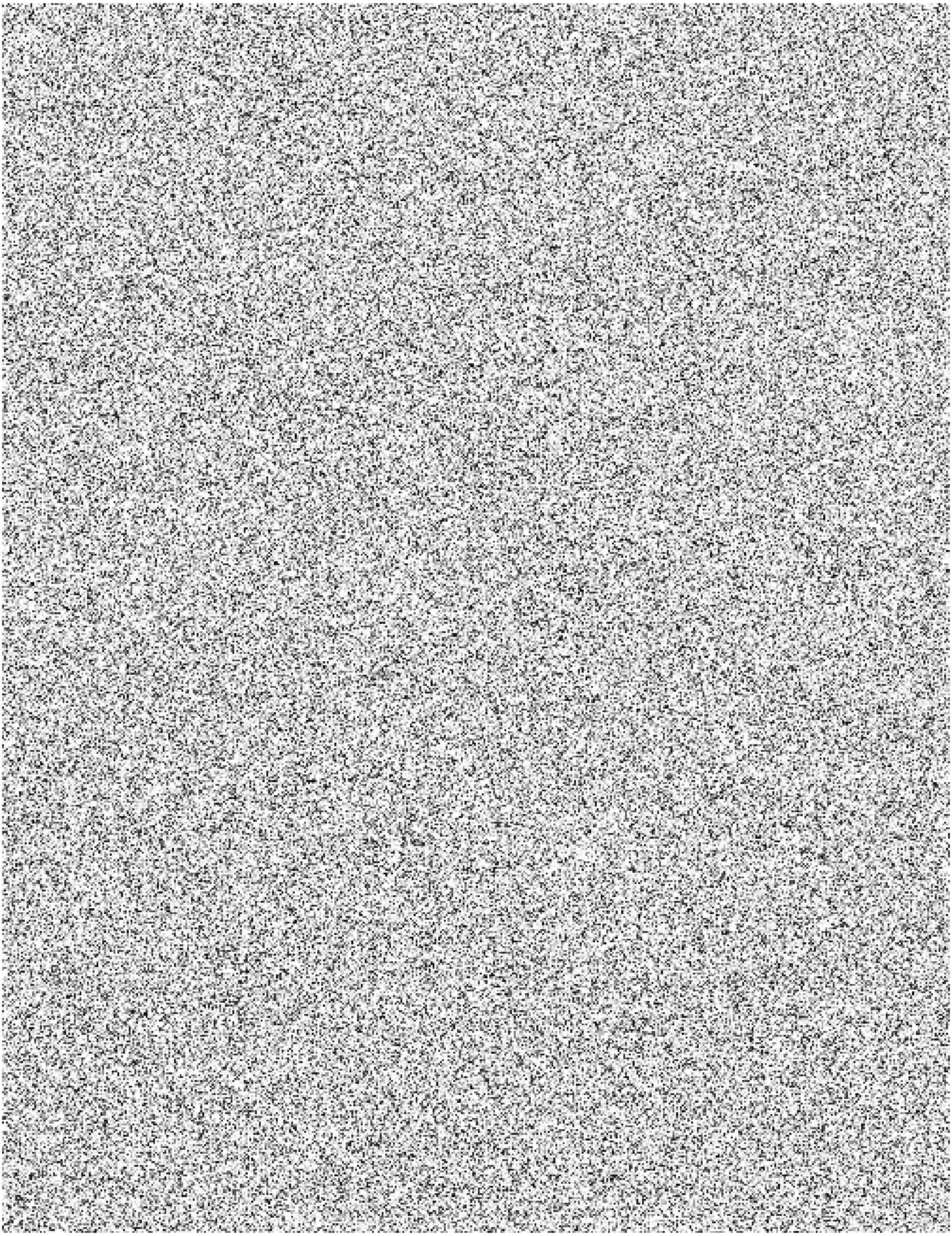


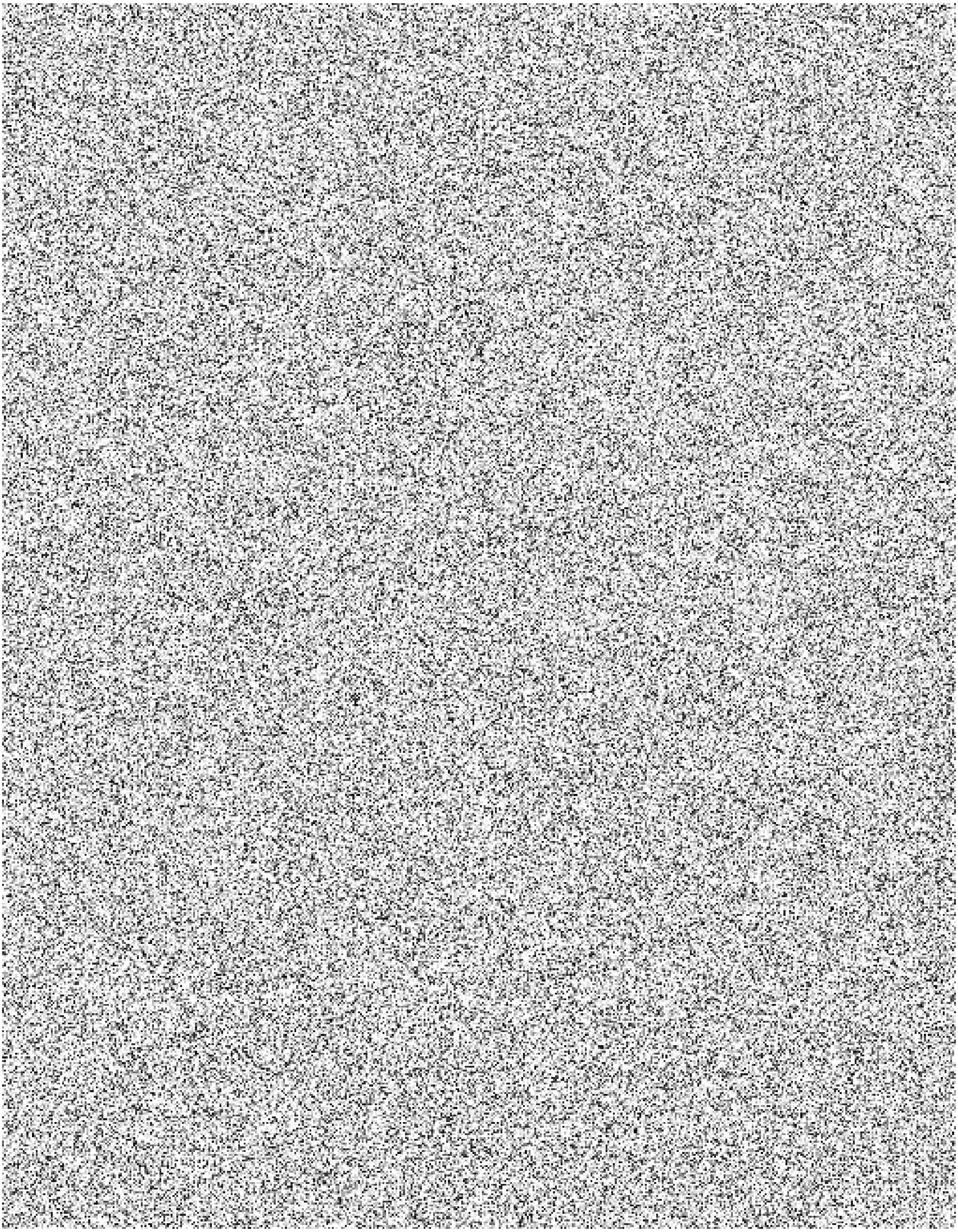


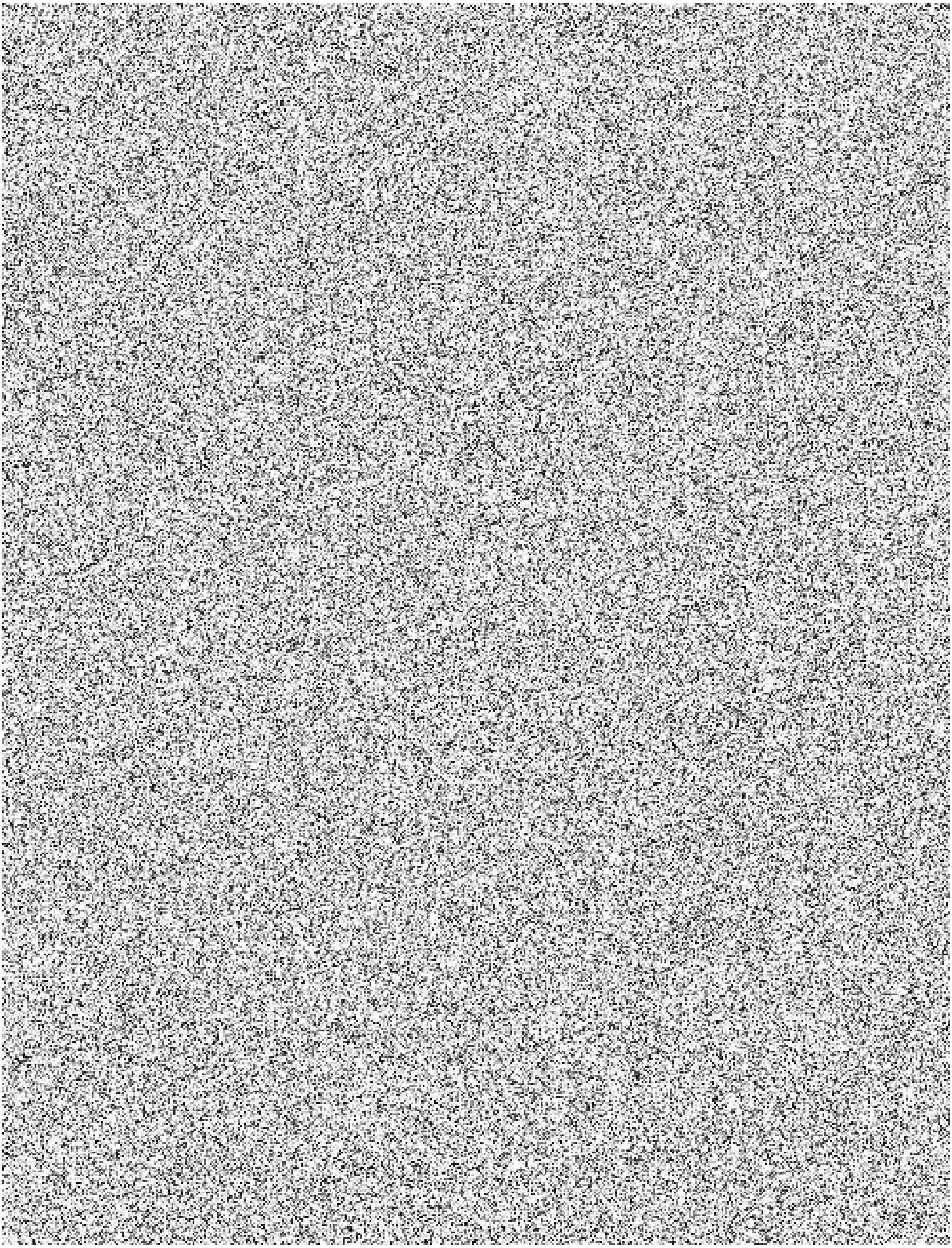


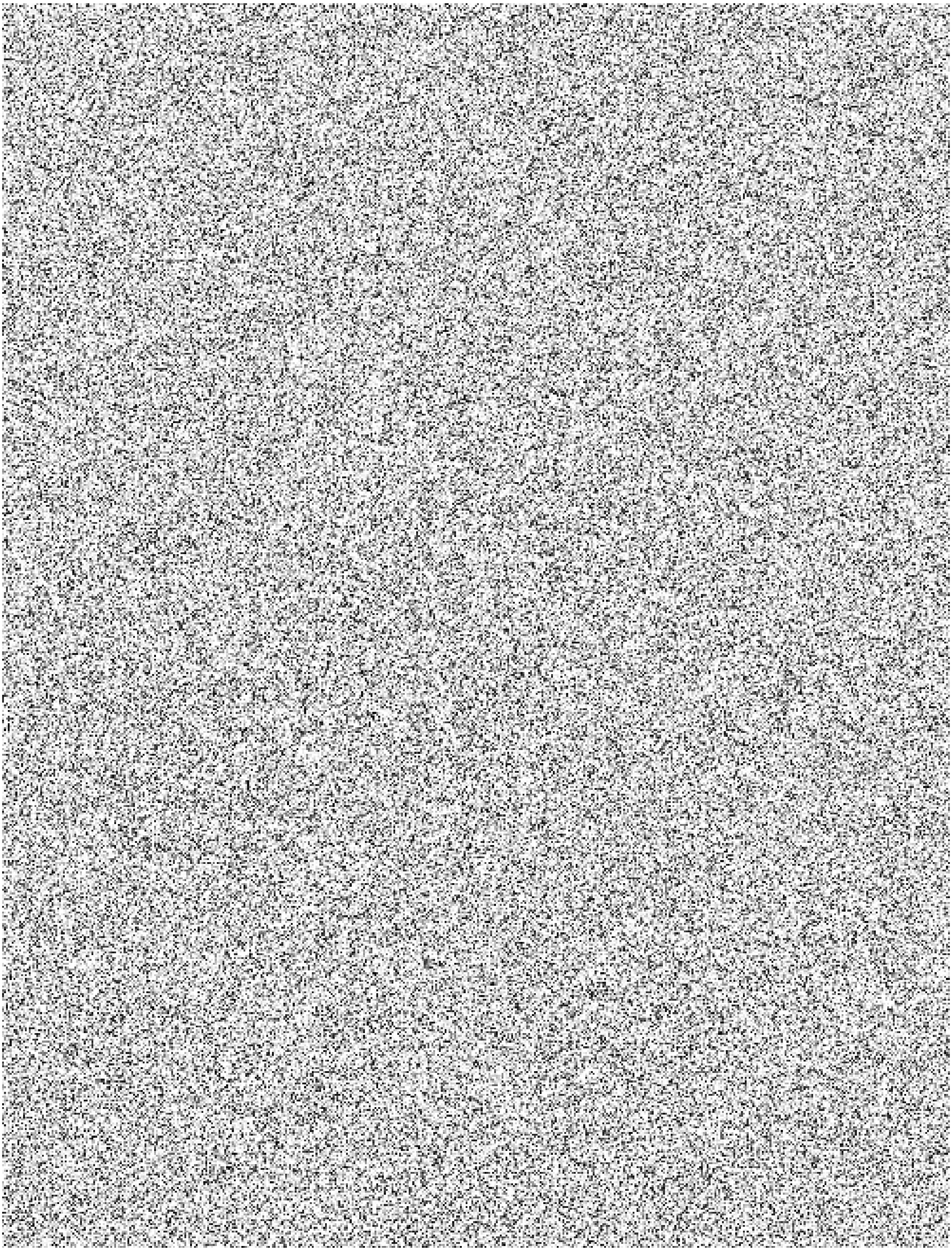


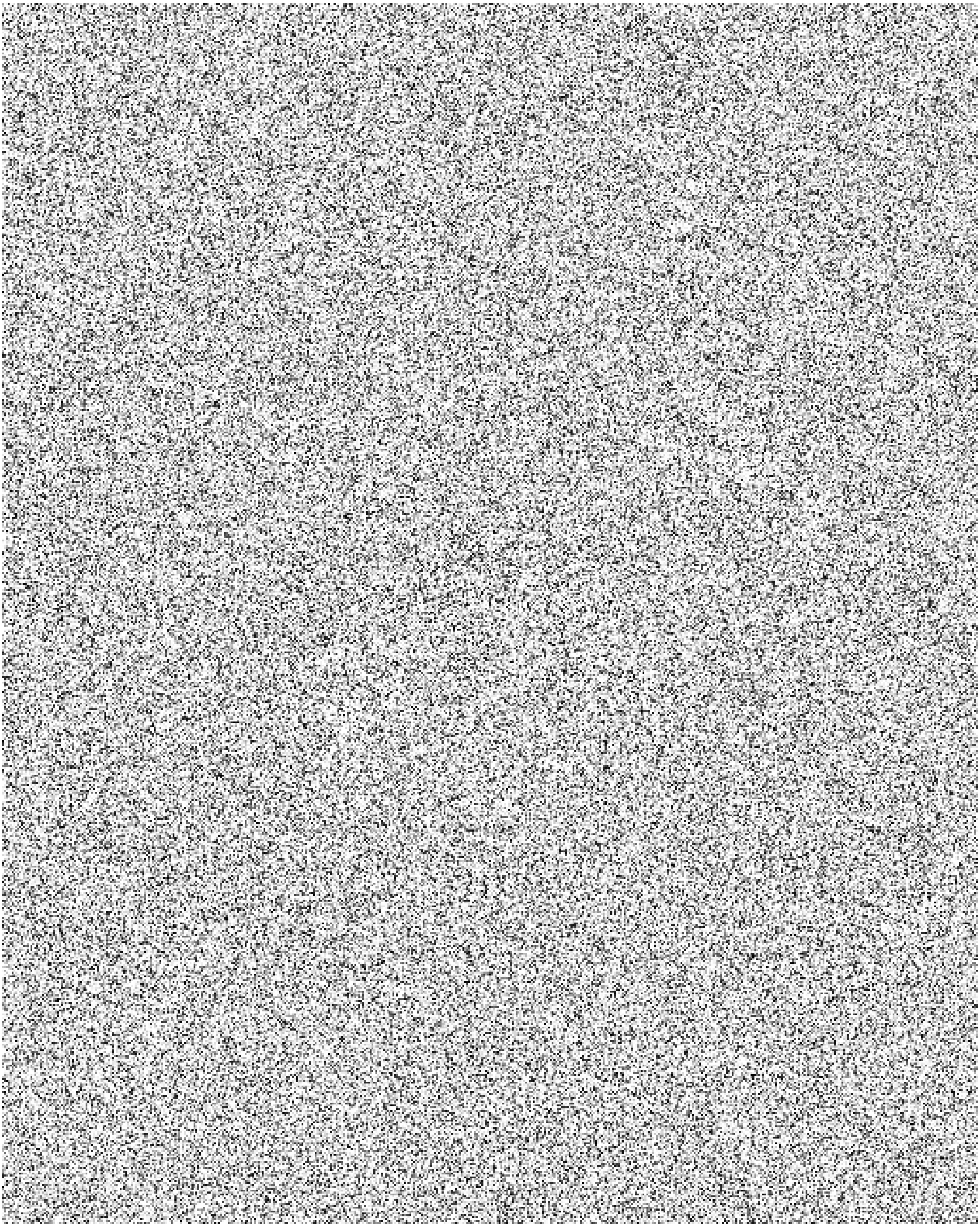


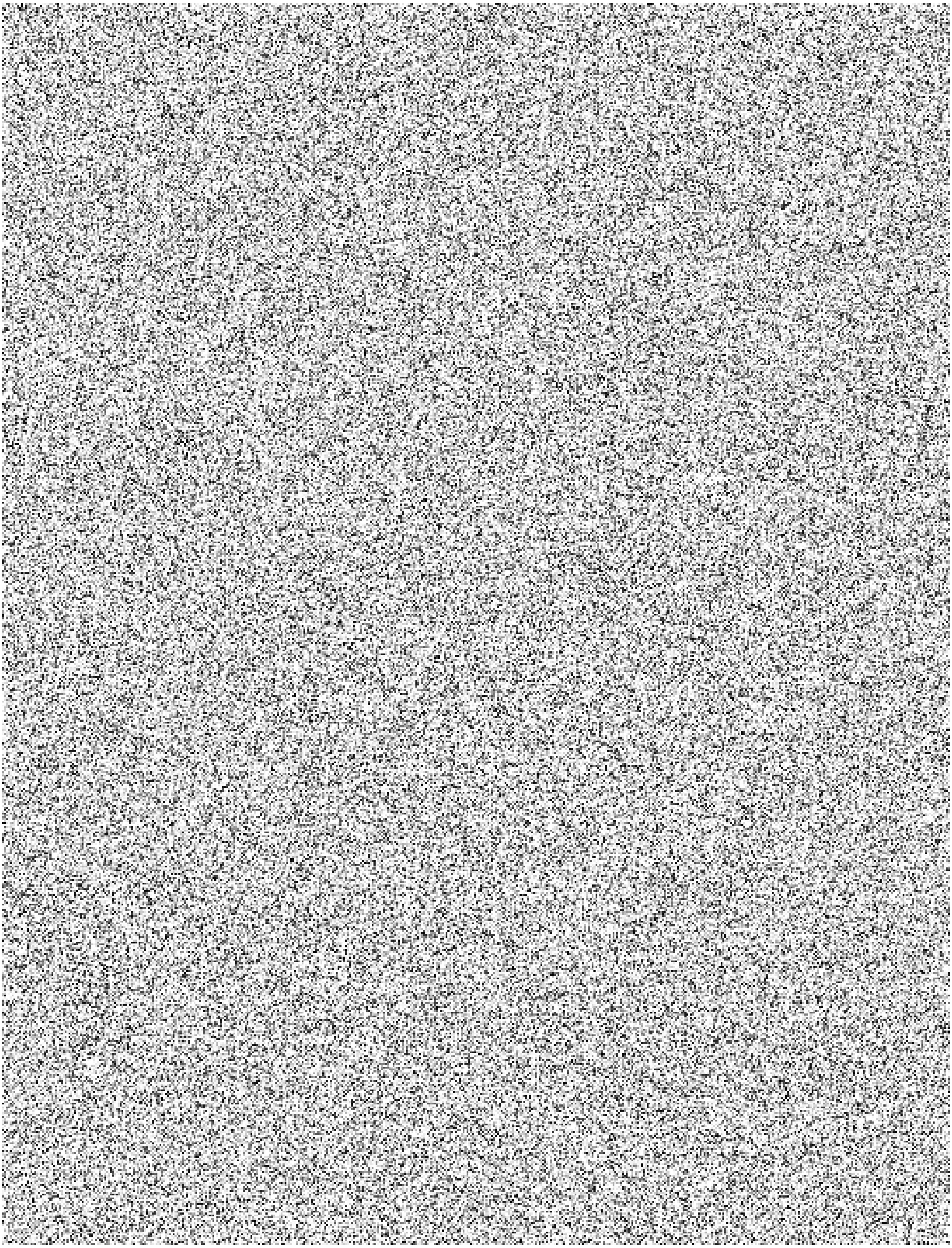


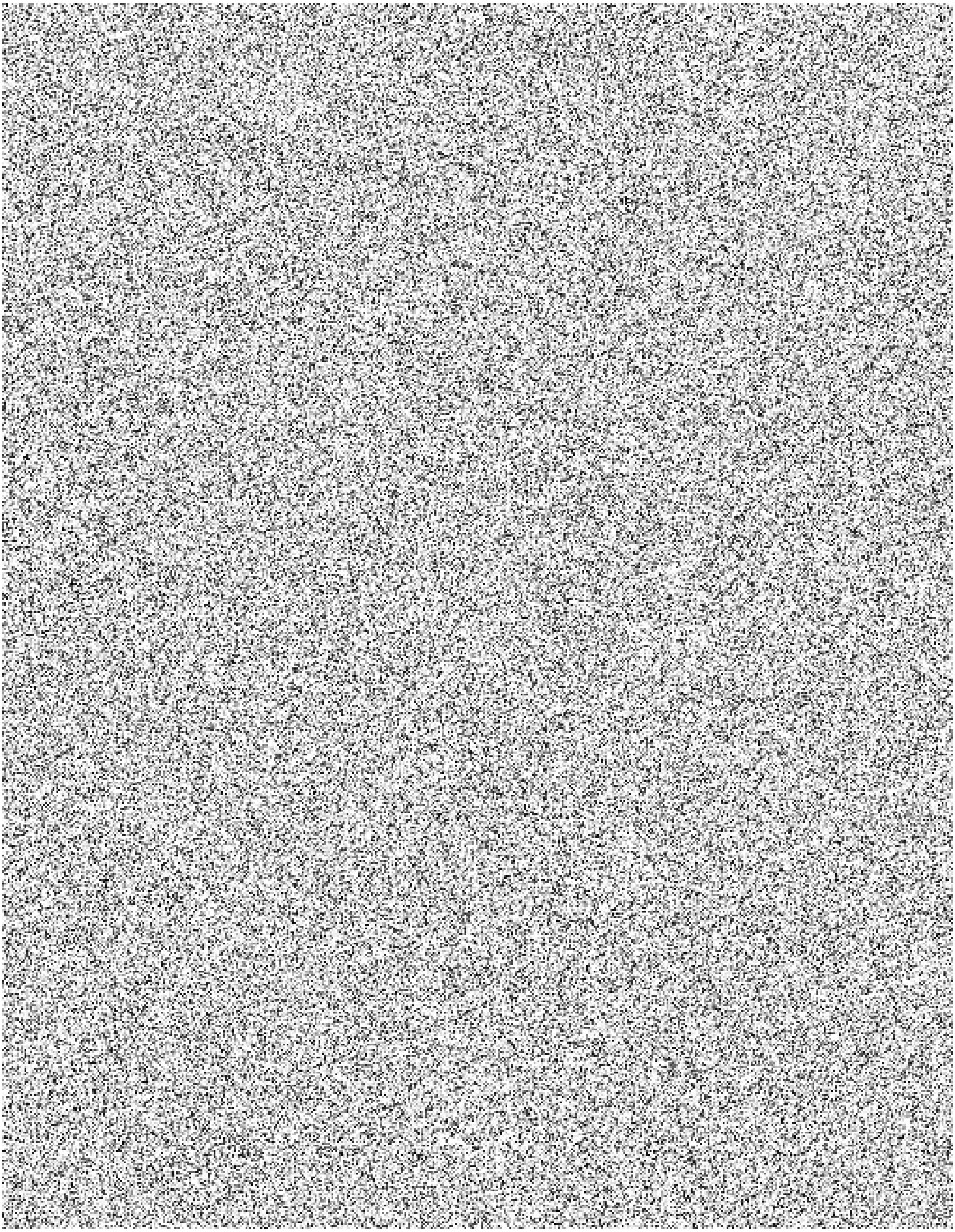


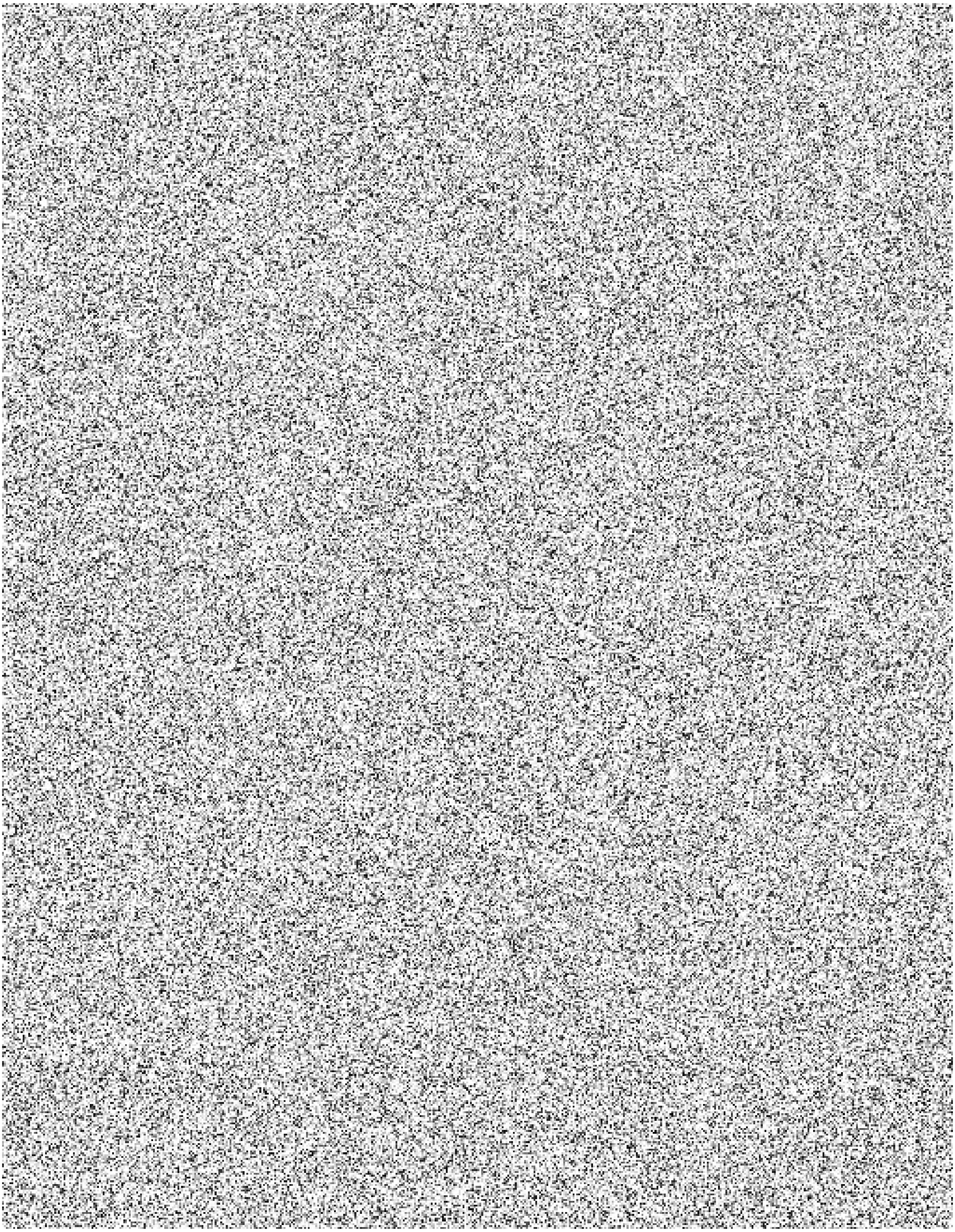


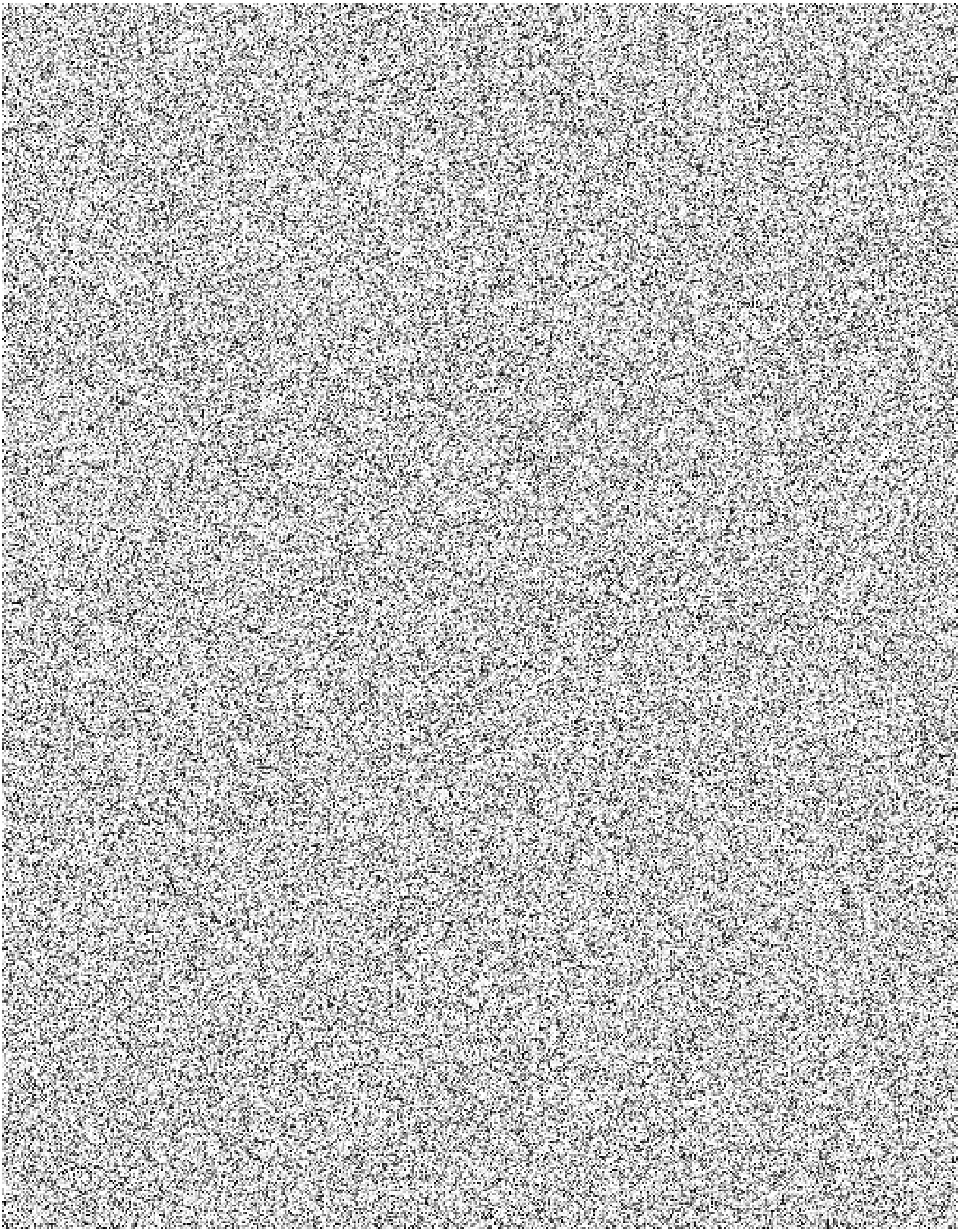


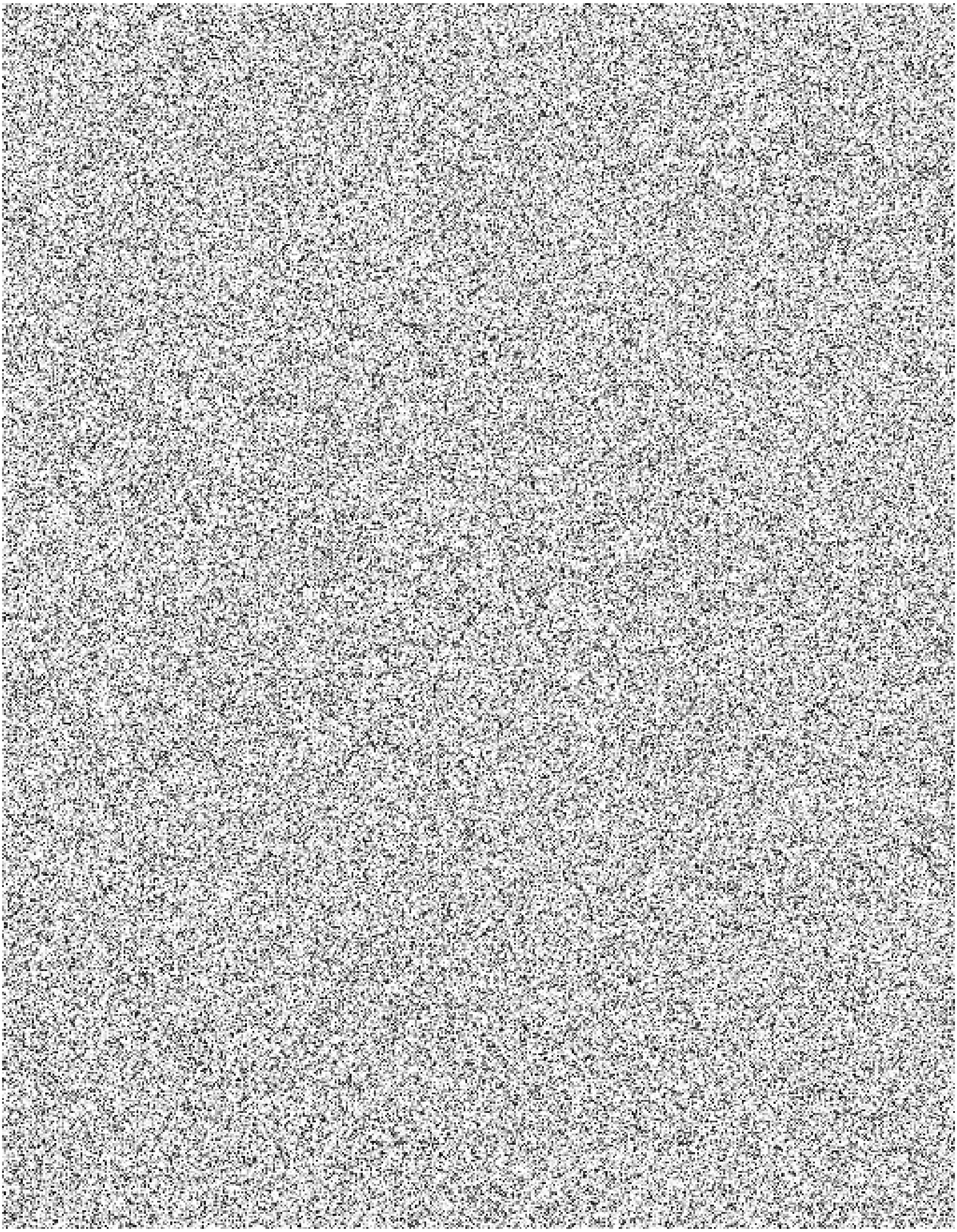


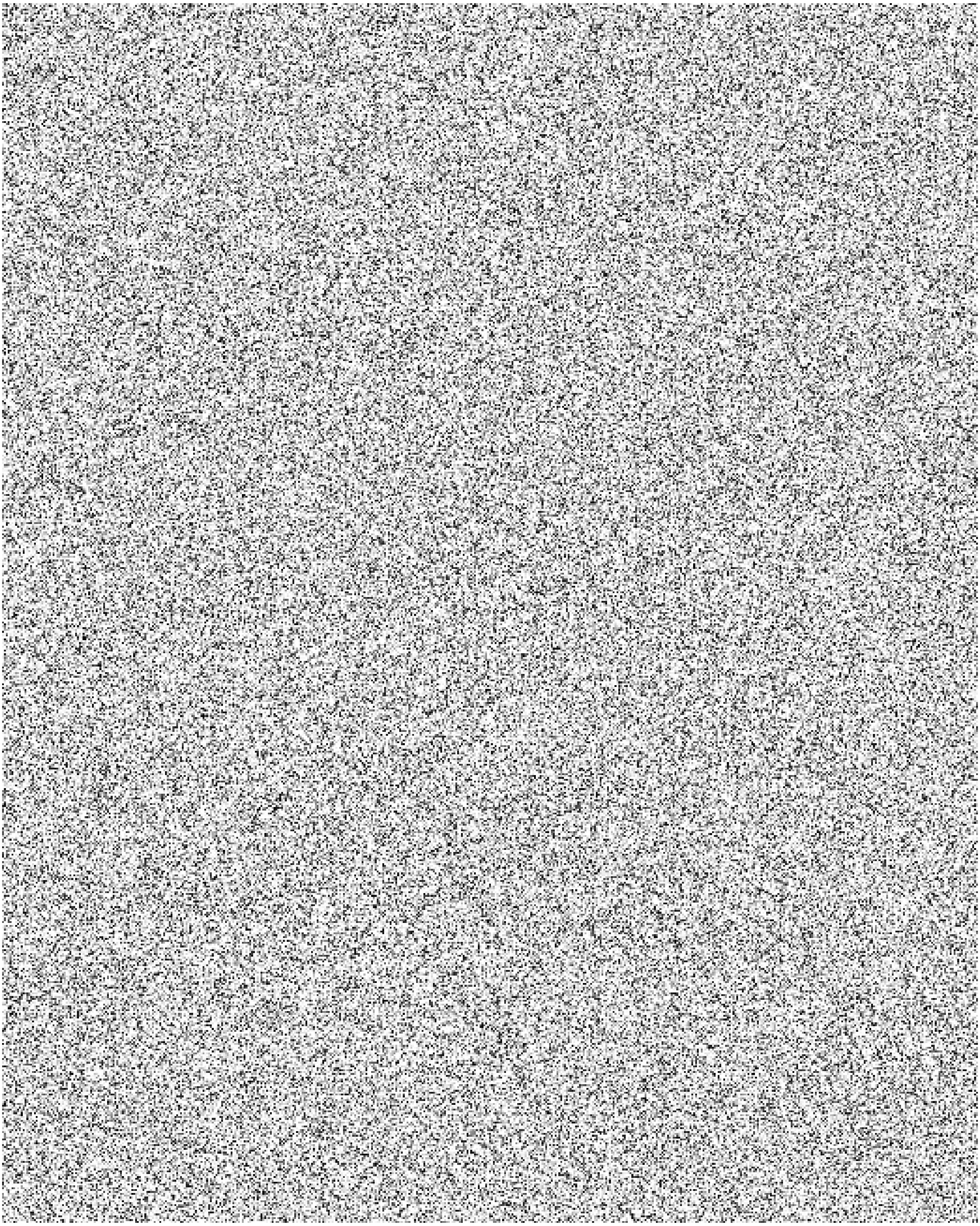


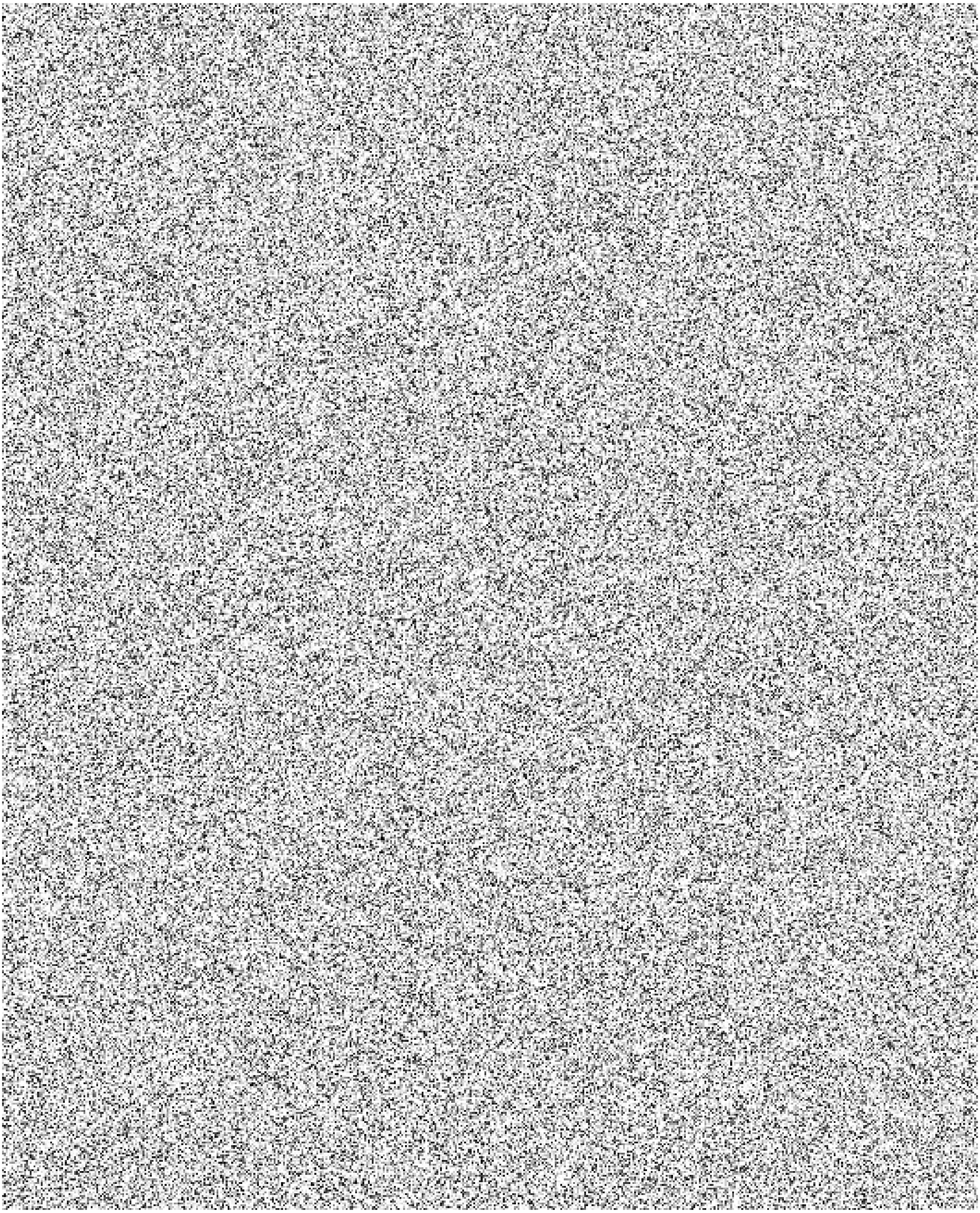


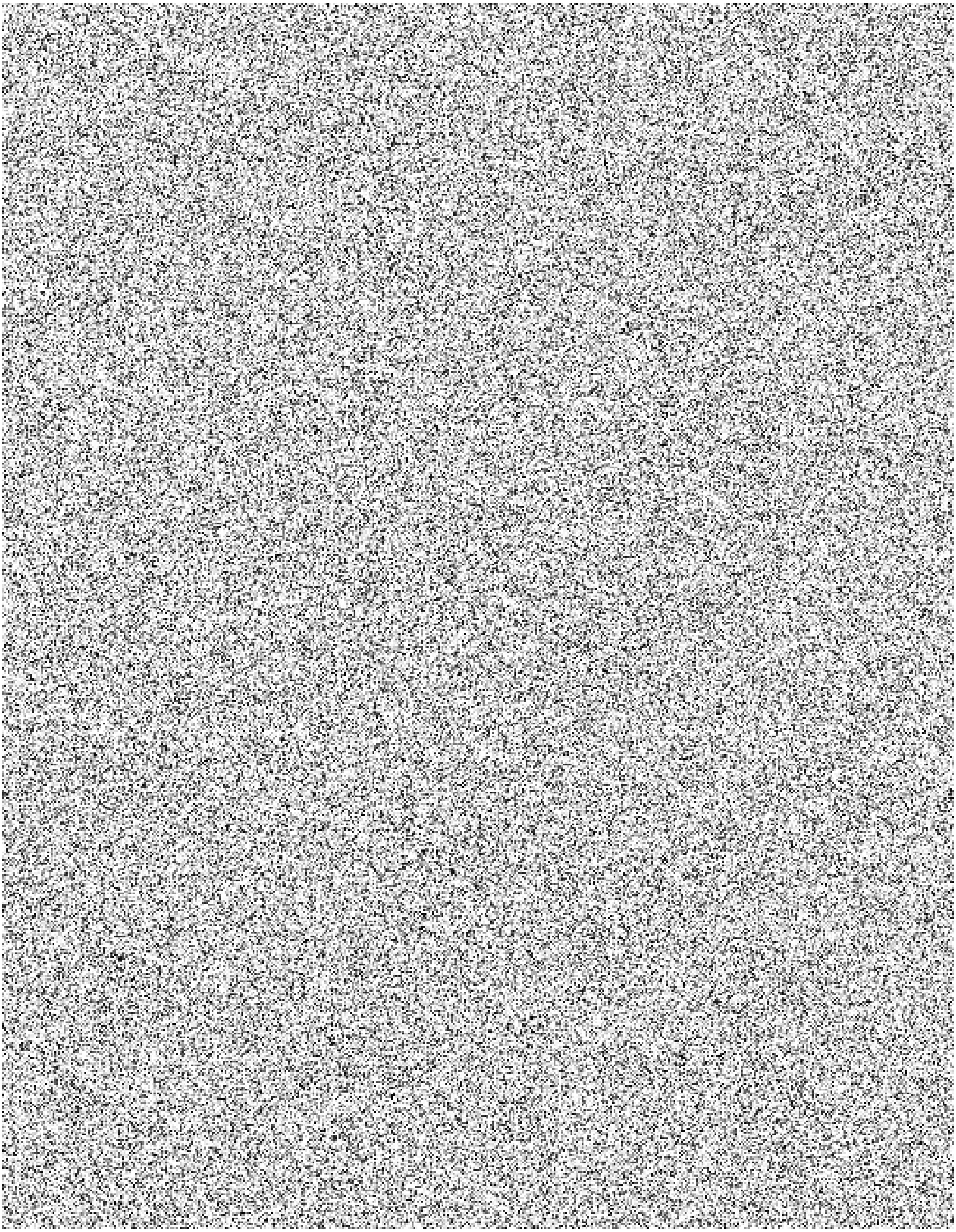


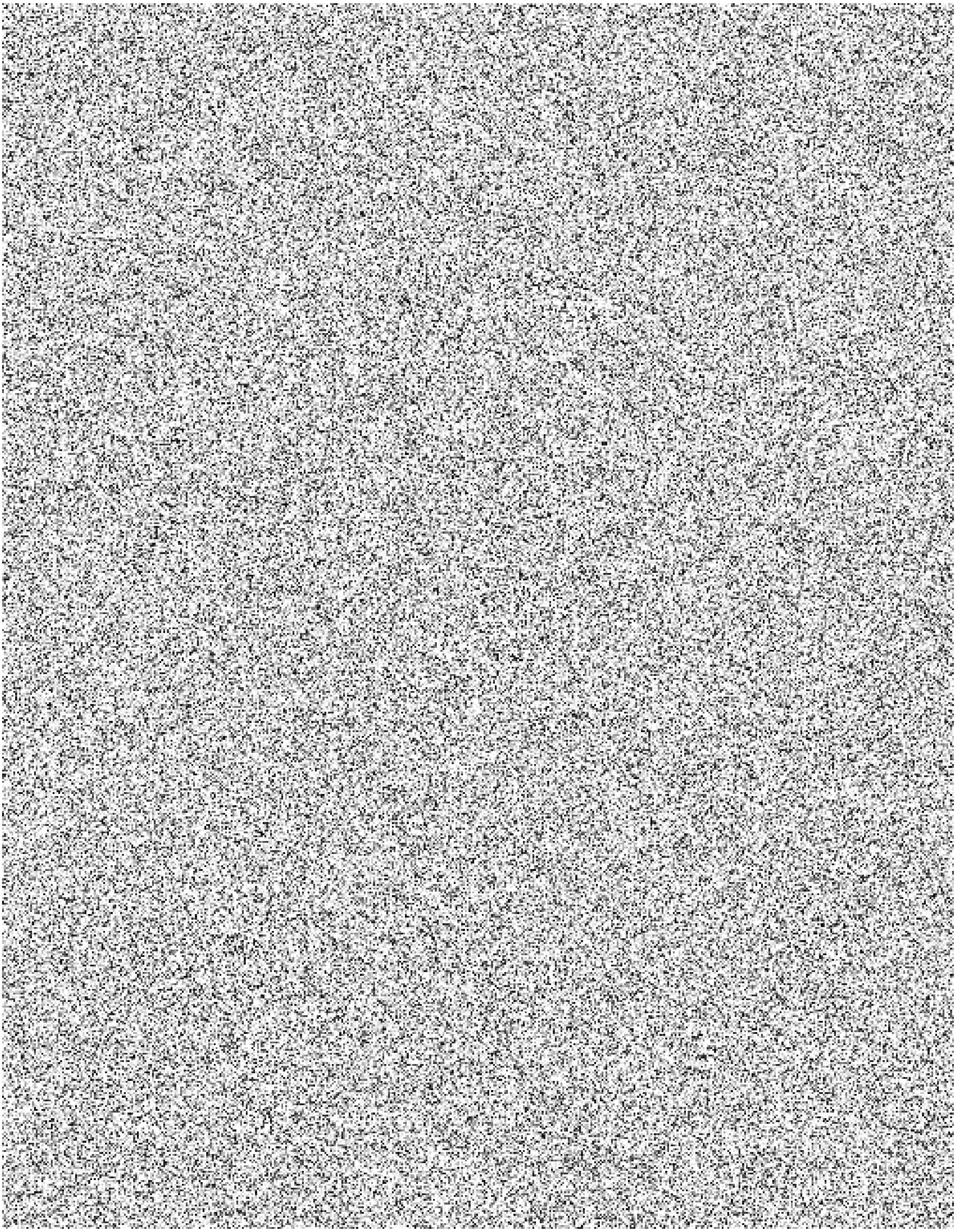


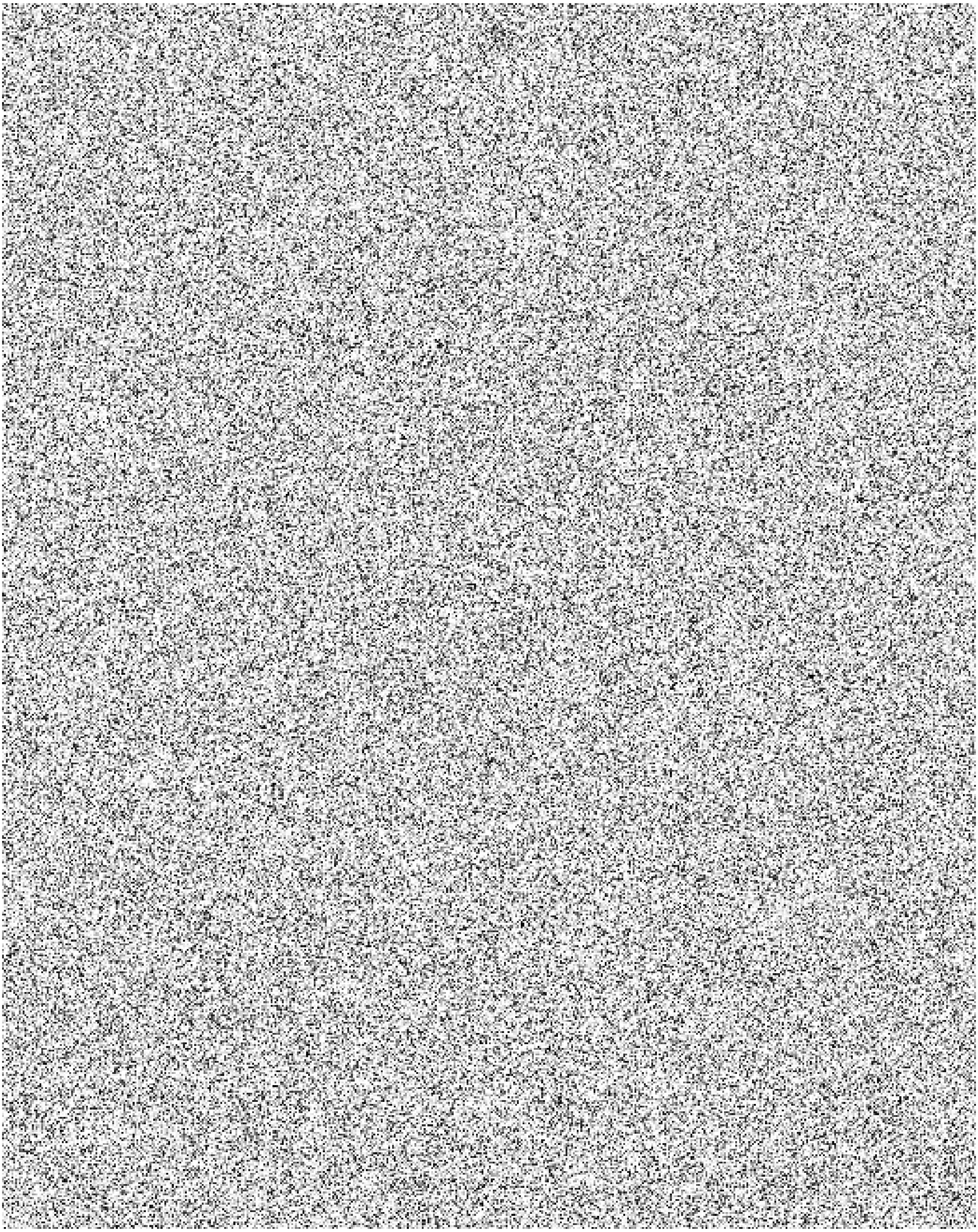


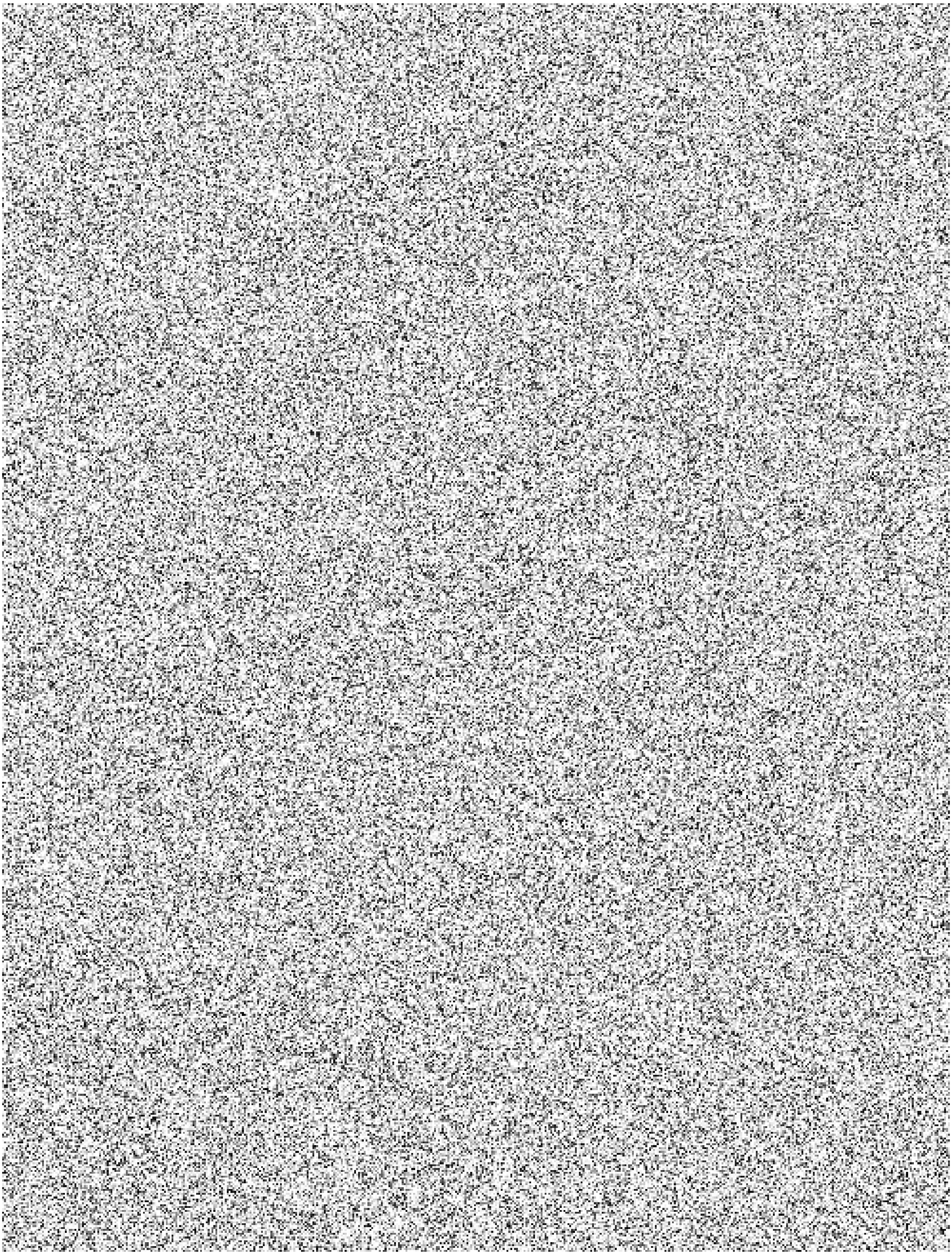


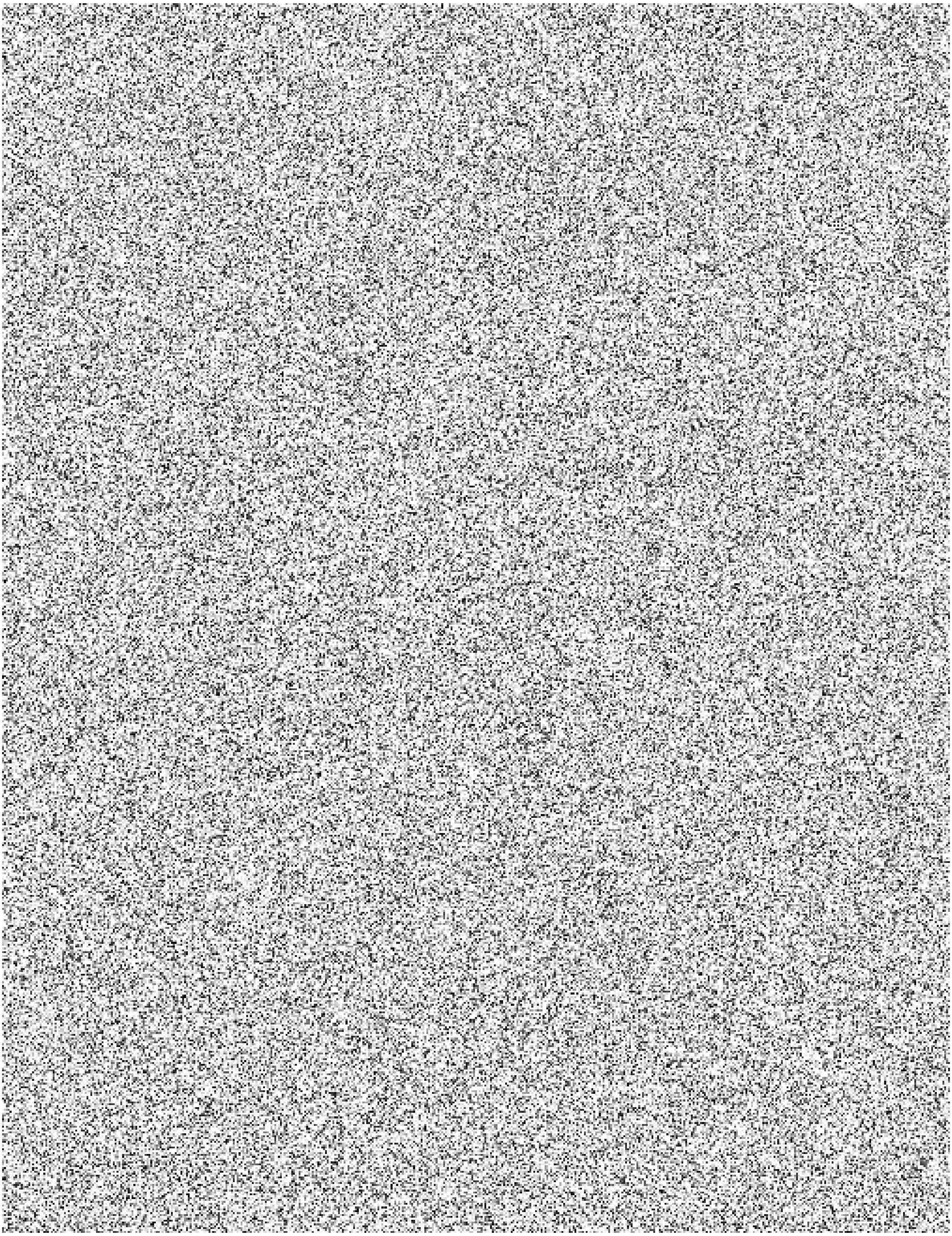


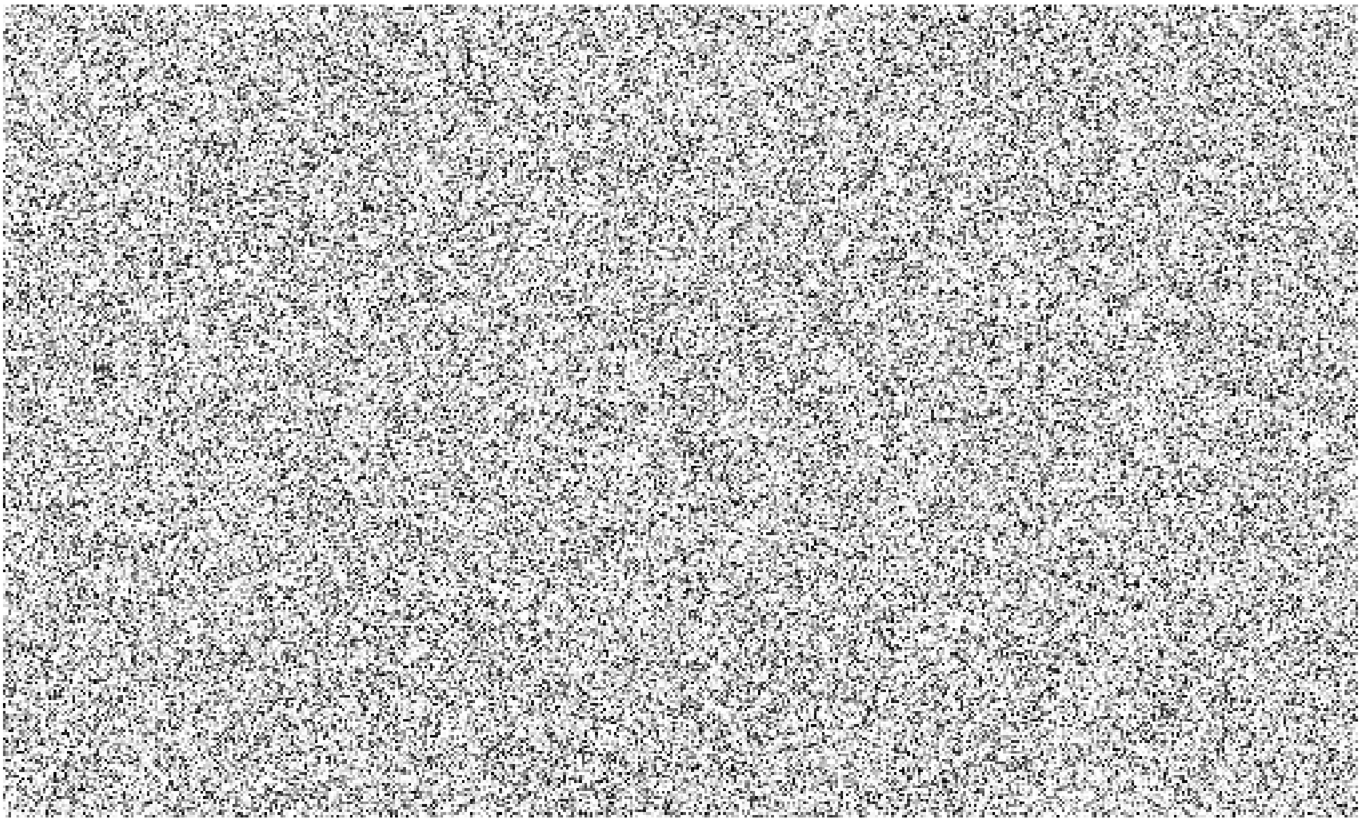








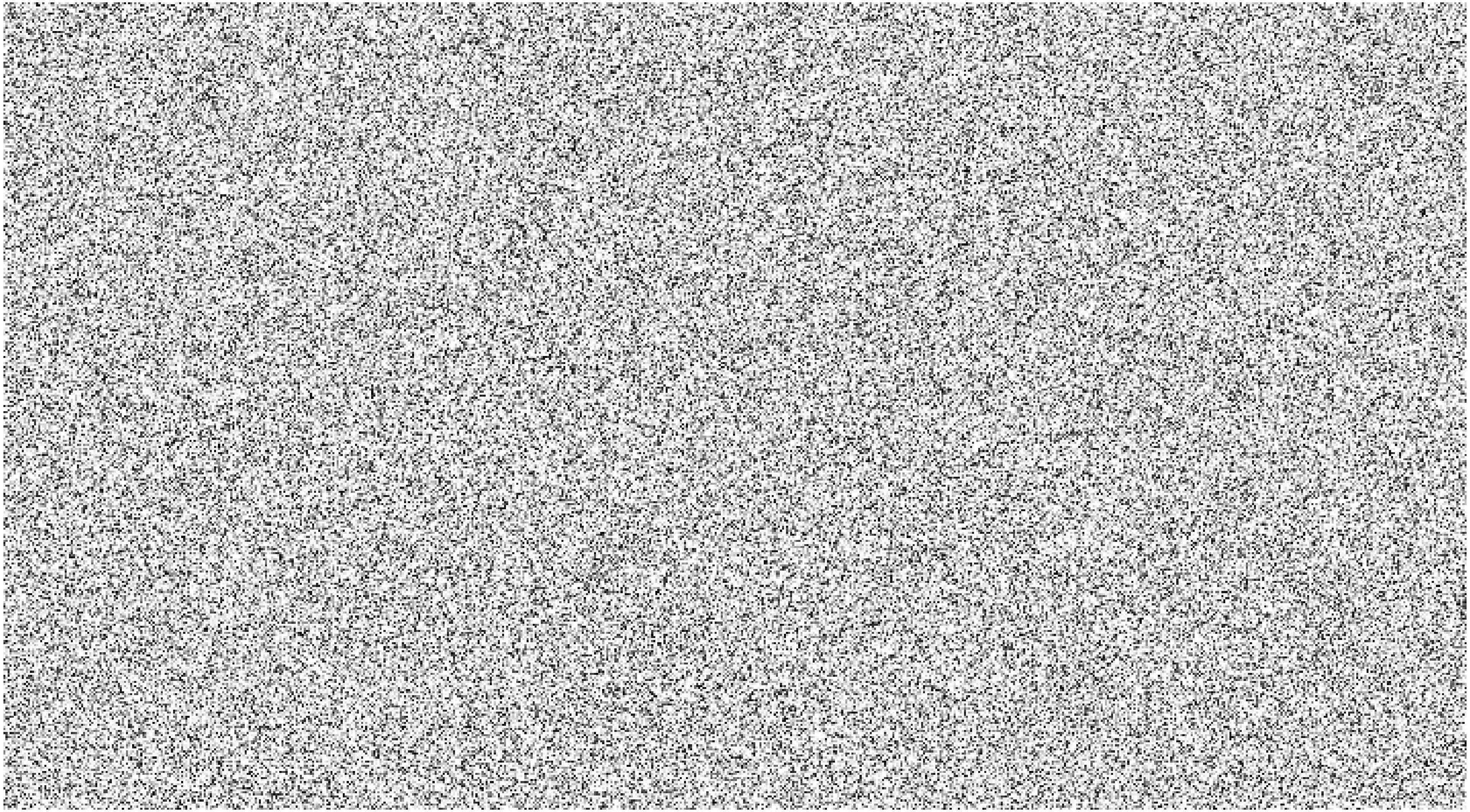




5.2.15 DBEH AND RSEH EXTERNAL NATURAL HAZARDS

Site specific parameters of external natural hazards were analyzed during preparation of Initial Safety Analyses Report and are described in chapters above.

In table below DBEH and RSEH values of external natural hazards were defined based on-site characteristic and shall be considered in the design of the Plant*.



External natural hazard	DBEH	RSEH

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TEMELÍN OPTION

EPC CONTRACT

CONTRACT SPECIFICATION

DOCUMENT NAME:	**TECHNICAL REQUIREMENTS DOCUMENT VOLUME 5 SITE CHAPTER 5.3 CONNECTION POINTS**
VERSION DATE:	**March 2025**

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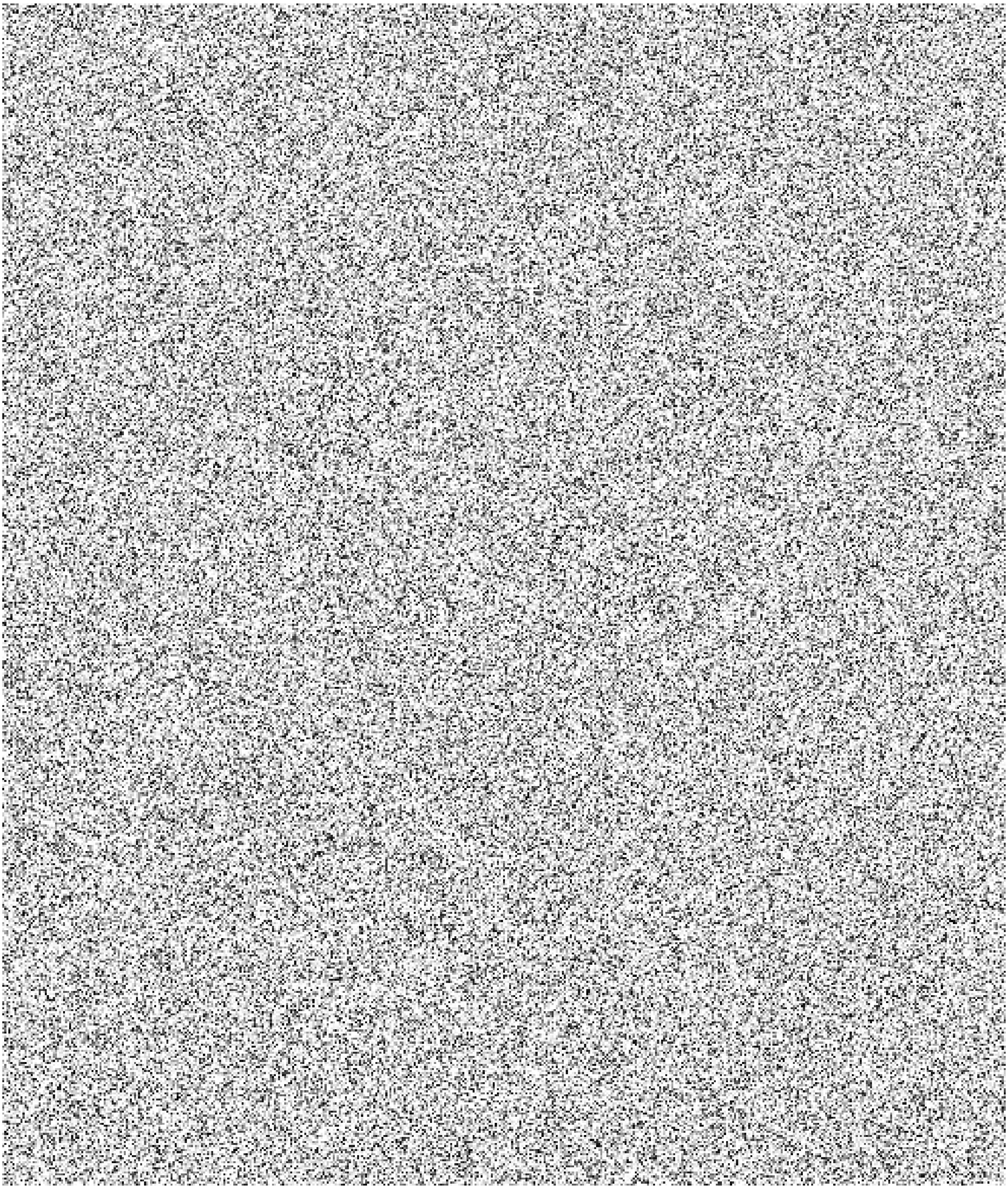

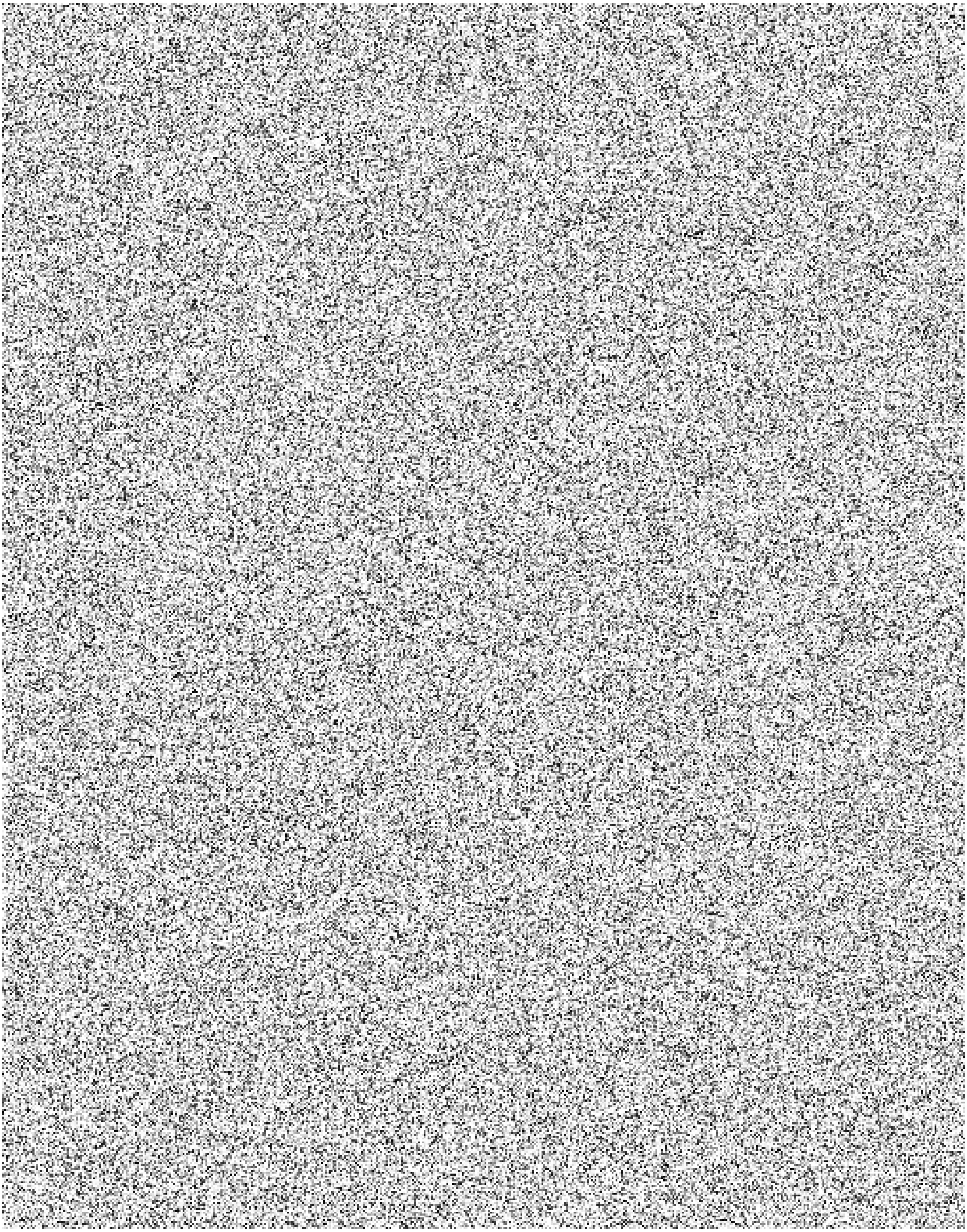

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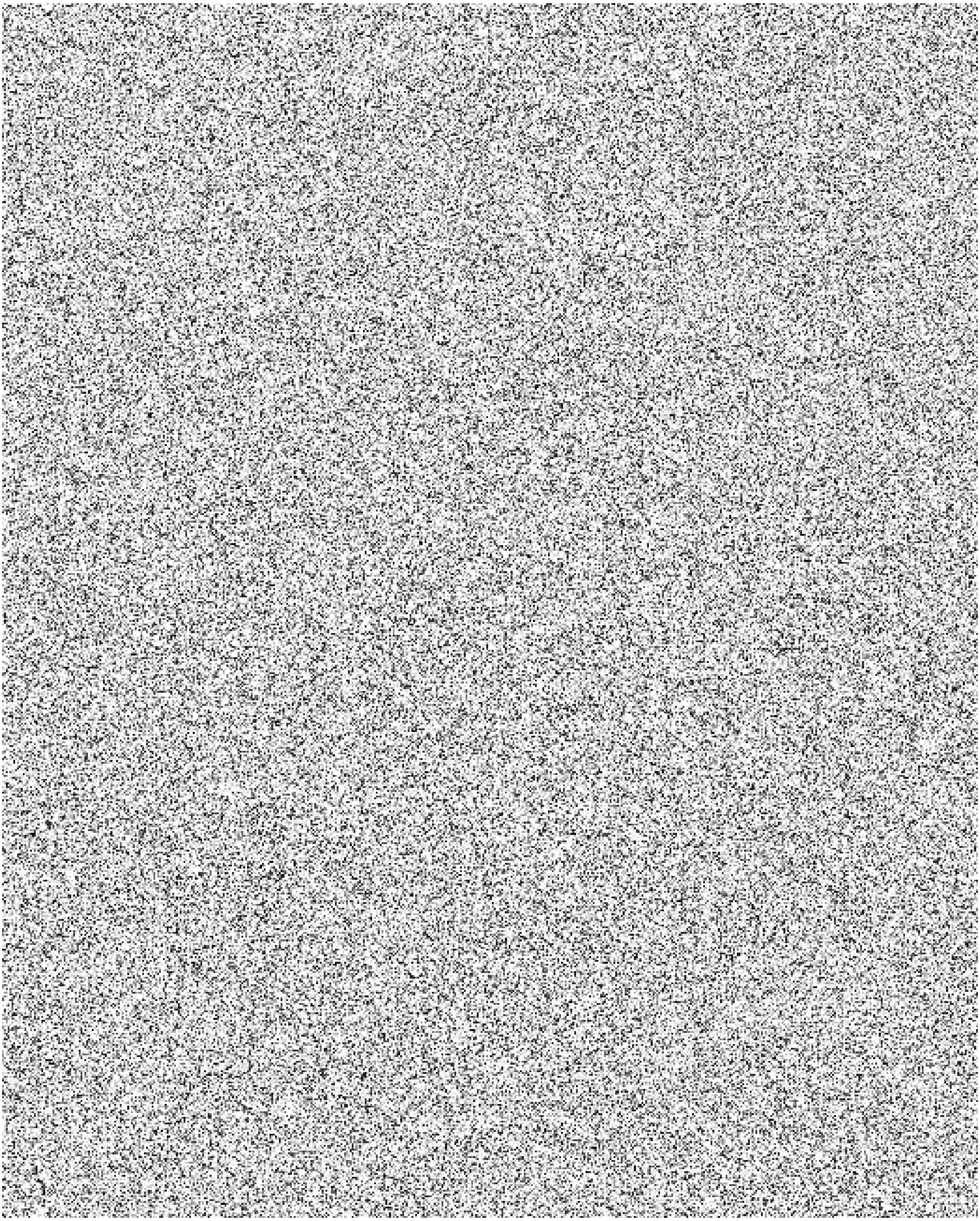

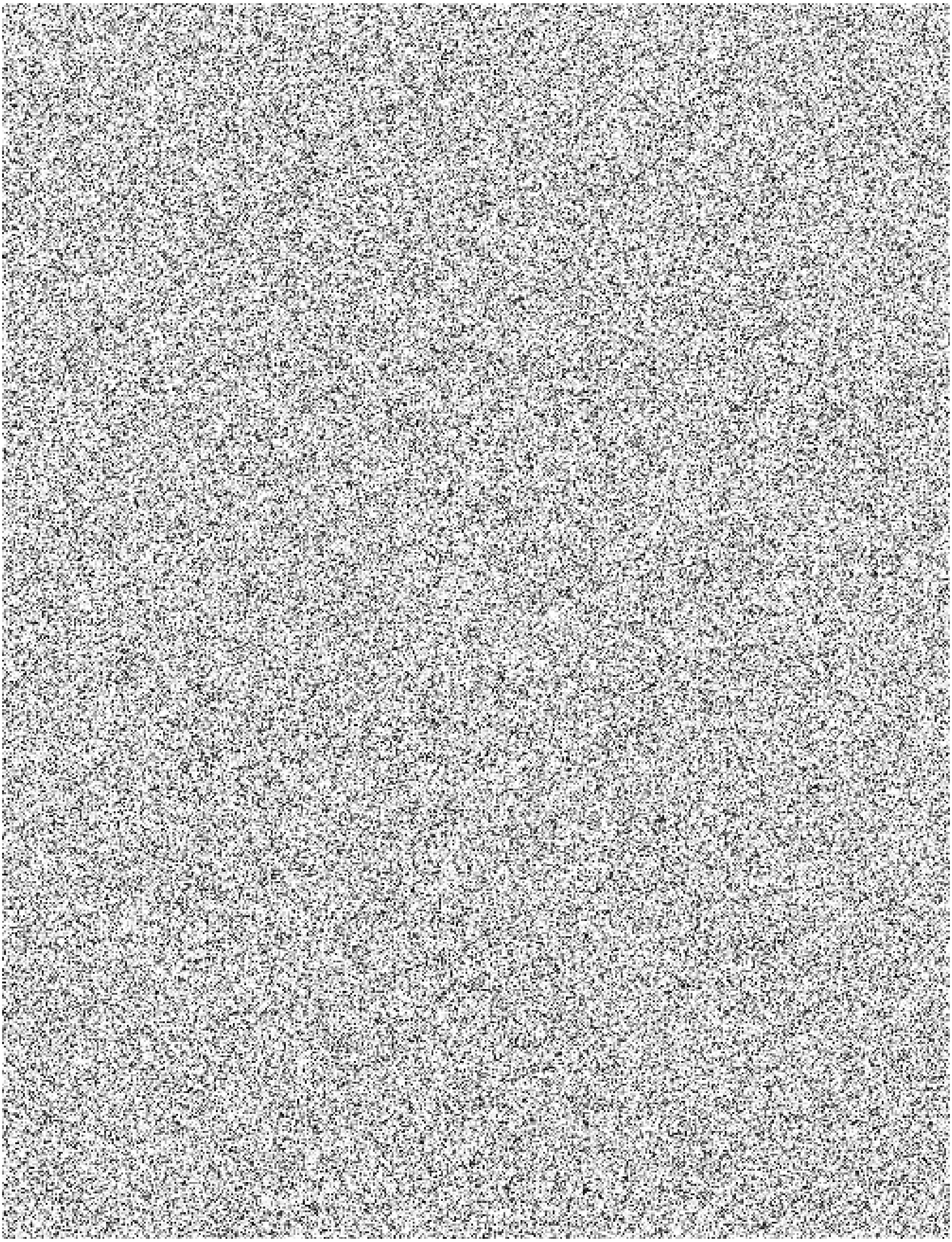

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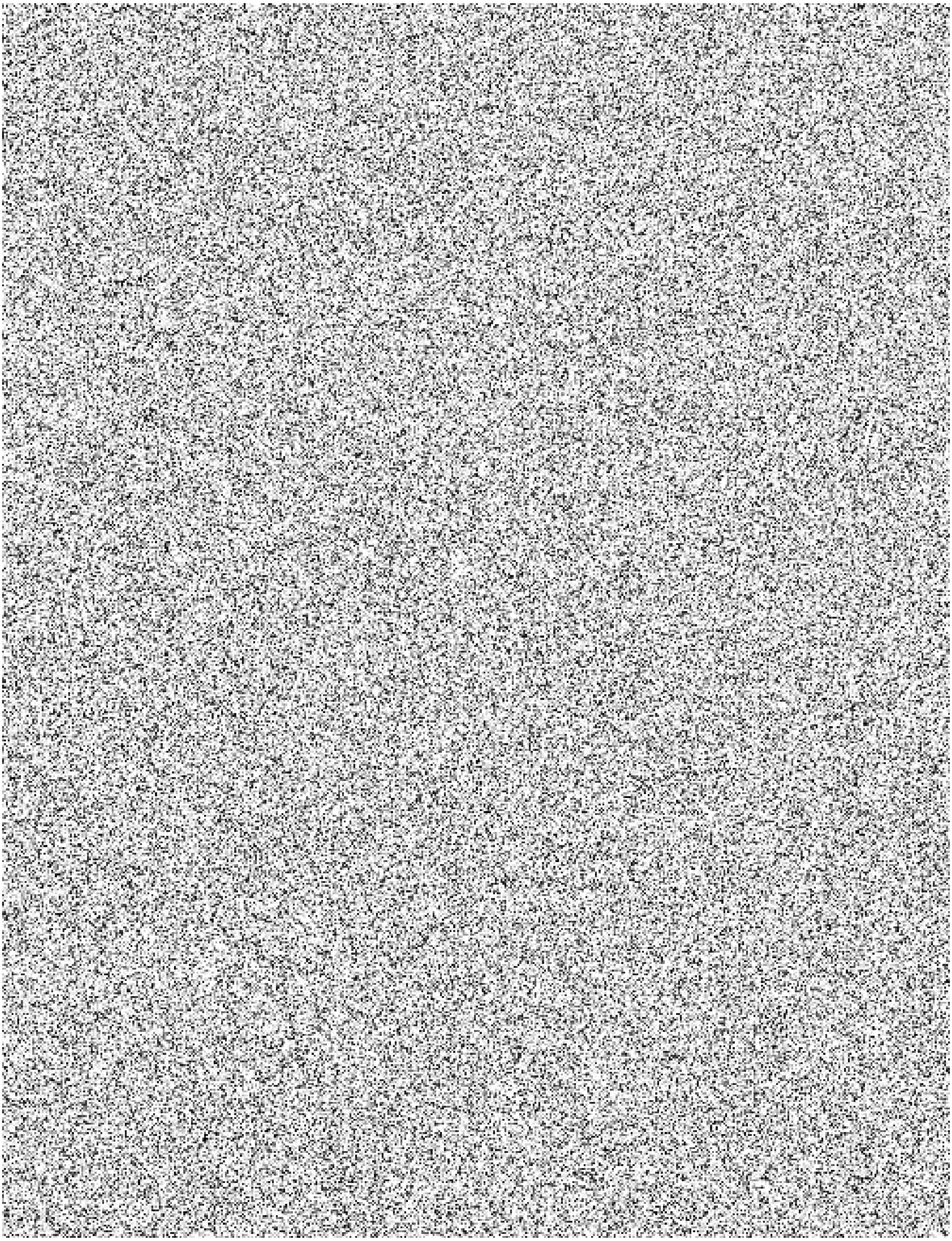

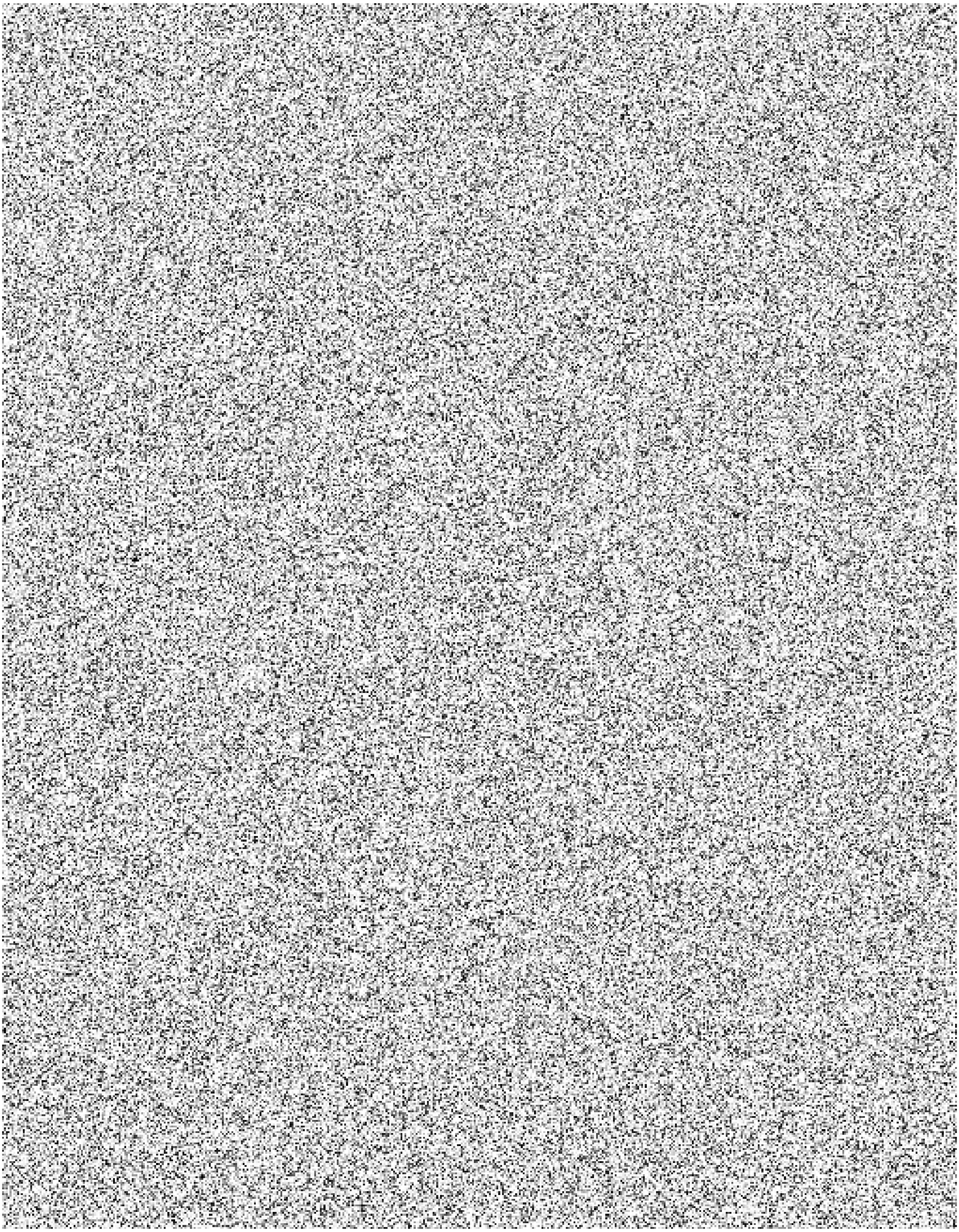

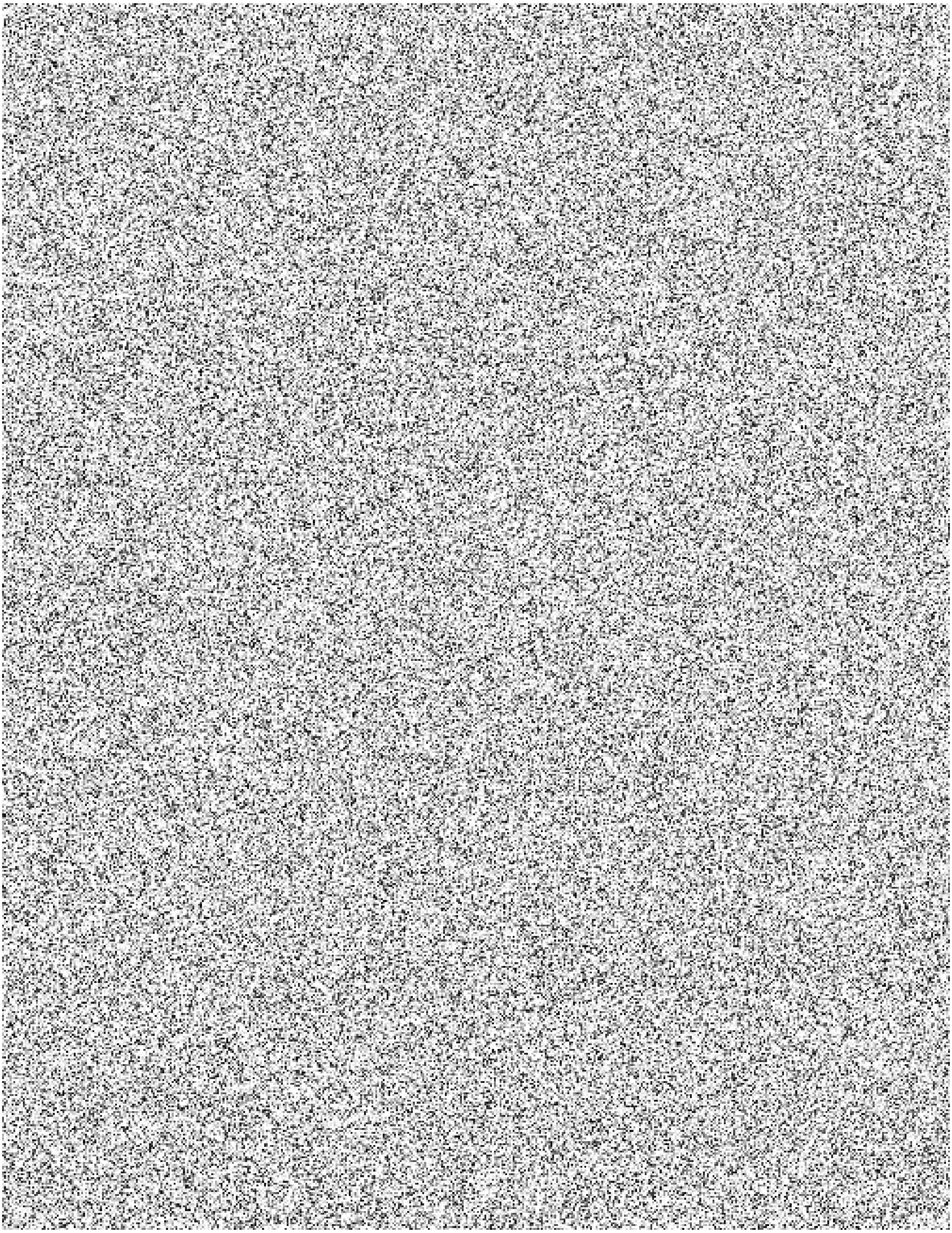

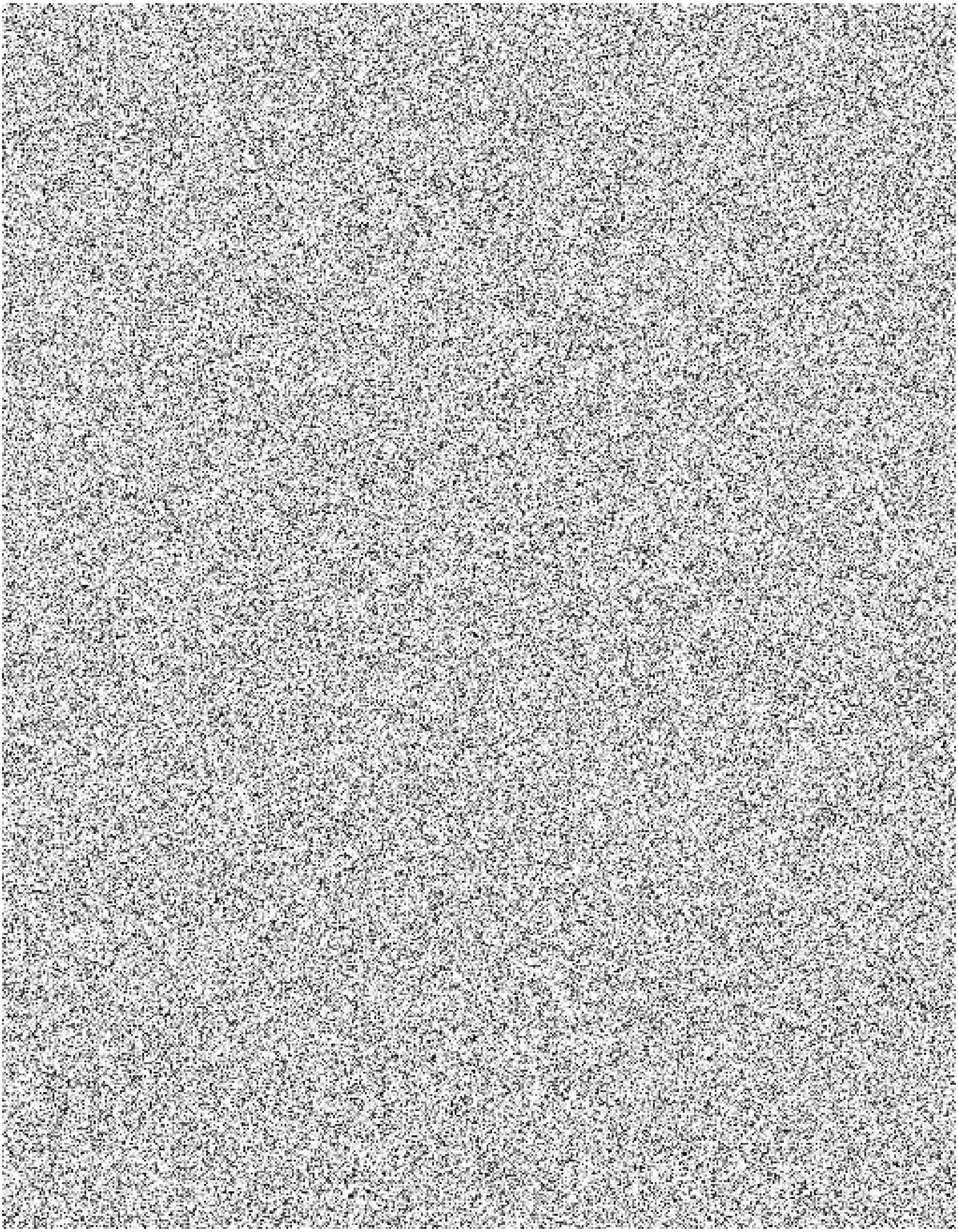

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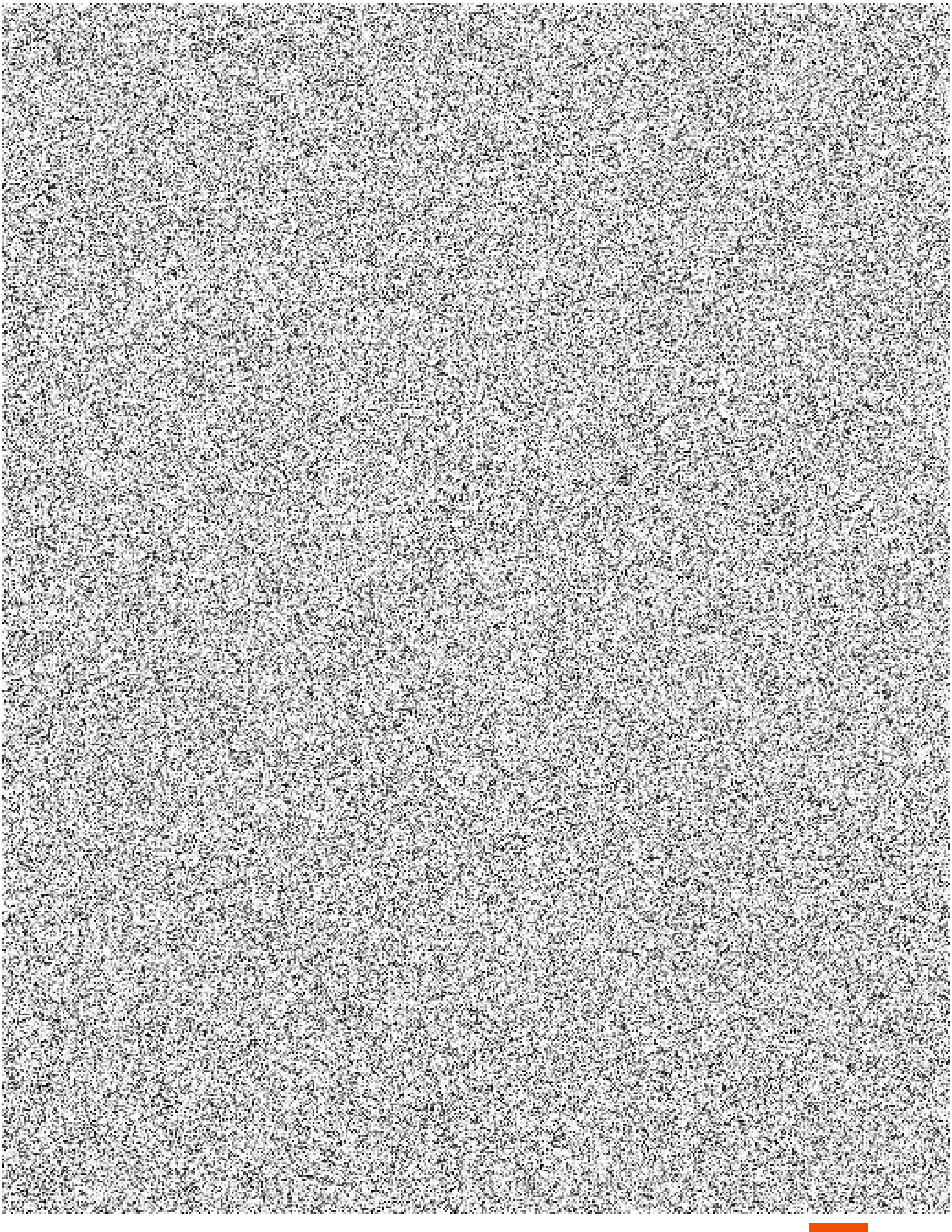

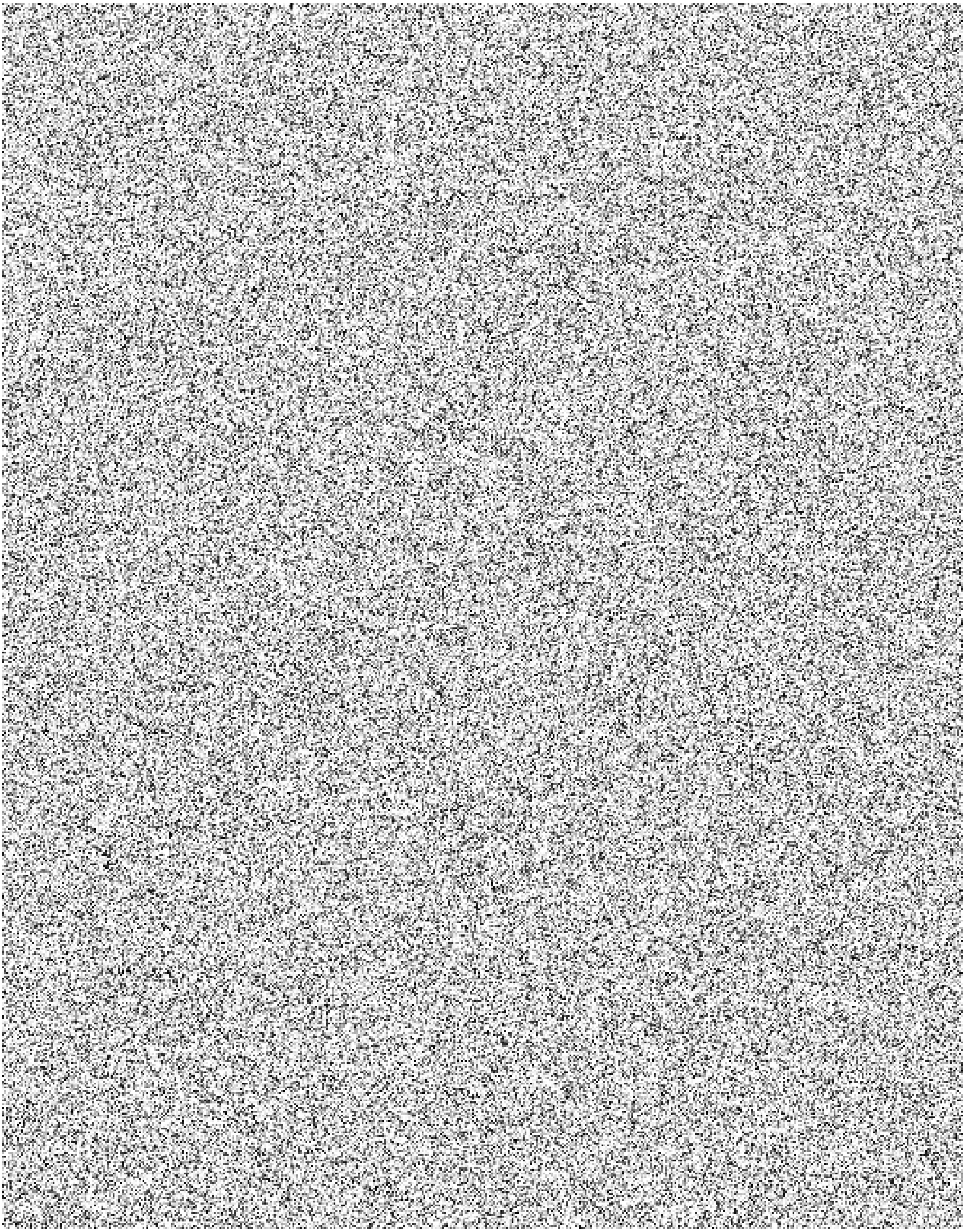

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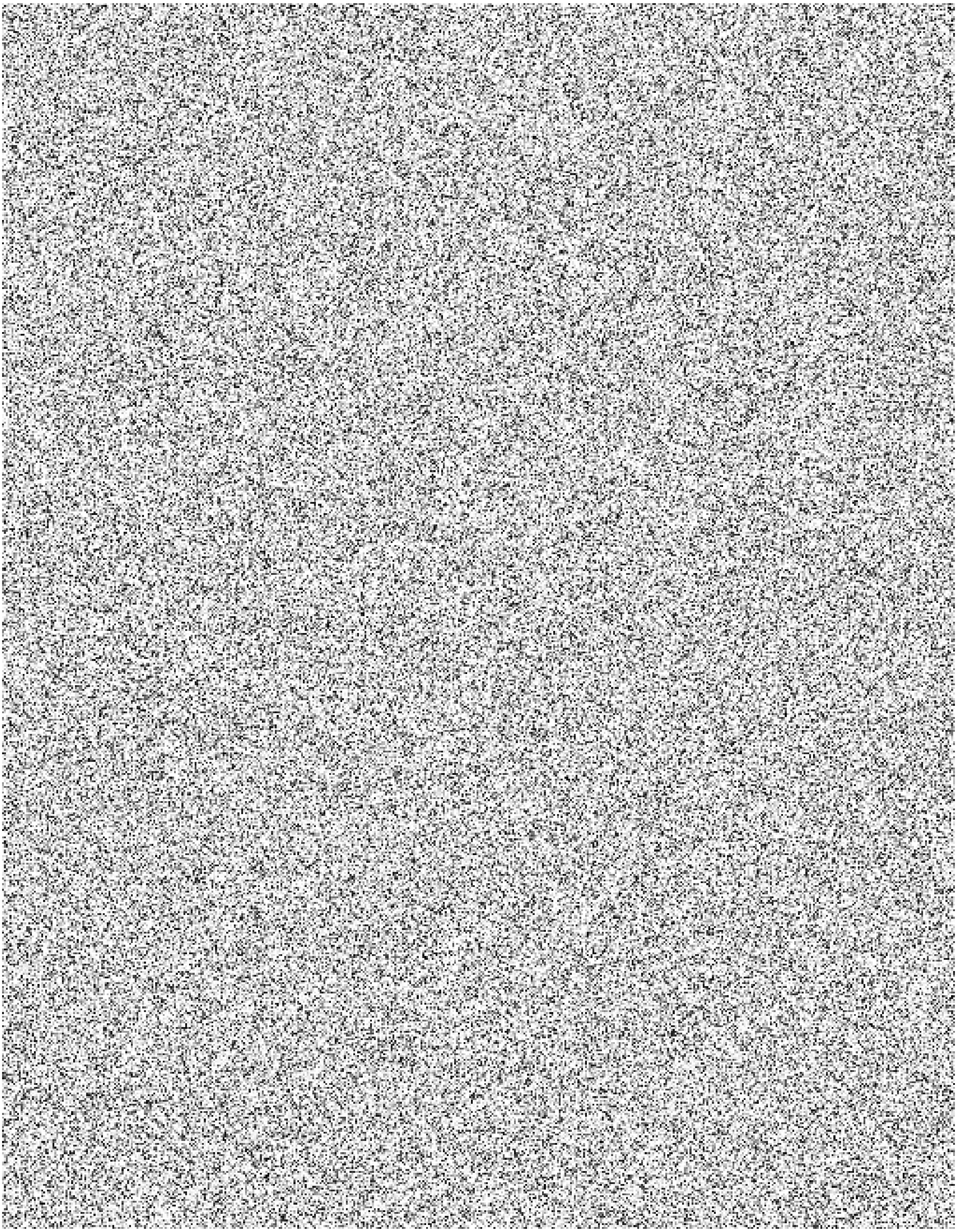

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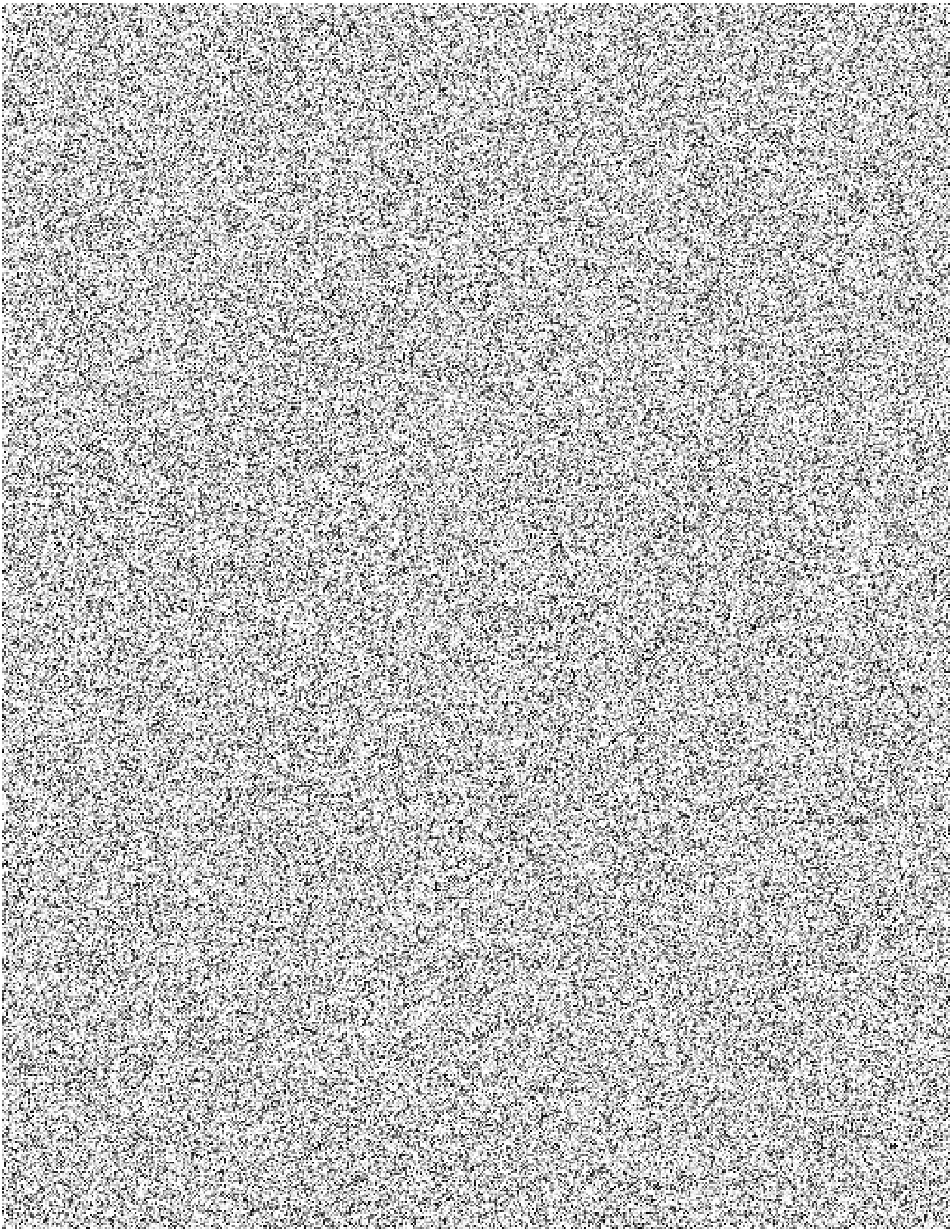

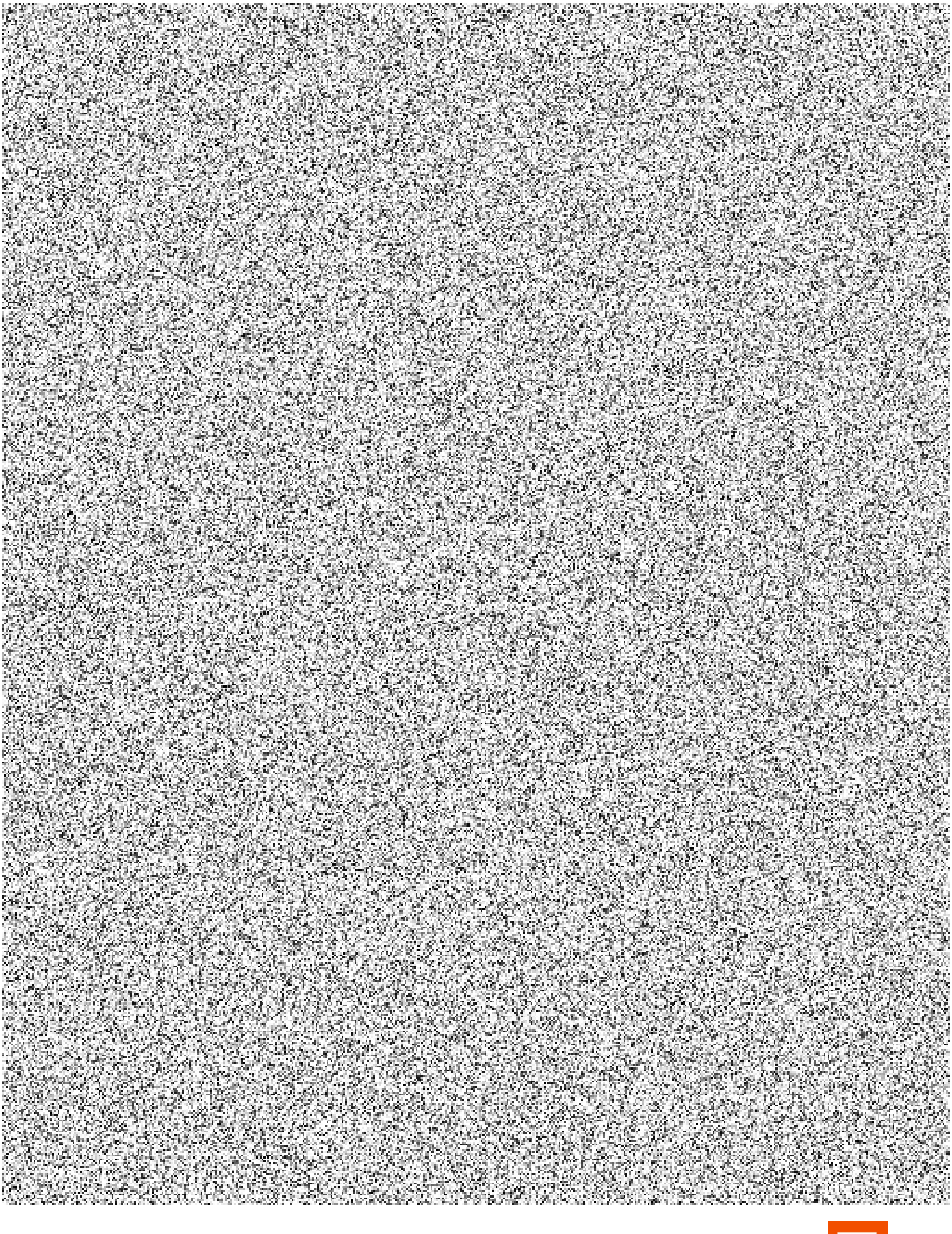

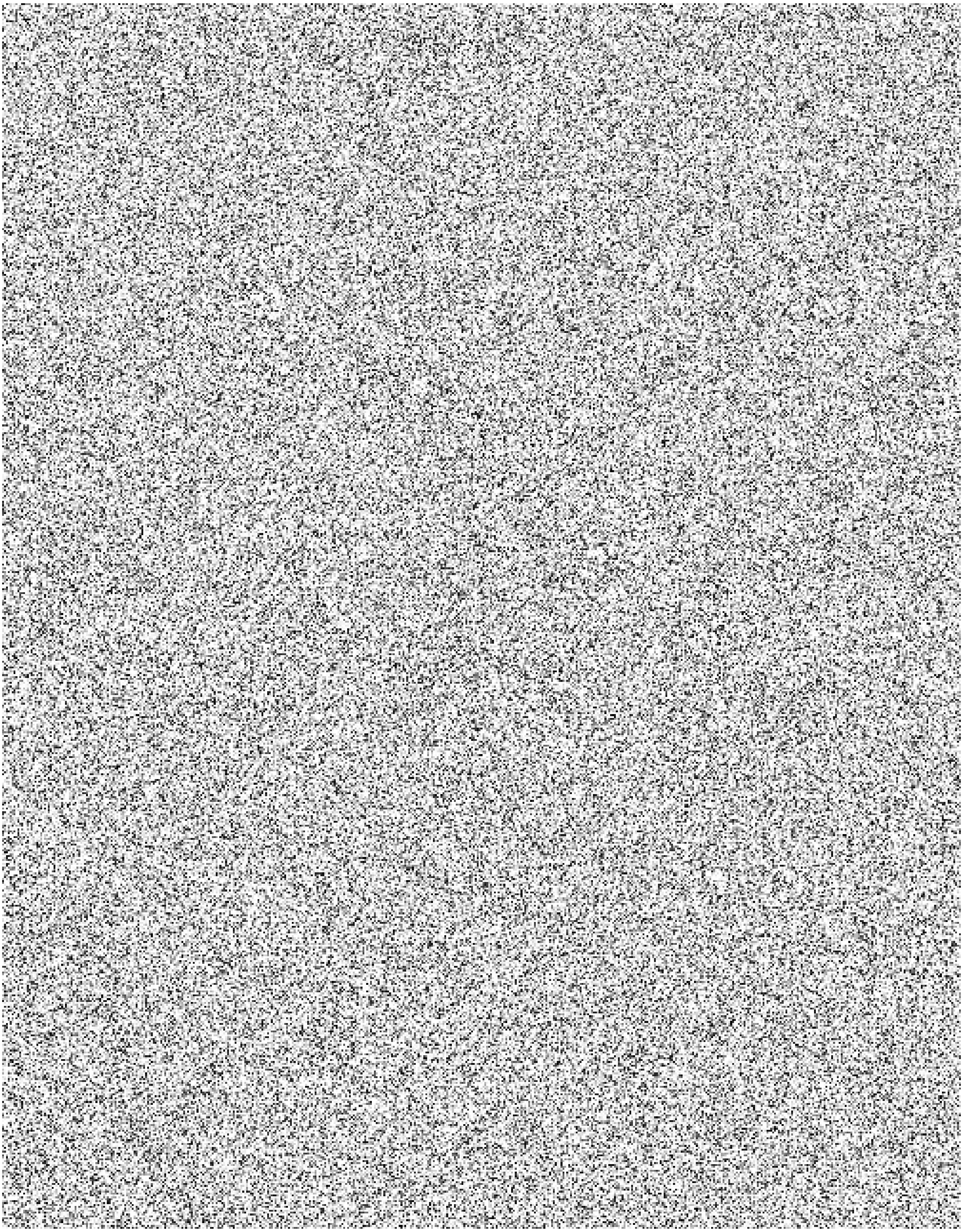

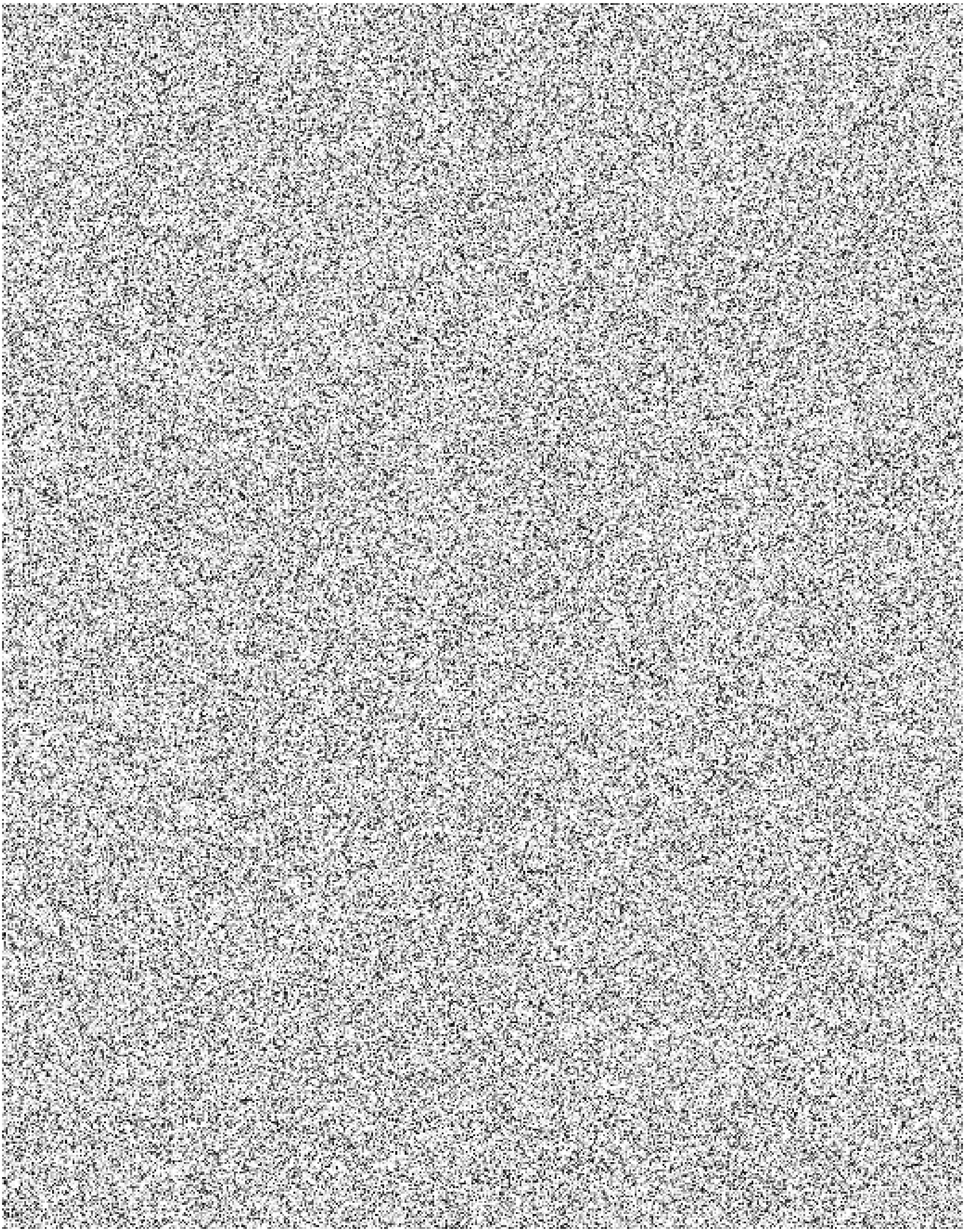

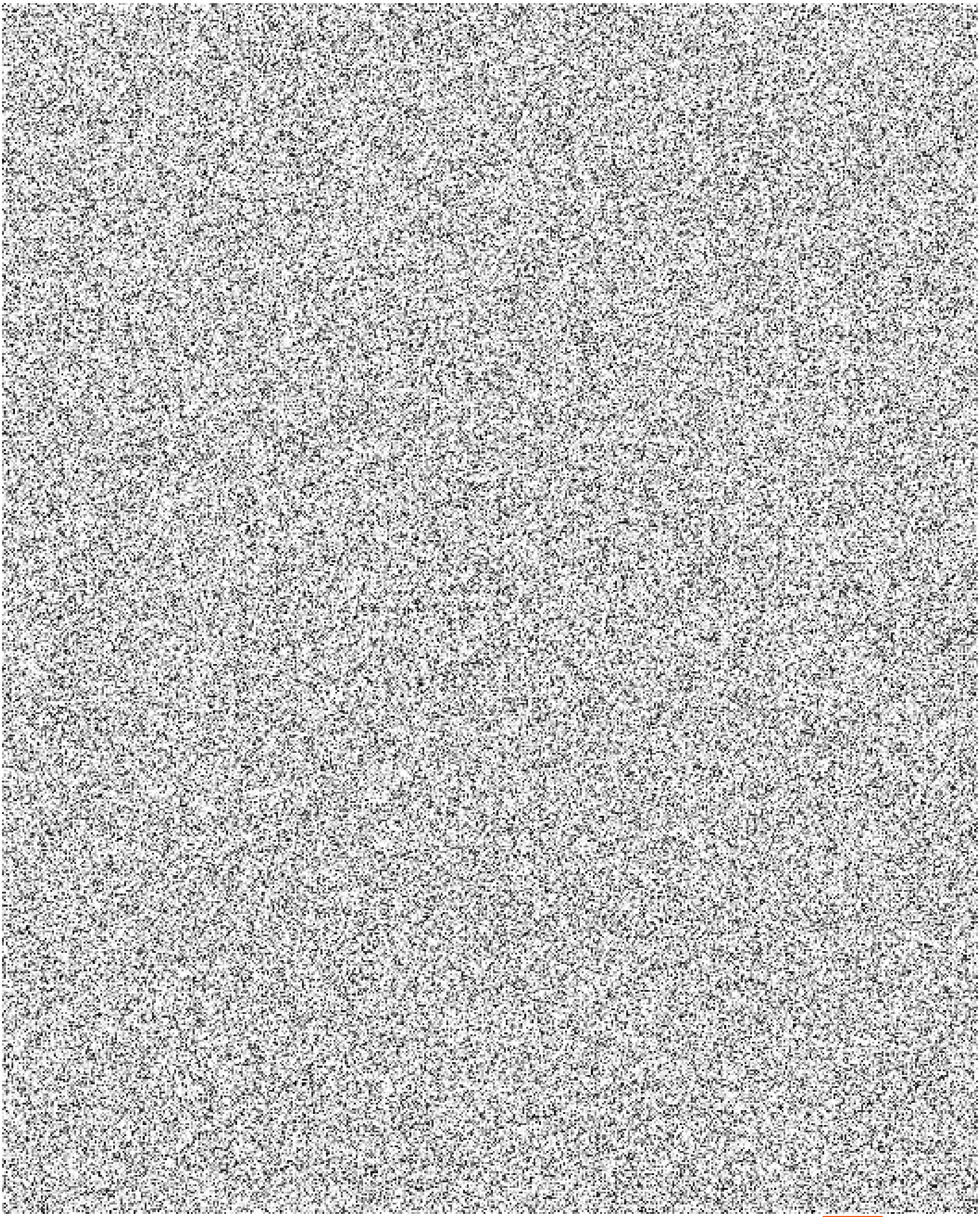

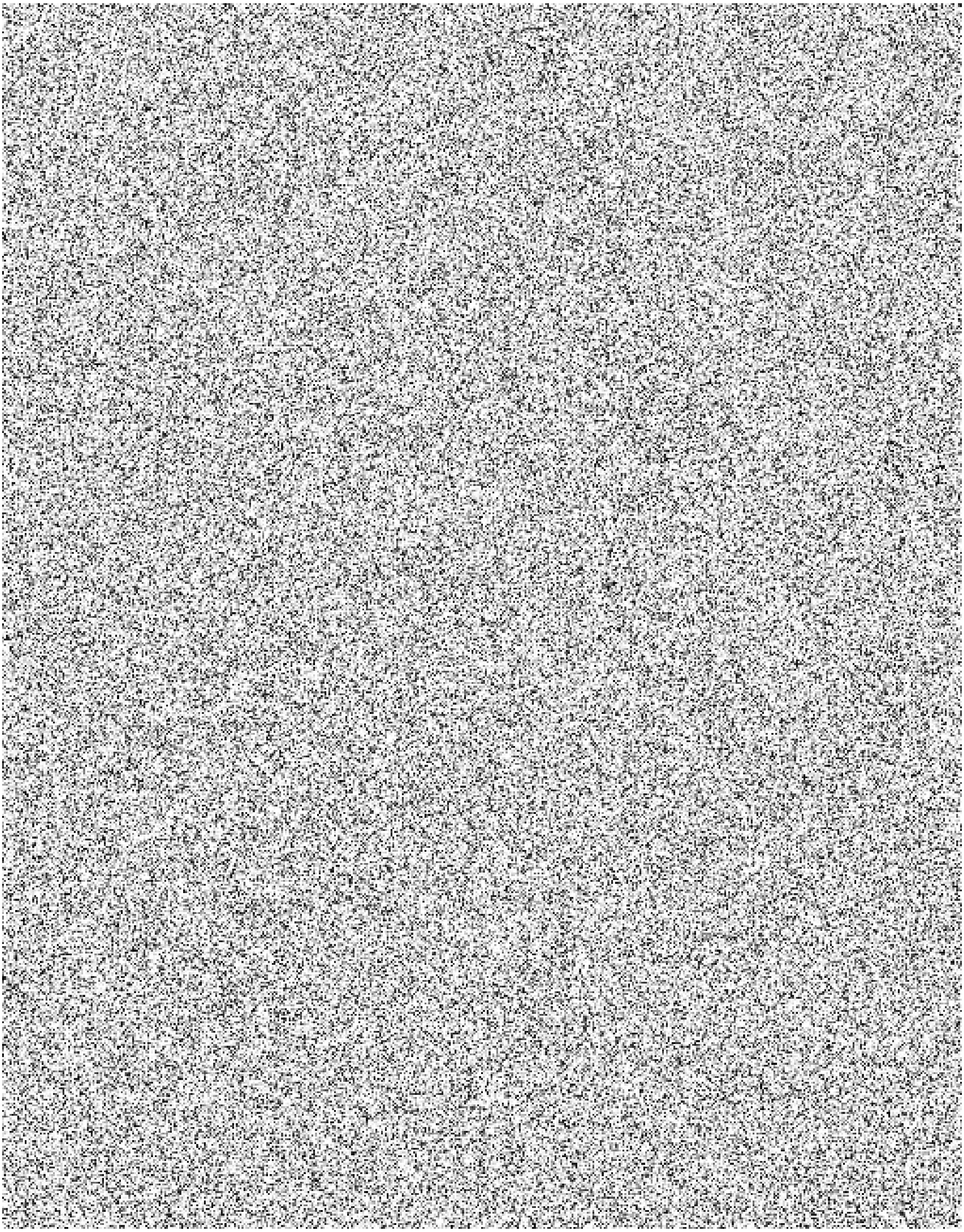

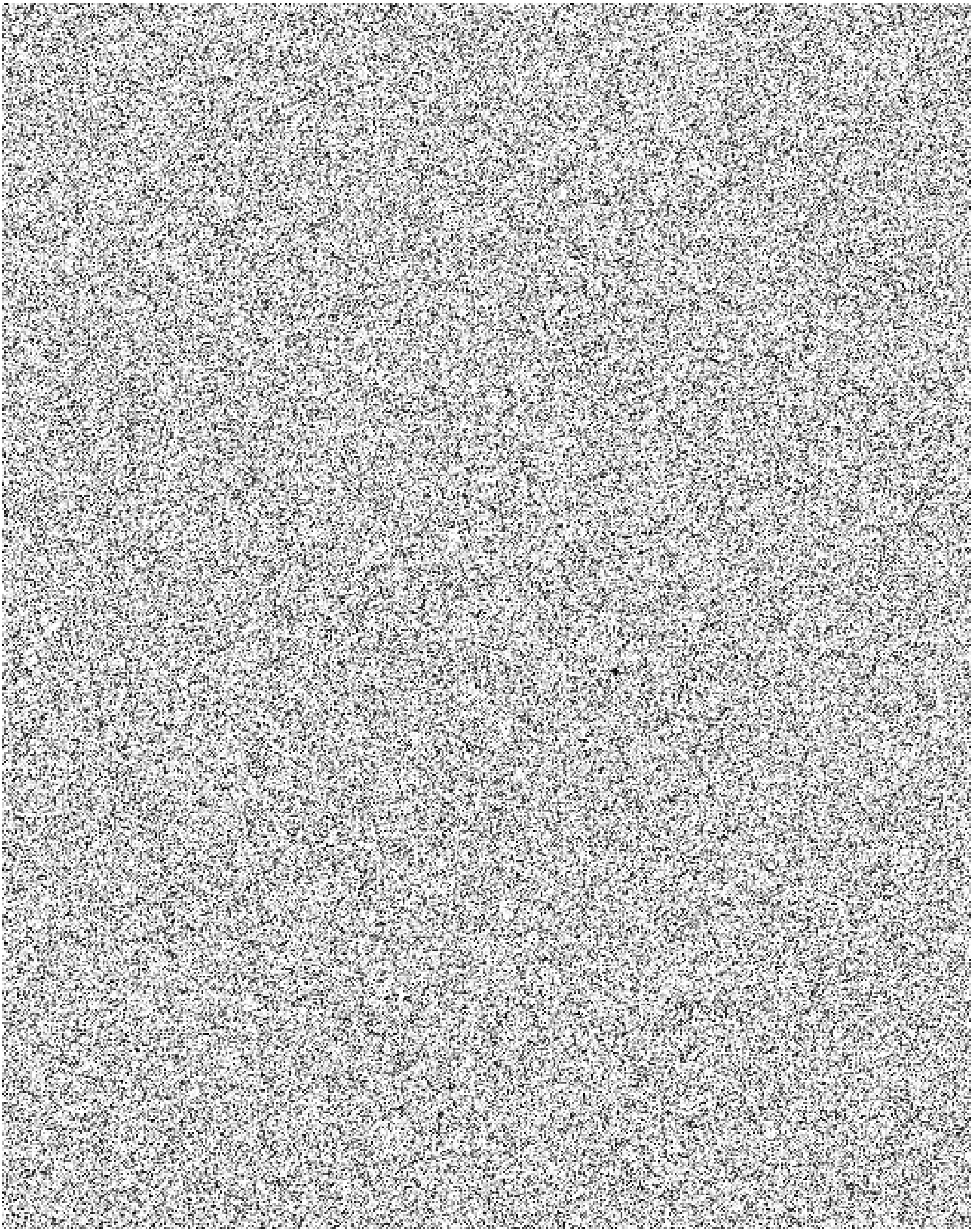

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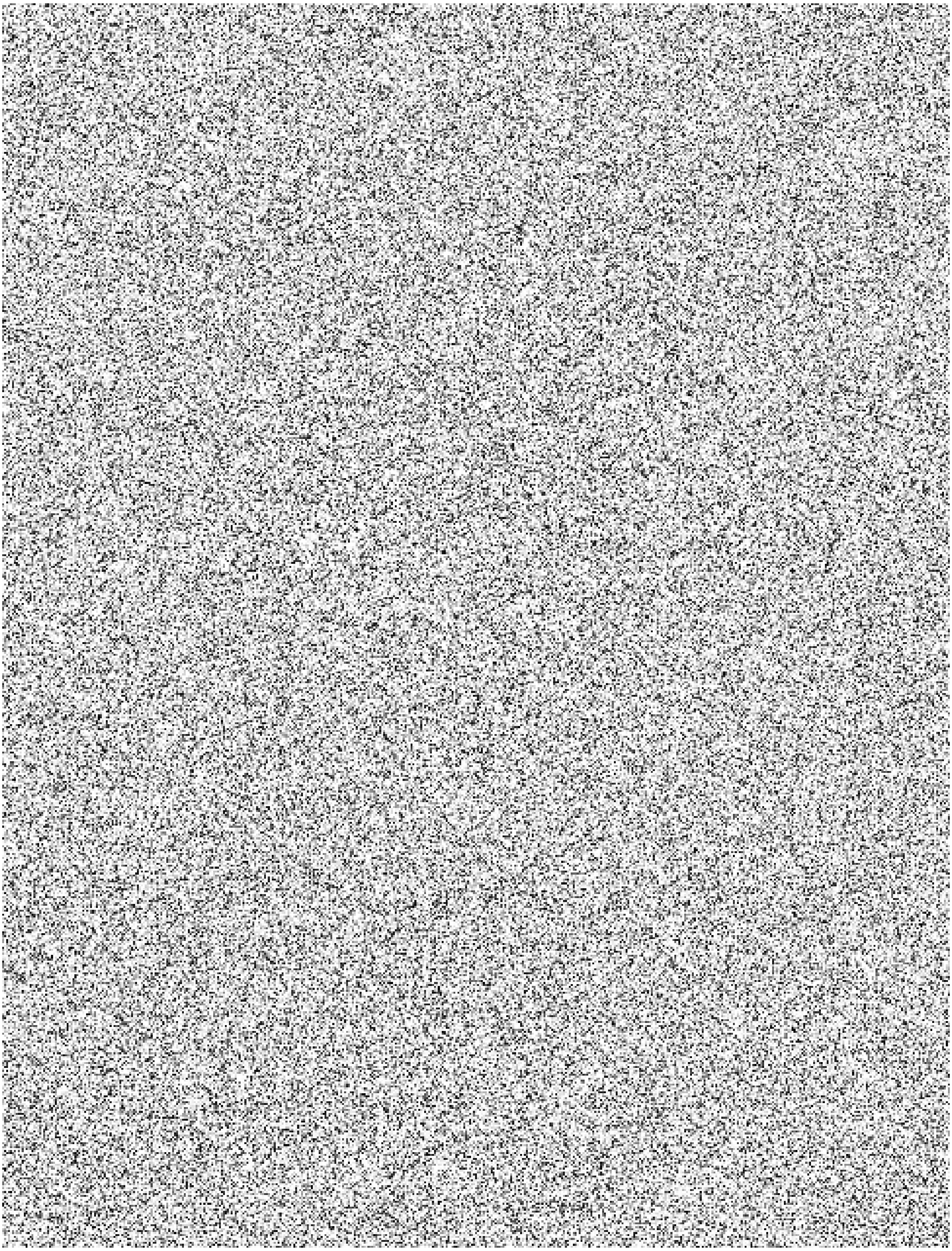

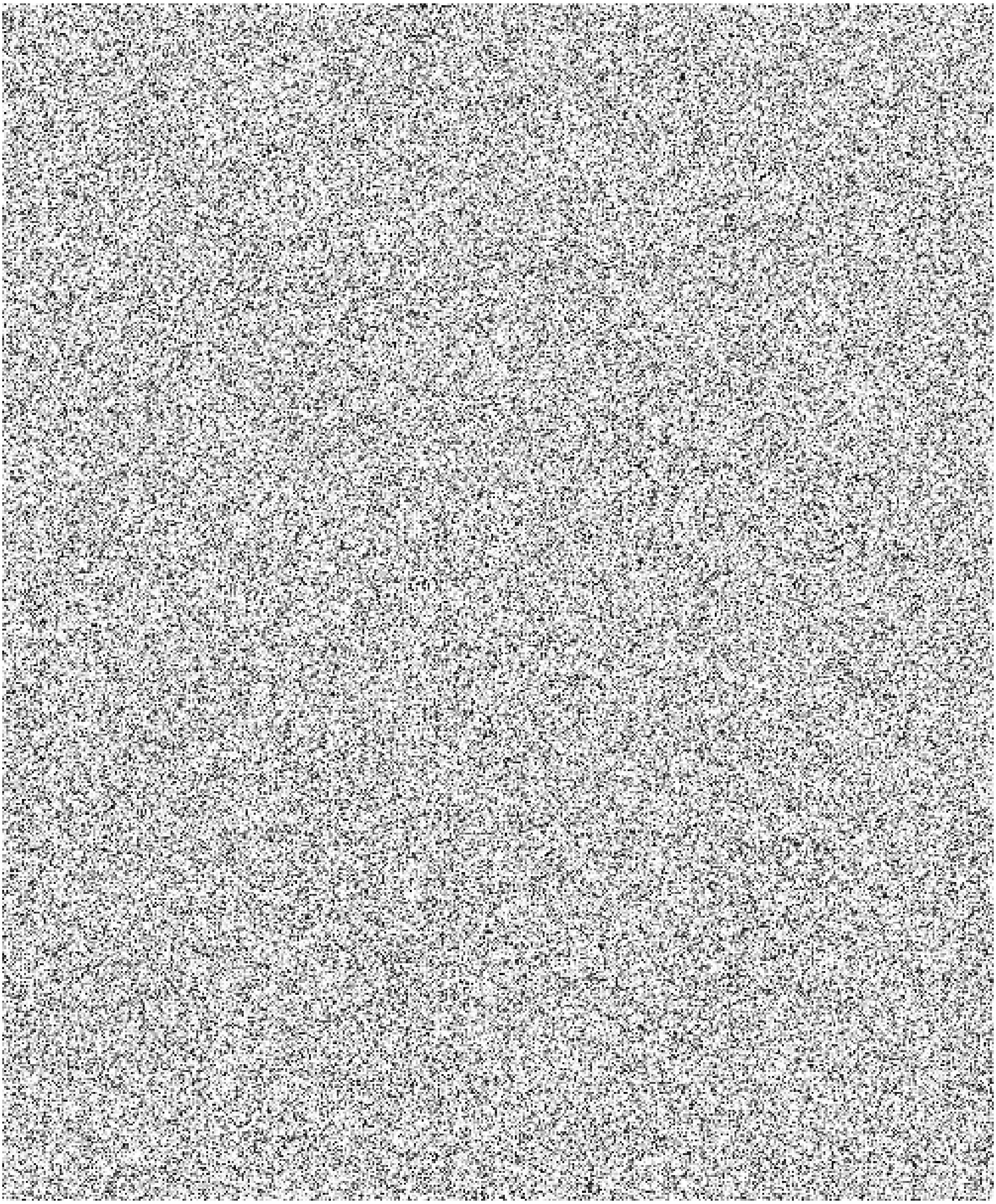

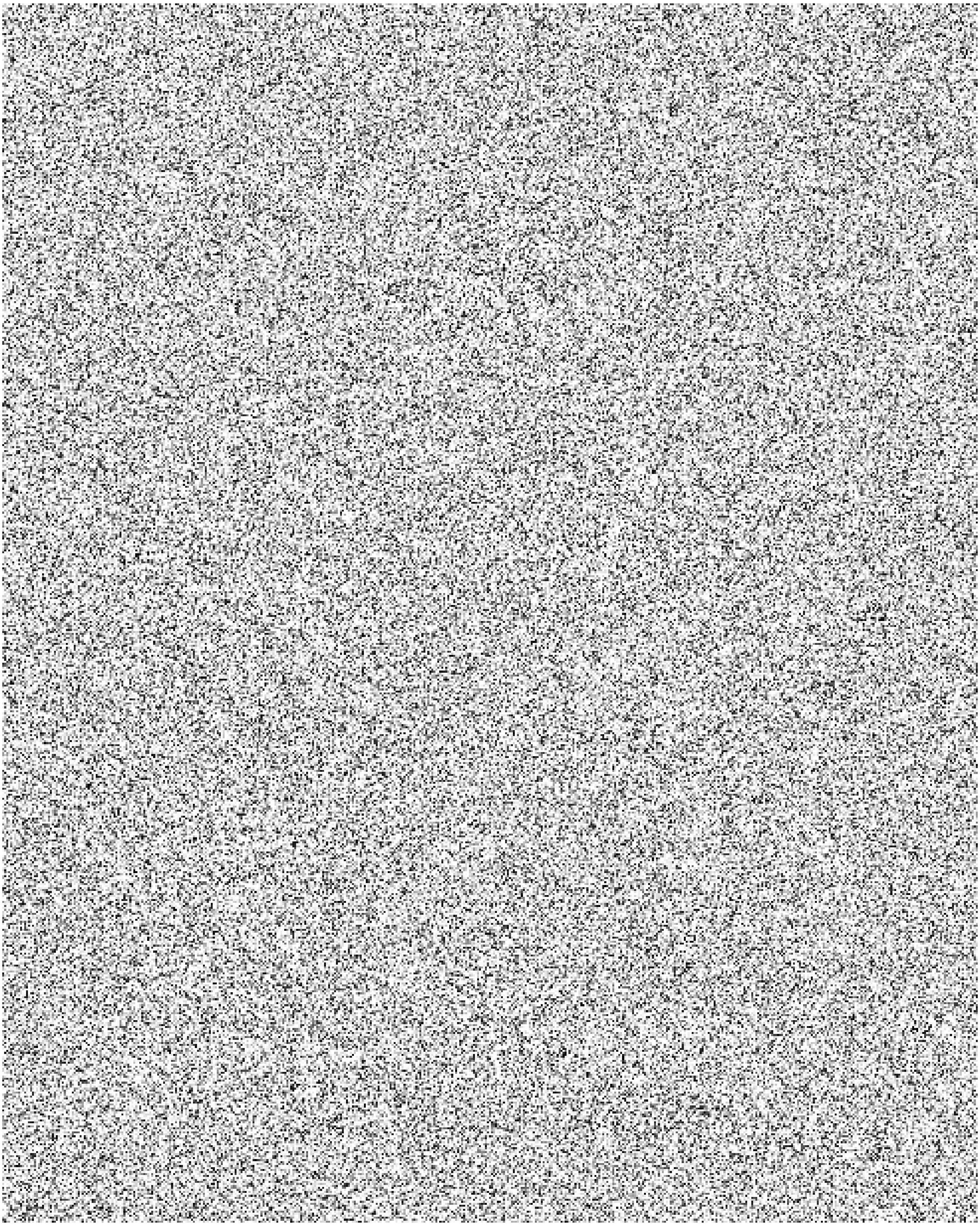

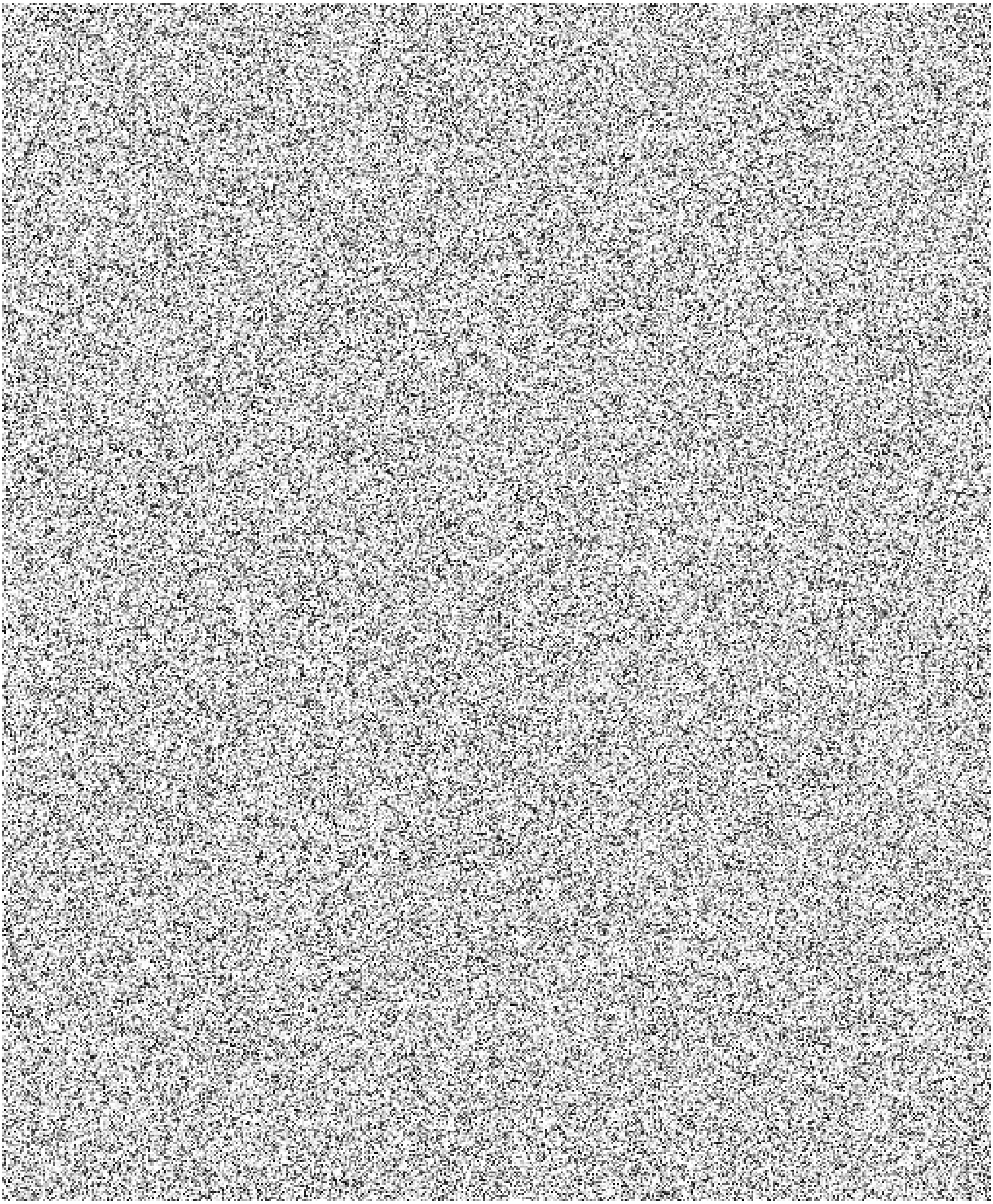

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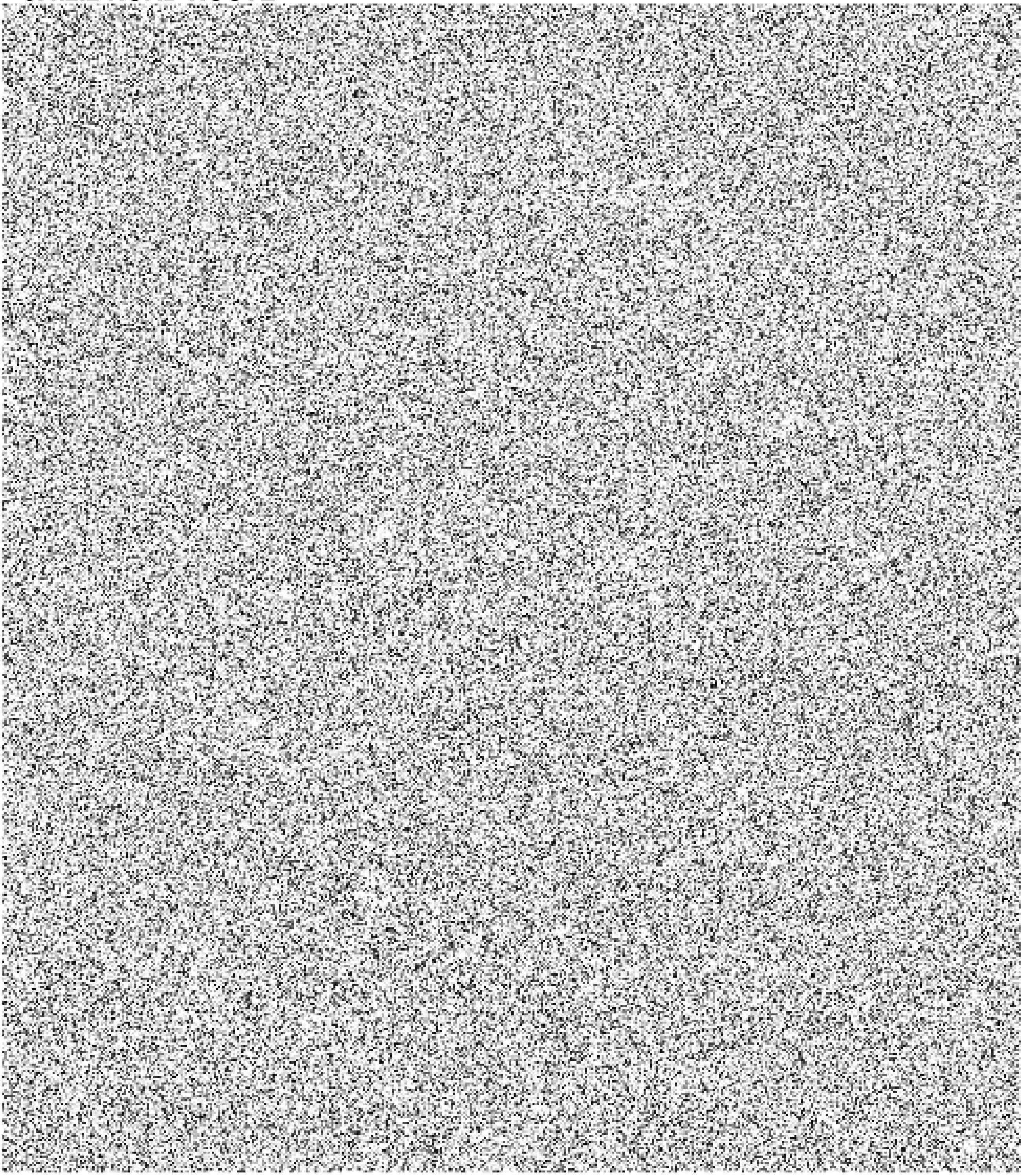

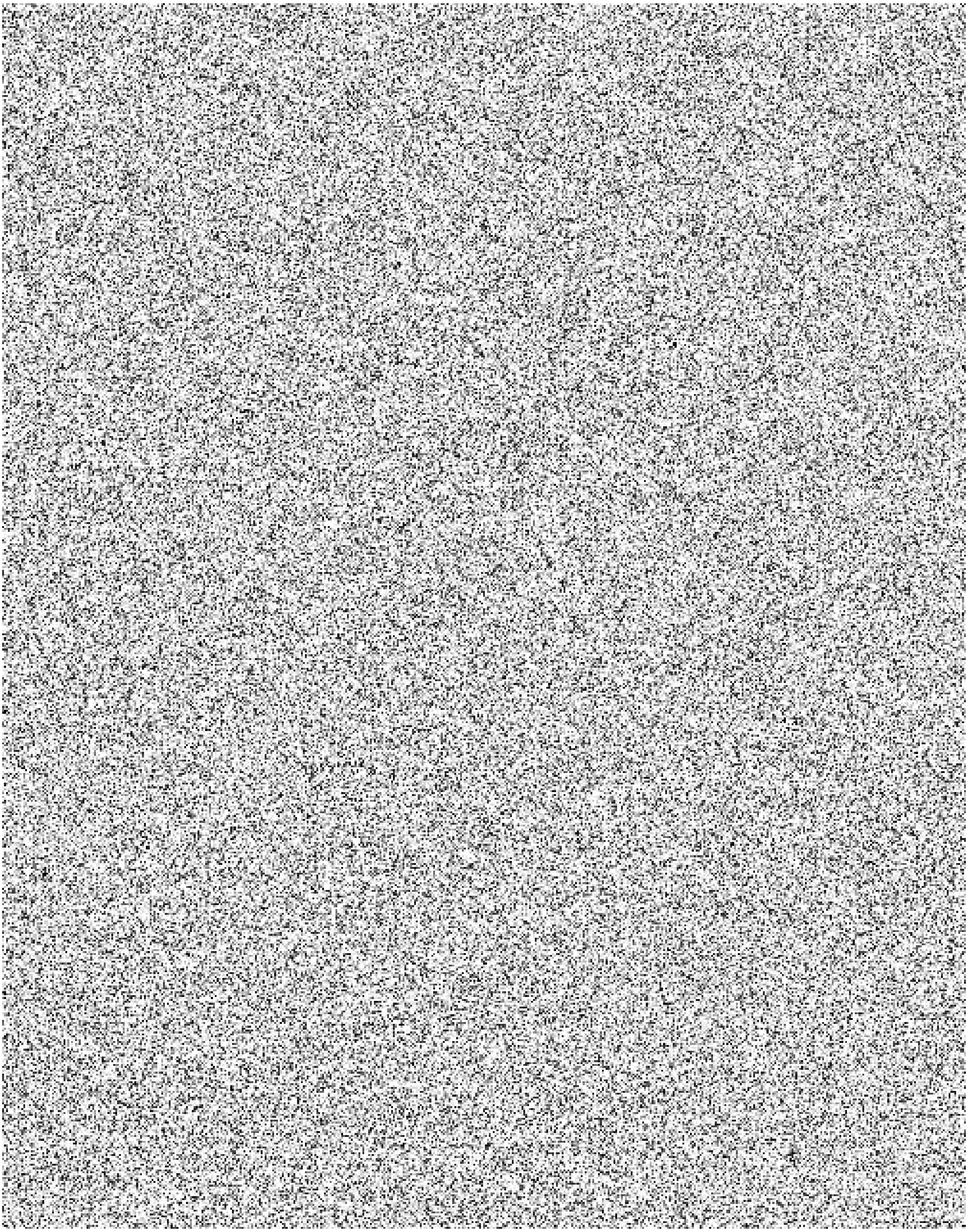

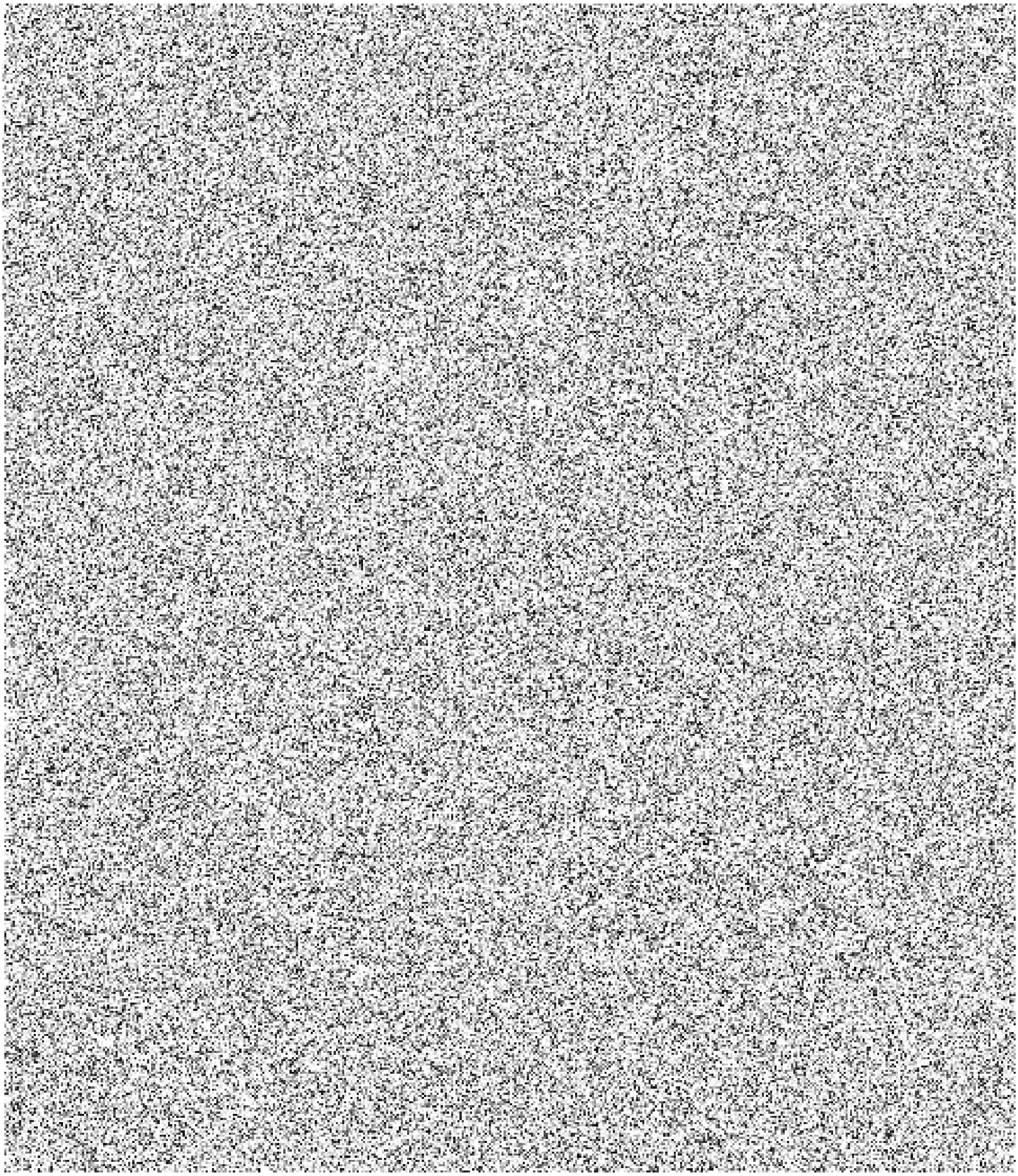

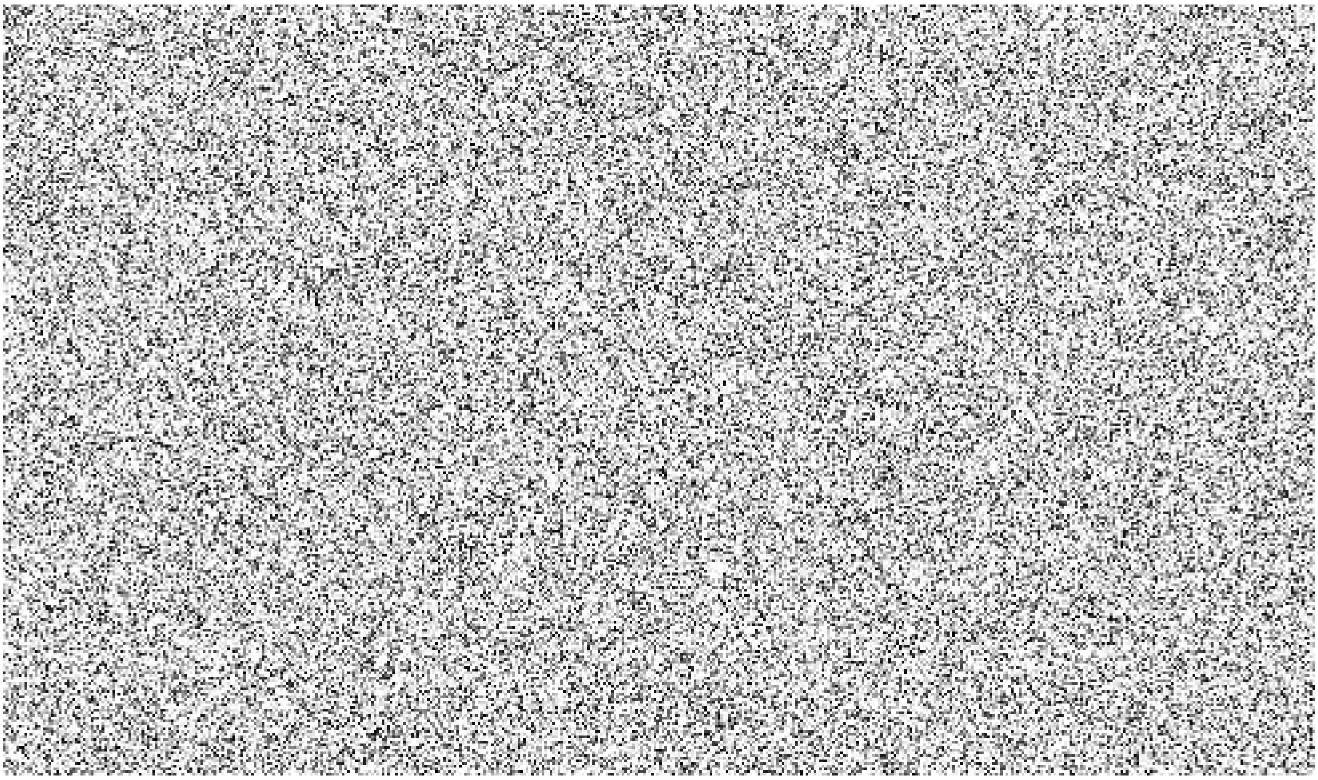

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