

MGM 1440.1
BASELINE-4

EFFECTIVE DATE: December 20, 2012

MARSHALL GUIDANCE MANUAL

IS01

GUIDANCE FOR VITAL RECORDS MANAGEMENT

With Change 4 (2/23/17)

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DOCUMENT HISTORY LOG

| Status (Baseline/ Revision/ Revalidation/ Change/ Canceled) | Document Revision/ Change | Effective Date | Description |
|--|---------------------------------|-------------------|---|
| Baseline | | 12/20/2012 | Guidance to assist with identification, selection, protection and management of vital records. This MGM also helps respond to an internal audit finding with respect to vital records (NCR 1491). |
| Change | 1 | 5/29/13 | On 5/29/13, at the request of the OPRD, an administrative change was made to reflect expiration of MPR 1040.4 and replaced it with NPR 1040.1 and/or IMSC-Plan-COOP-001. Also removed references to MPR 1040.3 |
| Change | 2 | 2/10/2014 | On 2/10/14, at the request of the OPRD, administrative changes were made at: 1. Reordered the documents listed in purpose statement and added IMSC-Plan-COOP-001. 3.1, Added note concerning use of term "essential records" by FCD-1. Appendix B, Added IMSC to the list. Appendix C, Updated NPR 9660.1 title and deleted MPR 1600.1. |
| Change | 3 | 4/20/2016 | On 4/20/16, at the request of the OPRD, administrative changes were made to update "IMSC-Plan-COOP-001" to "MCP 1040.1" and update the title for "NPR 1441.1" throughout the document. Appendix B. Deleted "IMSC" and added "MCP" to the acronym list. Appendix C. Corrected title of NPR 1441.1 and added NRRS 1441.1 to the list of references. |
| Change | 4 | 2/23/2017 | On 2/23/17, at the request of the OPRD, administrative changes were made to the Document History Log first column header, added "None" at 4. Cancellation, added "Original signed by Patrick Scheuermann" at signature block, in Appendix C References - removed quotes from around titles, added paragraph numbers, and added title and URL to one citation. |

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1. PURPOSE

To provide guidance with identification, selection, protection and management of vital records in support of NPR 1040.1, NPR 1441.1, MCP 1040.1, and MPR 1440.2.

2. APPLICABILITY

2.1 This Marshall Guidance Manual (MGM) applies to Center personnel, programs, projects, and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. (“Contractors,” for purposes of this paragraph, include contractors, grantees, Cooperative Agreement recipients, Space Act Agreement partners, or other agreement parties.)

2.2 This MGM applies to the Michoud Assembly Facility (MAF).

2.3 This MGM applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The following terms also apply: “may” or “can” denote discretionary privilege or permission; “should” denotes a good practice and is recommended, but not required; “will” denotes expected outcome; and “are/is” denotes descriptive material.

2.4 This MGM applies the following: all document citations are assumed to be the latest version unless otherwise noted.

3. GUIDANCE (General)

3.1 Vital Records (sometimes known as “Vital Business Information”) are those records and information systems considered essential to the continuity of business in the event of an emergency or disaster. These are needed to meet operational responsibilities under national security emergencies or other disaster conditions or to protect the rights and interests of the Government and those affected by Government activities. Vital Records are essentially “one-of-a-kind” records that are necessary to survival or reconstruction of MSFC/MAF operations or facilities or to enable uninterrupted operation during an emergency.

NOTE: Beginning with its October 2012 revision, the Federal Continuity Directive (FCD) 1 began using the term “Essential Records” instead of “Vital Records.” FCD-1 considers the term “vital records” to describe a subset of essential records that only deal with birth, marriage, and death documents. This change in concept of the definition of vital records has not been widely implemented across records management disciplines and/or documents; therefore, “vital records” as used in this MGM and MPR1440.2 still refers to the full set of records as described in this section.

3.2 The terminology “Vital Records” should not be confused with other records management terms such as *official records*, *permanent records*, etc. Vital Records are the portion of all records, regardless of their formal retention requirements that require special protection against incidents and in disaster or emergency situations, to ensure their ongoing availability for Continuity of Operations. Typically, Vital Records are less than 7 percent of the total volume of

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records/information.

3.2.1 Vital information (vital records) is not just a disaster plan, or just the delegation of authority, or any other single document. Vital records are the sum total of all essential information **plus** all information documenting legal and financial rights. Vital records consist of all the copies of original information that could be needed in the event of an emergency and require special protection strategies such as backup of systems, or copying the information and dispersing it offsite.

3.2.2 Vital records contain information essential to:

3.2.2.1 Operate during an emergency.

3.2.2.2 Resume and/or continue business after an emergency.

3.2.2.3 Re-establish the legal, financial, and/or functional status of the Agency.

3.2.3 Vital records can be found in any format and on any medium.

3.3 Vital Records fall into two basic categories: Emergency Operating Records (Type I) and Legal and Financial Rights Records (Type II).

3.3.1 Emergency Operating Records are those records vital to carrying out the essential functions of Centers and NASA for the duration of the emergency situation and are typically needed within the first 12 to 48 hours after an emergency or disaster event. These records include those covering the mobilization and protection of material and personnel resources, the continuation of essential services, and the preservation of critical scientific research and development (R&D) and technological systems including the Mission Essential Infrastructure (MEI) and Mission Essential Operation (MEO).

3.3.2 Legal and Financial Rights Records, also known as Rights and Interest Records, are those essential to the preservation of the legal rights and interests of individuals in cases where the Center is the statutory office of record, or where NASA records are the indispensable and exclusive source from which individuals may secure or preserve their rights and interests. These records may not be needed immediately after a disaster/emergency, but are required to be protected nonetheless. These records include such groups as personnel retirement records, payroll records, insurance records, valuable research records and ideas, formal agreements with partners, and potentially patentable materials submitted to NASA by partners and citizens.

3.4 The identification, preservation, and protection of Vital Records require special measures in addition to the normal requirements for records management and retention including special protection strategies such as backup of systems, or copying the information and dispersing it offsite.

3.5 Regulatory requirements governing Vital Records are provided in 36 C.F.R. Part 1223 and FCD-1. MSFC Vital Records Program requirements are documented in MPR 1440.2 and MCP

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1040.1.

3.6 Vital Records support and are an integral part of the MSFC COOP planning program. (Reference FCD-1, NPR 1040.1 and MCP 1040.1.)

3.7 For guidance on specific aspects of the Vital Records Program, see the following Chapters:

CHAPTER 1. Guidance for Vital Records Selection

CHAPTER 2. Examples of Potential Vital Records

CHAPTER 3. Guidance on Risk Assessments for Vital Records

CHAPTER 4. Guidance on Protection and Preservation of Vital Records

CHAPTER 5. Guidance on Disaster Recovery

4. CANCELLATION

None.

Original signed by

Patrick E. Scheuermann
Director

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CHAPTER 1. GUIDANCE FOR VITAL RECORDS SELECTION

CH1.1 Introductory Note

When implementing a Vital Records program, a key thing to remember is that you cannot save all the records but, by performing certain important steps, you can:

CH1.1.1 Protect some records against disaster;

CH1.1.2 Lessen the damage caused by a disaster; and,

CH1.1.3 Identify those records which merit restoration, if they are damaged.

CH1.2 Identifying Vital Records

Identifying Vital Records is one of the most critical tasks for records management personnel. It needs to be done immediately so that arrangements can be made for the protection of the records prior to a disaster or emergency situation. The general guidance listed in the steps below may be helpful in identifying the records that may be necessary to continue business during an emergency and resume functions after a disaster.

CH1.2.1 **Step 1:** Identify the key functions or responsibilities of your office or organization based on the following criteria:

CH1.2.1.1 Operational - Any functions which are vital to the operation and continuation of your office or MSFC as a whole.

CH1.2.1.2 Legal - Any functions which provide proof of MSFC's legal stand on an issue or contain information about its personnel or persons/entities doing business with the government.

CH1.2.1.3 Emergency - Any functions which are needed during an emergency, e.g., telecommunications.

CH1.2.1.4 Fiscal - Any functions which support MSFC's financial standings, e.g., accounts receivable or general ledgers.

Note: Your organization's existing records inventory and the organization's functional mission statement and organizational chart may prove extremely valuable tools in the identification of critical or key functions.

CH1.2.2 **Step 2:** Once critical responsibilities and functions are identified, ask and use the following questions and key considerations to help you identify your Vital Records:

CH1.2.1.1 What function will your organization or office be unable to do if records are destroyed (i.e., can the work be carried out or continued if a record is gone)?

CH1.2.1.2 How critical is the inability to perform the function?

CH1.2.1.3 What will be the consequences to NASA/MSFC if the records are lost?

CH1.2.1.4 Will any client or employee suffer loss of rights or be severely inconvenienced if the records are lost?

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CH1.2.1.5 If the records have to be reconstructed, what will the cost be in terms of time, money and labor?

CH1.2.1.6 Will the information in the records have to be reconstructed or retrieved in a matter of hours, days, or weeks?

CH1.2.1.7 Can these records be replaced from another source?

CH1.2.1.8 Are the records on paper, computer, disk, microfilm?

CH1.2.1.9 Are the records duplicated somewhere in a different format?

CH1.2.1.10 Is the format easily accessible after an emergency?

CH1.2.1.11 Uniqueness of the record – is it one-of-a-kind?

CH1.2.1.12 Relationship of one record to another – are records critical to each other?

CH1.2.1.13 Is the type of information needed during and following an emergency?

CH1.2.3 Records should be classified as Vital Records only if they fall within the criteria provided for Emergency Operating Records and/or for Legal and Financial Rights Records and are absolutely essential to continuity or resumption of business. While inconvenient and time consuming, many records can be reconstructed and/or business operations can be resumed without the actual records. Some records will be vital for purposes of performing the most basic and essential functions during an emergency situation, others will be vital for the full resumption of activities.

CH1.2.4 Caution should be exercised in designating records as vital in a Vital Records inventory. Records Management studies suggest that less than 7 percent of records actually may be Vital Records. Only those records series or electronic information systems (or portions of them) most critical to emergency operations or the preservation of legal or financial rights should be so designated. Difficult and judicious decisions are required.

CH1.2.5 For purposes of implementation, major emphasis should be placed first on identifying those records that have to be preserved and moved immediately with and/or be accessible to the Emergency Management Team at alternate operating locations when situations warrant evacuation of the Center. Secondly, preservation and protection of the records not necessarily needed during the emergency but necessary to resumption of activities should be addressed. Thirdly, general risks and protective measures will be assessed.

CH1.2.6 Chapter 2 provides examples of the types of records that might be considered as Vital for inclusion in a Vital Records Inventory.

CH1.2.7 The vital records lists should be reviewed in the conduct of inventory activities. The current list should be updated as needed to reflect any additional records identified for inclusion in the COOP Plan.

CH1.2.8 The process for identifying and protecting Vital Records is depicted in Figure 1.

Identifying vital records

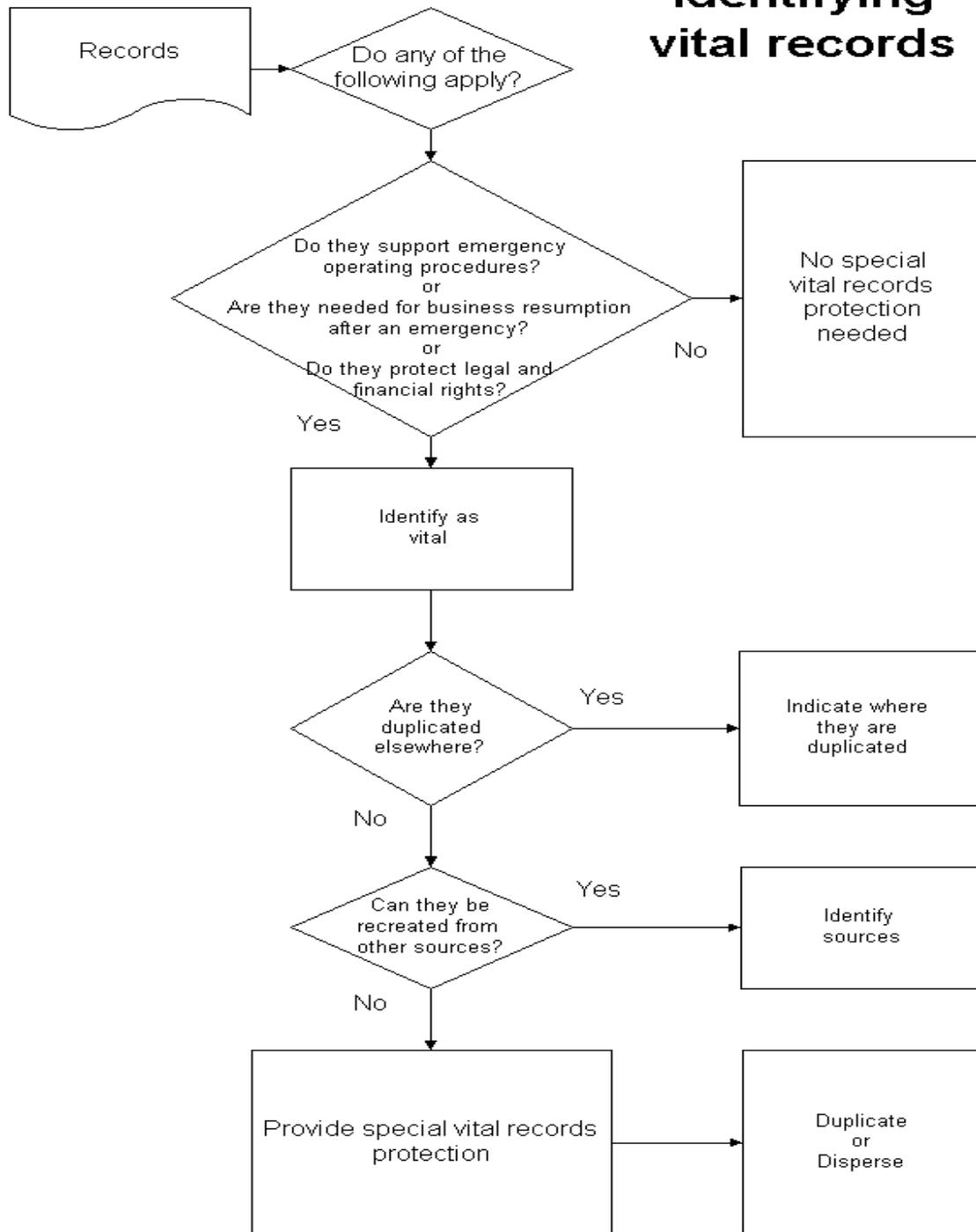


Figure 1 - Vital Records Selection Process Flow

Note: Reference MPR 1440.2 and MCP 1040.1, for requirements on the vital records inventory.

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CHAPTER 2. EXAMPLES OF POTENTIAL VITAL RECORDS

The following lists, compiled from several sources including several NASA centers and NARA, are provided for example purposes only of the types of records that might be considered as vital for inclusion in a Vital Records Inventory. The lists are not all-inclusive. It should be noted that FCD-1 requires that Vital Records Inventories, Orders of Succession and Delegations of Authority be included on the Vital Records Inventory.

CH2.1 Emergency Operating Records

CH2.1.1 Emergency operating records are comprised of records necessary for the mobilization and protection of material and manpower resources, services, and systems; the maintenance of public health, safety, and order; and the conduct of essential civil defense activities. Examples include:

- Emergency and Disaster Recovery Plans – These exist so you know how to respond to emergency or disaster conditions
- Emergency/Disaster Directives, Procedures, or other authorizing issuances
- Emergency communications plans, procedures, operating instructions, and routing
- Orders of succession
- Delegations of authority – These are meant to identify lines of succession and those in charge, along with staffing assignments, at the point that the emergency occurs
- Emergency staffing assignments, including lists of personnel, along with their addresses and telephone numbers (and comparable data for alternates), assigned to the emergency operations center (EOC) or other emergency duties or authorized access to damaged facilities to assess the extent of damage
- EOC access credentials and classified or restricted access container documentation (as required)
- Security clearance lists
- Telephone directories (MSFC, Local, NASA Headquarters)
- Building plans, and building systems operations manuals for all Agency facilities – These are designed for emergency responders who need to enter a structure affected by the disaster
- Vital records inventories
- Equipment inventories for all Agency facilities
- File plans describing the records series and electronic information systems maintained at official filing stations for all Agency facilities
- Copies of Agency program records (whatever the media) needed to carry out continuing critical functions
- System documentation for any electronic information systems designated as emergency operating records – This includes code books, layouts, and manuals that tell you how to restore files from backup tapes, and how to resume computer operations at an alternate site
- Records of amounts and locations of emergency supplies and equipment, and lists of emergency sources of supplies necessary to operate and administer the emergency site
- Procurement data such as emergency procurement regulations and contracting instructions, contractor and source lists, contract forms, vendor listings, commodity catalogues, defense materials allotment reports, and current contract files that are essential to emergency operations
- Emergency operating information that is unique to your organization.

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CH2.1.2 Scientific and technological data which would be required to meet priority needs of the programs of the Federal Government in a national defense emergency, including essential R&D information related to:

CH2.1.2.1 Aeronautical and space programs in support of the military effort, resource mobilization, or civil preparedness.

CH2.1.2.2 Operation of NASA's communication, tracking and data acquisition and processing capabilities as a component of the National Communications System.

CH2.1.2.3 Operation of satellite and aircraft systems capable of providing information pertaining to the nation's resources, environment, civil defense and military objectives.

CH2.1.3 Any Rights and Interests (Legal and Technical) Records considered critical for continued performance of essential functions should be included in the Emergency Operating Records and maintained at the appropriate alternate continuity facility.

CH2.2 Legal and Financial Rights Records (Reference also NPR 9660.1, Appendix B)

Legal and Financial Rights (also known as Rights and Interests Records) are records that are essential for the preservation of legal rights and interests of individual citizens and the Federal Government such as personnel-related records as well as records documenting financial agreements with external entities. Examples include:

- Accounts Receivable files
- Contracting and Acquisition Files
- Official Personnel Records (Data on personnel earnings, service, leave, qualifications, retirement, beneficiaries, or position classifications, etc.)
- Social Security, Payroll, Retirement and Insurance records
- Property Management and Inventory records
- List of Warranted Contracting Officers
- Invention Disclosures & Patents
- Agreements
- Information Technology (IT) Systems Documentation, Licenses, and Support Contacts
- Financial management records and reports considered to be essential for the preservation and protection of the rights of employees and others
- Records supporting legal rights maintained by NASA as the statutory office of record, patents and patent applications, guaranteed loans, and patent waiver agreements with contractors
- NASA budget estimates for the current and next fiscal year.

CH2.2.1 Data, critical design specifications, and essential drawings of spacecraft, launch vehicles, control systems, important test facilities, and such systems which would be vital to NASA's furnishing direct assistance in support of the military effort in an emergency.

CH2.2.2 Brief summaries of work in progress on current R&D projects.

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CHAPTER 3. GUIDANCE ON RISK ASSESSMENTS FOR VITAL RECORDS

CH3.1 Background

CH3.1.1 Once Vital Records are identified, documented risk assessments (reference FCD-1 Annex I) are required in order to determine the proper protection methods for the Vital Records. Risk assessments identify the potential hazards a record faces as well as how the records can be damaged by those hazards. Hazards can range from a natural disaster, spilled coffee, computer crashes or to unlawful access.

CH3.1.2 Of necessity, risk assessments and evaluations are on-going efforts in the identification of records in all locations and the risk hazard potential for the location. Not all records require preservation and protection in the same manner. Nor is it feasible in all cases to provide for the immediate removal/movement of records to safe locations when an incident occurs or in an impending situation such as a tornado. The economical and feasible protection of Vital Records needs to be based on the level of risk perceived and derived from analysis. In almost all cases, the best method of protection would be to provide for continuing duplicate back up of records in alternate locations or media.

CH3.1.3 While risk assessments are largely an exercise in probability, since we can never know what is going to happen, a risk assessment narrows the scope of protection and preservation methods and allows for some early disaster preparedness. A risk assessment consists of four basic steps:

CH3.1.3.1 Identifying the risks an office may encounter;

CH3.1.3.2 Determining the level of impact a risk will have;

CH3.1.3.3 Calculating the probability of a given risk happening; and,

CH3.1.3.4 Calculating the overall risk factor.

CH3.2 Step 1: Identifying the Risks an Office May Encounter

The first step is to identify the five or six most important risks to a particular office or function. Not all areas are likely to face the same risks, although fire and water damage are the most common. For example, an office that deals in research may have the added risk of sabotage, whereas an office dealing strictly with technology and computers would have a far greater risk of losing information in a power outage. The following table (CH3-1) depicts three categories of disasters.

Table CH3-1- Records Risk Assessment/Categories of Disasters

| Natural Disasters | Technical Disasters | Human Disasters |
|---------------------|--------------------------------------|---|
| Flooding | Power Failure | Data entry error |
| Fire | HVAC Failure | Hazardous material |
| Earthquake | Malfunction/Failure of CPU | Unauthorized access |
| Wind/Tornado Damage | Failure of system software | Chemical spill |
| Snow/Ice Storm | Failure of application software | Robbery/theft/burglary |
| Volcanic Eruption | Electromagnetic interference | Bomb Threats |
| Epidemic | Explosion | Strikes/picketing |
| Vermin/Insects | Telecommunications failure | Civil disorder |
| Hurricane | Gas leaks | Vandalism |
| Tsunami/Tidal Wave | Communications failure | Sabotage |
| | Loss of physical access to resources | Malicious damage or destruction of data |
| | Water leaks | Improper handling of sensitive data |
| | | War |

CH3.3 **Step 2: Determining the Level of Impact a Risk Will Have**

The second step is determining the level of impact each disaster might have on the functional area and its ability to continue or resume operations. Use the following rating scale (Table CH3-2) to put a numerical value to the level of impact. For example, if the perceived risk to operations is an interruption of only 3 hours, then the Impact Rating would be given a 1.

Table CH3-2 - Risk Assessment Impact Rating Scale

| |
|--|
| <p>0 = No interruption in operations</p> <p>1 = Interruption up to 8 hours</p> <p>2 = Interruption for 8 - 48 hours</p> <p>3 = Over 48 hours of interruption – cessation or relocation of operations necessary</p> |
|--|

CH3.4 **Step 3: Calculating the Probability of a Given Risk Happening**

The third step requires an assessment of the probability of a disaster actually happening. Use the probability rating scale (Table CH3-3) below to determine a probability. For example, at MSFC the probability of flooding or tornados is very probable (10 probability points) whereas the likelihood of a Tidal Wave is very low (1 probability point).

Table CH3-3 - Disaster Probability Rating Scale

| | | |
|--------|---|-----------|
| High | = | 10 points |
| Medium | = | 5 points |
| Low | = | 1 point |

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CH3.5 Step 4: Calculating the Overall Risk Factor

The final step is to determine a risk factor. This is done by multiplying the Impact Rating times the Probability Rating to give a risk factor value as shown in the example below. The resulting sum will be the Risk Factor which can be used to help determine the best methods of protection. If fire and water damage have high risk factors, MSFC can look into the best protection methods from that sort of damage. If explosions are a high risk factor for your office, protection methods will be based on that factor and offsite storage would probably be best.

$$\begin{array}{rcccl}
 \text{Impact Rating} & & \text{Probability Rating} & & \text{Risk Factor} \\
 (3) & \times & (10) & = & (30)
 \end{array}$$

CH3.5.1 For uncertainties regarding the disasters or risks that might affect an area or office, the following questions may assist in the identification of potential risks.

- | | |
|---------------------|--|
| Climate | <ul style="list-style-type: none"> • Is the area subject to extremes or sudden changes in temperature or humidity? • Which materials would be affected by changes? • How soon after failure of your heating or cooling system will the climate in the area exceed recommended environmental conditions? |
| Topography | <ul style="list-style-type: none"> • Is the building situated by a lake, stream or river? Is that body of water prone to flooding? • Is there a basement? Is it below water level or water table level? |
| Extreme Weather | <ul style="list-style-type: none"> • Is the area subject to hurricanes, tornados, extreme wind/rain/lightning? What sort of damage could occur in the office? • What extreme weather elements are most likely to affect your office? |
| Building Structure | <ul style="list-style-type: none"> • What are the building's structural materials? • Does the building have a flat roof, skylights, roof access doors, or internal roof drains? • Are there water/sewer pipes running through records storage areas? |
| Hazardous Materials | <ul style="list-style-type: none"> • Are hazardous materials such as gas cylinders, solvents, paints, etc., stored in the building or adjacent areas nearby? • Have potential hazards such as, poisonous, flammable, or reactive chemicals, etc., been removed from the area? |

CH3.5.2 Many factors have to be considered in determining the best practices for protecting records and ensuring their availability in emergency situations and resumption of business afterwards. Discussion of these considerations is provided in Chapter 4.

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CHAPTER 4. GUIDANCE ON PROTECTION AND PRESERVATION OF VITAL RECORDS

CH4.1 Protection and Preservation of Vital Records

CH4.1.1 After your Vital Records have been identified and risks determined, a protection and preservation method needs to be identified that best suits the risks, record format and need for access. Locations and/or methodologies for backup preservation of records are determined and developed on a case-by-case basis for each type of record and organization. The protection method will be based on several factors, including:

CH4.1.1.1 Cost and effectiveness of protection;

CH4.1.1.2 Equipment necessary to enforce the protection method;

CH4.1.1.3 How vital the record is;

CH4.1.1.4 Format of the record;

CH4.1.1.5 Access and retrieval needs; and,

CH4.1.1.6 Type of hazard the record faces, as determined through a risk assessment (See Chapter 3).

CH4.1.2 Determine Protection Strategies

There are four basic strategies you can use to protect your vital information – Avoidance, Acceptance, Mitigation, and Transfer.

CH4.1.2.1 **Avoidance.** Avoidance involves avoiding the risk altogether. As you survey your environment, you will probably identify many avoidance-style preventive and protective measures. For example, you may be able to implement passwords to increase security for electronic records, lock up records and establish security protocols to prevent unauthorized access, control temperature and humidity in storage areas, or encourage good housekeeping to prevent fire or other damage to records.

CH4.1.2.2 **Acceptance.** Acceptance involves recognizing the existence of a specific risk and accepting the impact of the risk, should it occur. No action is taken (i.e., the “do nothing” option). For example, records storage is provided in the basement of your facility for pallets only, and there are no funds or other storage space available to move the records to a safer environment. You have to accept the storage risk.

CH4.1.2.3 **Mitigation.** Mitigation involves taking steps to minimize the likelihood or impact of a disaster. You may not be able to prevent a risk or threat from occurring, but you may be able to reduce its likelihood, or mitigate the impact it has on your organization if it does occur. For example, in the situation just described, you may accept the storage risk, but also move the records from pallet storage to metal shelf storage at least 6" off the floor. You have now mitigated some of the risk to the records.

CH4.1.2.4 **Transfer.** A fourth option is to transfer the risk to another party. In the situation we

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are discussing, for example, you could store the records at a records center or a contractor's facility, thus shifting the responsibility for their protection.

CH4.1.3 Determine Protection Measures

There are several actions you can take to protect your vital information, including: Automatic/Routine Dispersal, Planned Dispersal, Onsite Protection, Evacuation, E-vaulting, Tape Backup, Data Replication, and Mirroring

CH4.1.3.1 Automatic/Routine Dispersal. You may find that you are already creating and protecting copies of vital information at different locations through your normal business processes. For example, a key document that is generated at NASA Headquarters might also be sent to one or more field offices on a regular basis. Study your business processes to determine where, how, and when such information is shared.

CH4.1.3.2 Planned Dispersal. Some information will need to be copied on a regular basis and stored in another location. Computer system and network backup tapes that are stored offsite are examples of copies made on a regular basis and stored somewhere else, solely for the purpose of COOP and disaster recovery.

CH4.1.3.3 Onsite Protection. Some vital information may need to be kept onsite. Special equipment such as fire-resistant cabinets and vaults can be used to protect the information. The specifications for furnishings and construction should address the risk about which you are most concerned. Secured storage rooms can also be planned, but will have to be specified to meet the needs of the Center.

CH4.1.3.4 Evacuation. If the original vital information cannot be copied and cannot be protected onsite, you may have to plan to collect the originals and transfer them to another site when an emergency occurs. With this protection method, you will have to plan exactly:

- a. What will be evacuated?
- b. Where it will be evacuated?
- c. How it will be evacuated?
- d. How it will be stored, managed, and accessed in its new location?

CH4.1.3.5 Data Replication. This method is used to replicate data at one or more sites, such as a primary processing site and an alternate site, so that the information is accessible in the event that the primary site becomes unavailable. Data replication is used when continuous availability of data is required or when recovery of data has to be accomplished in a very short period of time.

CH4.1.3.6 Mirroring. Mirroring is a method of data replication that maintains a replica of electronic records, such as those found in databases and/or file systems, by applying changes at the secondary site simultaneously with the changes at the primary site. Mirroring requires

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enough network bandwidth to transport data at fast enough speeds to ensure that the process is successful.

CH4.1.4 Duplication/Copying Formats

The main protection method for Vital Records is typically through Duplication or Dispersal of records. This entails the physical duplication of information and the transfer/dispersal of these duplicates to a protected storage location, either on- or offsite.

Note: When we talk about safeguarding vital information, we are typically talking about creating backup copies of information. Your backup copies may be in a different format than the original information.

CH4.1.4.1 The **benefits** of duplication/dispersal are:

- a. The minimal chance that the primary copy and all distributed copies will be destroyed;
- b. It is cost efficient; and,
- c. It is easy to do and can usually be done in the normal course of business.

CH4.1.4.2 The **drawbacks** to duplication/dispersal are:

- a. The volume (e.g., number of pages or number of copies needed) of the record, may cause this method to become burdensome over time; and,
- b. The distribution of additional copies of information on paper is a poor records management practice. In cases where several offices have the same record, the copy maintained by the functional area manager is the official copy for primary retention purposes.

CH4.1.4.3 There are two ways of achieving duplication/dispersal:

- a. Natural/built in: The information is routinely distributed or backed up to designated or alternate locations in the normal course of business. This is the least expensive form of protection since it often occurs in the normal course of business, usually without offices being consciously aware of it; and,
- b. Reproduction: This represents the decision to duplicate or transfer the record onto a different format specifically for its protection. Scanning or magnetic media are common forms of reproduction.

CH4.1.4.4 Duplication formats include:

- a. **Microform**. Documents can be filmed or output to microfilm or microfiche. While this method is not used as much currently, it is still a valid format.
- b. **Digital formats**. You may choose to scan documents or download data and store them on computer media. While this format allows you to store a great deal of information in a small amount of space, you should also determine what software and hardware will be needed to access the data, the costs of reformatting the data, and the costs of maintaining access to data

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stored offsite. One drawback to digital formats is if a power source is not available to run the computer equipment needed to access the records. Also, some emergencies/disasters may be such that digital data can't be read even if a power source is available.

c. **Paper.** Paper copies are the least expensive method of reformatting, but the most cumbersome to update and distribute—and they may also have associated costs for storage offsite, costs which depend on the quantity of information identified as vital information.

CH4.1.4.5 Regardless of the format used, it's critical to ensure that when your information is duplicated; all the necessary information is transferred to the copy.

CH4.1.5 Evaluate Protection Measures

CH4.1.5.1 Consider Formats

Vital Records should be stored in a format that will last as long as the records are needed. If a Vital Record is in a format only readable by specific equipment (e.g., microfilm reader or computers), procedures for accessing/obtaining the equipment have to be arranged. For example, if a Vital Record is in electronic format, then the hardware or software used to create the record also needs to be protected or arrangements made to obtain compatible equipment.

a. As you explore protection measures, you need to consider special media needs. For example, paper, photographs, microforms, and electronic media all have specific storage condition requirements, and all have different characteristics that have to be addressed when they are wet or damaged. Provisions for each medium need to be considered in your plan of action for handling risk.

b. Vital information should be protected using the method that best suits its medium, its cycle of updates, and the need for its immediate accessibility. The protection strategy you apply needs to include decisions about what media you will use to store your vital information. (Remember, your vital information is not necessarily in the same medium or format as the original.)

c. Answering the following questions will help you to determine your protection strategy with regard to the media requirements of the specific information:

- (1) Is the information static? Would a paper copy suffice?
- (2) What is the timeframe for recovery?
- (3) Is the information dynamic?
- (4) Do several employees need copies of the document— phone tree, file plans, etc.?
- (5) What is the volume involved?

CH4.1.5.2 Consider Cost

The cost of protecting vital information will require a long-term commitment from management. Management needs to be able to weigh the cost of protecting the information against the risk of

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not recovering the information in the event of an emergency or disaster. A cost-benefit analysis should be prepared in order to identify the most cost-effective way to protect the vital information, and to resume business in a determinate amount of time. Balance needs vs. cost, and use risk assessment to determine how quickly vital information is needed, as well as the appropriate level of protection for the information.

CH4.2 Identify and Protect Electronic Systems and Applications

Electronic records and information are not separate from the technological infrastructure on which they are created, maintained, and used. For electronic vital information we need to look at protecting not only the information, but also the information systems. This means that records management and information technology personnel need to work together. The following takes a look at protection considerations and solutions for several information system platforms: Desktop computers and portable systems, Servers, Web sites, Local Area Networks (LAN), and Wide-Area Networks (WAN).

Note: Refer to the National Institute of Standards and Technology (NIST) Contingency Planning Guide for Federal Information Systems (Special Publication (SP) 800-34) for more information on protecting electronic systems and applications. It can be downloaded from the NIST SP Web site at: <http://csrc.nist.gov/publications/PubsSPs.html>

CH4.2.1 Desktop Computers and Portable Systems

Because the desktop and portable computers (PCs) are the most common platform for routine automated processes, they are important elements in a Vital Records Program. PCs can be physically connected to an organization's LAN, can dial into the organization's network from a remote location, or can act as a standalone system.

CH4.2.1.1 Protection Considerations

Protection considerations for desktop and portable systems should emphasize data availability, confidentiality, and integrity. To address these requirements, the systems manager should consider each of the following practices:

- a. Store backups offsite
- b. Encourage individuals to back up data
- c. Provide guidance on saving data on PCs
- d. Standardize hardware, software, and peripherals
- e. Document system configurations and vendor information
- f. Coordinate with security policies and system security controls

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CH4.2.1.2 Protection Solutions

a. Backups:

- (1) Equipment interoperability
- (2) Storage volume
- (3) Media life
- (4) Backup software

b. PC data backups can be accomplished through:

- (1) Floppy diskettes
- (2) Tape drives
- (3) Removable cartridges
- (4) Compact disks (CDs)
- (5) Network storage
- (6) Replication or synchronization
- (7) Internet backup

c. Imaging: A standard desktop computer image can be stored, and the corrupted computer can be reloaded.

CH4.2.2 Servers

Servers support file sharing and storage, data-processing, central application hosting (such as email or a central database), printing, access control, user authentication, remote access connectivity, and other shared network services. Local users log into the server through networked PCs to access resources that the server provides.

CH4.2.2.1 Protection Considerations

Because servers can support or host numerous critical applications, server loss could cause significant problems to business processes. To address server vulnerabilities, the following practices should be considered:

- a. Store backup media and software offsite
- b. Standardize hardware, software, and peripherals
- c. Document system configurations and vendors
- d. Coordinate with security policies and system security controls

CH4.2.2.2 Protection Solutions

a. System backup: Three types of system backup methods are available to preserve server data:

- (1) Full: A full backup captures all files on the disk or within the folder selected for backup.
- (2) Incremental: An incremental backup captures files that were created or changed since the last backup, regardless of backup type.
- (3) Differential: A differential backup stores files that were created or modified since the last **full** backup.

b. Electronic vaulting and remote journaling

c. Server load balancing: This allows traffic to be distributed dynamically across groups of servers running a common application so that no one server is overwhelmed.

d. Disk replication

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CH4.2.3 Web Sites

Web sites present information to the public or authorized personnel via the World Wide Web (Web) or a private intranet.

CH4.2.3.1 Protection Considerations

- a. Document the Web site
- b. Web site programming
- c. Web site coding
- d. Coordinate contingency solutions with appropriate security policies and security controls
- e. Coordinate contingency solutions with incident response procedures

CH4.2.3.2 Protection Solutions

- a. Domain Name System (DNS): When a user enters a URL using the Web browser, the request is directed to a DNS server that maps the URL to an IP address. The IP address is assigned to the Web server. The DNS server then directs the request to one of the clustered servers.
- b. Reverse proxy: The reverse proxy approach bundles the requests of the browsers and reduces bandwidth by performing data caching.

CH4.2.4 LAN

A LAN is owned by a single organization; it can be as small as two PCs attached to a single hub, or it may support hundreds of users and multiple servers. The LAN is the infrastructure that most likely needs to be restored after an emergency. Backups are focused on LANs, so when restoration occurs, it will occur at the LAN level.

CH4.2.4.1 Protection Considerations

- a. Documentation of the LAN
- b. System configuration and vendor information documentation
- c. Backup procedures and documentation
- d. Software documentation (operating system and applications)

CH4.2.5 WAN

In addition to connecting LANs, a WAN can also connect to another WAN, or can connect a LAN to the Internet. With WANs, connectivity is the focus, particularly in terms of the ability to connect the LAN to the WAN. If your vital records protection strategy involves the WAN (such as the case in which vital records stored through e-vaulting or mirroring), then the LAN needs to have connectivity to the WAN.

CH4.2.5.1 Protection Considerations

- a. Systems configurations and vendors
- b. Documentation of the WAN
- c. Contingency plans should include a vendor list to enable rapid replacement of hardware, software, and other WAN components following a disruption.

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CH4.3 Storing Vital Records

Determining where and how to store Vital Records is the next crucial step after determining the methods of protection. The location selected may need to be accessible within seconds to 24 or more hours after a disaster. Depending on management decisions and external requirements, it is possible that Vital Records might be stored onsite, offsite, or in specialized equipment.

CH4.3.1 Storage Onsite

CH4.3.1.1 Onsite storage means storing Vital Records in the same vicinity as your office, such as in a closet or storage area in the building. The drawback to choosing onsite storage is that you have little chance of retrieving your Vital Records if a major disaster strikes the entire building or damages it beyond repair.

CH4.3.1.2 If Vital Records are stored in the same building your office occupies, precautions have to be taken to prevent a disaster from spreading to the storage area. This could range from installing fire doors and walls to following basic best practices to protect the records. Best practices range from actual physical location to working conditions within the storage area.

CH4.3.1.3 The following questions should be asked and resolved for each office which has Vital Records in their active files:

- a. Does the selected storage area have ventilation? Does it have proper temperature and humidity controls?
- b. Are there electromagnetic fields nearby that could damage computer tapes or disks?
- c. What security measures are in place to stop unauthorized access to the area?
- d. Is the building itself secured against fire, flood and other disasters?
- e. Is the equipment used for storage adequately safe from disasters and sabotage?
- f. Would it be safer storing the only copy of a Vital Record onsite or offsite?

CH4.3.1.4 If onsite storage is selected, the following concerns and issues should be also addressed:

- a. Are there potential fire, water or sewer or other hazards? Any corrections or repairs should be addressed immediately (leaking overhead pipes may cause a disaster). Records should never be stored directly under any type of pipes;
- b. Staff members should know the location of the vital records, and access to materials should be restricted to authorized personnel; and,
- c. Records should be managed in accordance with the NRRS, and inactive records should be transferred on a regular basis to the storage facility.

CH4.3.2 Pros & Cons on Use of Specialized Storage Equipment

CH4.3.2.1 Onsite storage may involve the use of specialized equipment, such as vaults, fire-resistant cabinets and/or fire-resistant safes. While this equipment may provide some initial protection against fire damage, it may not be immune to water damage. Fire-resistant equipment is often used as a last resort when there is very little office space, no storage areas available to hold duplicated Vital Records, or duplication is not cost effective based on the level of risk.

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CH4.3.2.2 Disadvantages of specialized equipment include:

- a. The possibility of spontaneous combustion when a drawer is opened after a fire that is the result of oxygen being released back into the drawer's atmosphere;
- b. Inadequate protection from extreme temperatures. If the fire is hot enough, the paper records will burn in the drawer;
- c. The high cost of specialized equipment;
- d. The susceptibility of specialized equipment to water damage;
- e. Materials used in construction will make specialized equipment heavy and burdensome, which can be a hazard after a fire because of increased weight from water gain; and,
- f. The weight load of the equipment may be too heavy for some floors in older buildings.

CH4.3.2.3 If specialized equipment is going to be used, it should be designed specifically for the type of record medium it contains and used exclusively for Vital Records.

CH4.3.2.4 Satisfactory fire-resistant cabinets/vaults are rated according to the maximum number of hours they can be exposed to fire and maximum temperature while still protecting the contents. For example, a rating of UL 150-3 means that this piece of equipment has an Underwriter's Laboratory Class 150 rating with 3 hours of protection from fire damage. Vendor catalogs will give the specifications and equipment costs according to level of resistance; but, keep in mind that the "hours of protection" will decrease as the temperature of the fire increases.

CH4.3.3 Storage Offsite

CH4.3.3.1 Offsite storage means storing the records away from the office, in another building, or out of the geographical area. For MSFC purposes, certain records may be preserved on CDs for immediate removal to an offsite emergency operations location in the event of a disaster or impending emergency requiring evacuation of the MSFC. This location (Hot site) may be used during the immediate course of the emergency for emergency operations. Other records may be routinely backed up and sent to an offsite location from which the records can be accessed or retrieved for immediate needs or the resumption of business following the disaster (Cold site).

- a. Hot site - An area identified prior to an emergency/disaster as the operation center or meeting place from which MSFC will continue operations during the term of the emergency. In general practice, hot sites usually contain everything an office has identified as critical for operation and ready for immediate use. This method of protection can be costly and is best used by offices requiring computer systems to be up and running immediately after a disaster or by offices with the responsibility for organizing and running recovery procedures (e.g., police, physical plant, computing and communications).
- b. Cold site - A cold site is an area identified as a back-up location in case the original office is unusable after a disaster. It differs from a hot-site in that there is no requirement for unique equipment or supplies which are necessary at a hot site during an emergency.

CH4.3.3.2 In general practice, and although it is much less costly, re-establishing operations from a cold site may involve more time and effort. If the cold-site is used to store Vital Records,

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the cost of duplicating and delivering the Vital Records to the site have to be considered in a cost analysis.

CH4.3.4 Environmental Considerations for Storage of Vital Records – Best Practices

- a. Certain environmental considerations have to be made for any area chosen to store Vital Records. Best practices are provided in the Table CH4-1 to ensure that records will be in relatively good condition when they are needed. Few areas will be able to meet all of the conditions, but the objective is to get as close as possible to the best temperature and humidity levels.
- b. If a dust and air filtration unit is available in your records storage area, it should be able to remove approximately 90% of the airborne particles (dust, chemicals, or outside pollutants, etc.) that may work their way into the area.

Table CH4-1 – Environmental Considerations for Storage of Vital Records

| | |
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| Paper | <ul style="list-style-type: none"> • Storage facility should be maintained at 60 - 70° Fahrenheit (F) with a Relative Humidity (Rh) of 50 - 55%. • Extended exposures to humidity below 30% will cause drying and brittleness of paper; extended exposure to humidity higher than 75% will cause mold spores to develop. • Temperature and humidity should not fluctuate over 5% during a 24 hour period. |
| Magnetic Media (magnetic tape, floppy and optical disks) | <ul style="list-style-type: none"> • Storage facility should be maintained at a temperature of 65° F with an Rh of 30 - 40%. • Temperature and humidity should not fluctuate more than 5% within a 24 hour period. • Magnetic Media is extremely sensitive to heat, water, steam, magnetic fields, and sunlight - try to limit exposure to these conditions. Optical disks should be stored at a temperature of 55 - 65° F with an Rh of 20 - 40%. |
| Microfilm, Negatives, Photographs: | <ul style="list-style-type: none"> • Air should be filtered to remove dust from storage areas. • Microfilm storage area should be maintained at a temperature not exceeding 65° F with an Rh of 20 - 30%. • Photographic storage area should be maintained at a temperature of 70° F with an Rh of 45 - 50%. • Temperature and humidity should not fluctuate over 5% during a 24 hour period. • Security copies of microfilm should be stored in acid free containers. |

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CH4.4 Making Vital Records Readily Available

CH4.4.1 Use a system to prioritize your vital records for accessibility. The following rules of thumb may help to determine timeframes for accessing vital records.

- **Priority 1** – Needed immediately, to respond to the incident
- **Priority 2** – Needed to manage the incident and resume operations
- **Priority 3** – Needed to continue essential functions

CH4.4.2 In the event of an emergency, information classified as Priority 1 would be needed immediately, within the first 0–12 hours and beyond, until the crisis is over. Usually, this information is retrieved from the selected storage site and distributed to an alternative work site. Then you can focus on restoring secondary systems and processes. At this point, you would require access to vital information classified as Priority 2, which would be needed in the first 12–72 hours.

CH4.4.3 After secondary systems and processes are restored, you will need access to Priority 3 information, which is needed to continue essential functions if normal Agency information is not available for prolonged periods of time. Priority 3 information will be needed until normal operations are restored.

CH4.5 Cycling—Ensuring That Vital Records are Current

Cycling is the periodic replacement or updating of obsolete copies of vital records with current copies. In most cases, vital records don't stay "vital" forever. Most vital records have limited time value; it is vital only for a specific period of time, and once that time has passed, the copies are valueless for emergency response and resumption of operations. In order for the most current or up-to-date vital records to be available during an emergency, organizations need to ensure that their vital records are cycled on a routine basis. Cycling may be done on a daily, weekly, quarterly, or annual basis, depending on the need. The organization is responsible for periodically cycling or updating vital records by removing obsolete items and replacing them with the most recent versions as necessary. Cycling should be part of the plan and the frequency documented in the Vital Records Inventory.

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CHAPTER 5. GUIDANCE ON DISASTER RECOVERY

CH5.1 Disaster Recovery

a. There is always the chance that records will be damaged in some way after an emergency. Information is provided here for stabilizing and recovering damaged records. Some steps can be taken immediately; others should wait until representatives from the Emergency Management Office or other knowledgeable sources can provide help with recovery.

b. Coordination of recovery efforts should be conducted both before and after a disaster strikes. Emergency Management Office should be contacted as soon as possible after an emergency in which records are damaged regardless of the extent or severity of the damage.

CH5.1.1 Emergency Preparedness

Before an emergency, actions should be completed and resource materials should be available for immediate access either by the affected office or other recovery personnel as follows:

CH5.1.1.1 Emergency contact lists (employees, vendors, and phone numbers for help resources) – preferably stored in an alternate safe location and/or in waterproof containers.

CH5.1.1.2 Index of Vital Records and their locations (including maps as necessary) – preferably stored in an alternate safe location and/or in waterproof containers.

CH5.1.1.3 Suitable supplies for use in initial recovery efforts, which may include:

- a. Paper towels;
- b. Plastic garbage bags;
- c. Protective masks, gloves, and clothing;
- d. Flashlights;
- e. Plastic sheeting;
- f. Scissors;
- g. Mops and buckets;
- h. Paper, pencils, and water proof markers;
- i. Master keys of offices, storage areas, desks, and cabinets;
- j. Hard hats;
- k. Rubber gloves;
- l. Clip boards; and,
- m. Camera and film.

CH5.2 Basic Stabilization Rules

CH5.2.1 Because there are many differences between various media types, recovery efforts will vary from office to office. However, there are a few basic rules that all offices need to follow after a disaster such as:

CH5.2.1.1 Do not use fans in rooms that have water damaged records;

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CH5.2.1.2 Keep the temperature as cold as possible in rooms that have water damaged records;

CH5.2.1.3 Keep rooms that have water damaged records well ventilated;

CH5.2.1.4 Bring down temperature and humidity to help the water evaporate;

CH5.2.1.5 Contact the MSFC Environmental Office and/or the Safety Office if records have incurred sewer damage, or hazardous waste leakage, as the area will need to be cleaned by biohazard specialists; and,

CH5.2.1.6 If microfilm or electronic media (tapes, disks, etc.) have gotten wet, keep them wet, do not let them dry.

CH5.2.2 Immediately unpack and follow rules provided above. Do not store/seal wet paper records in plastic bags or boxes except in cases of immediate need for removal to safety and prevention of further damage.

CH5.3 Records Recovery Processes Guidance

More detailed guidance on recovery processes is provided below. The “dos” and “don’ts” of this information are important in mounting a records recovery effort that will allow the recovery of as many records as possible. Various actions should be implemented by knowledgeable professionals.

CH5.3.1 Wet Paper

Rapid response for wet paper is essential. Wet records stick together; inks run; books swell; mold growth occurs. Because wet paper is fragile, careful handling is required. No drying method will fully restore wet collections and they may not look the same or may need to be replaced. Immediate steps include attention to the immediate environment – remove water, control temperature and humidity, protect and segregate dry collections which will stabilize damaged records. Various techniques may be used.

CH5.3.1.1 **Air Drying** is most suitable for small numbers of damp or wet documents. It is inexpensive but labor intensive and requires a great deal of space. Mold may develop and care has to be taken with soluble inks.

A clean, dry environment with temperature below 70° F and humidity below 50% should be provided. Air should be continually circulating to accelerate drying and discourage mold growth. Fans should be aimed away from drying records. Single sheets can be laid out on tables, floors, etc. Coated papers have to be separated from each other to prevent sticking. Because dried records will take up more space than undamaged ones, photocopying may then be used for file reconstitution.

CH5.3.1.2 **Freeze Drying** is better for larger volumes of materials. A self-defrosting freezer

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with temperatures maintained below -10° F is required. Materials should be placed in freezer as soon as possible after becoming wet. Documents may be placed in stacks or spread out for faster drying. The process can take several weeks.

CH5.3.1.3 **Vacuum Freeze Drying** is suitable for large volumes of records and for water-soluble inks. Records should be placed in a vacuum chamber and dried at temperatures below 32° F. The process prevents additional swelling and distortion and is acceptable for rare and unique materials.

CH5.3.1.4 **Dehumidification** processes allow collections of records to be left in place. Large, commercial dehumidifiers are placed directly in the facility where wet records are located. Temperature and humidity are carefully controlled and collections can stay in their storage containers. Dehumidification is especially effective with buildings that have suffered water damage.

CH5.3.2 Non-textual Media

Records preserved as non-textual media, such as electronic records and sound and videotapes, also require special attention and techniques.

CH5.3.2.1 **Magnetic Tapes** can stay wet for several days but **Should Not Be Frozen**. Tapes soaked by dirty water should be rinsed but do NOT touch the magnetic media with bare hands. Always handle them only by the hubs or reel. Tapes should be kept in plastic bags till they can be air dried and should be packed vertically in plastic tubs or crates. Air-dry only.

CH5.3.2.2 **Floppy Disks** should be immediately packed and **Should Not Be Frozen**. Disk surfaces should not be touched with bare hands and should be kept wet until they can be air-dried. Disks should be packed vertically in plastic bags or tubs of cold water. Air-dry only.

CH5.3.2.3 **Compact Disks** should be immediately air dried. Surfaces should not be scratched. Disks should be packed vertically in crates or cartons.

CH5.3.2.4 **Sound and Video Tapes** should be rinsed if soaked by dirty water. Magnetic media should not be touched with bare hands and **Should Not Be Frozen**. Tapes should be kept wet in plastic bags until they can be dried. They should be packed vertically in plastic tubs or crates. Air-dry only.

CH5.3.3 Disaster Recovery Principles and Dealing with Mold

Dealing with and preventing mold growth requires immediate and dedicated attention in the disaster recovery process. Active mold can stain or eat through paper and can be a significant health hazard. People with asthma or known allergies should not work with moldy materials. Protective masks should be considered. Various kinds of mold may occur and can be of various colors; they may look fuzzy or slimy when active. Attempts to clean active mold should not be conducted because it will smear and spread. Mold is hard to kill, but can be made dormant by improving environmental conditions. Dormant mold is dry and powdery. The following salvage principles and steps should be applied:

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CH5.3.3.1 Reduce humidity and temperature – humidity below 55% and temperature below 68°;

CH5.3.3.2 If collections are wet, dry or freeze for the type of record – this will not kill the mold but will stop its growth;

CH5.3.3.3 Isolate affected areas – quarantine affected items by moving them to a clean area, or by sealing off the storage area;

CH5.3.3.4 Begin to dry materials – dry wet materials in a cool, dry space with good air circulation; collections may be dried outside in the sun if humidity is low;

CH5.3.3.5 Clean storage areas where mold occurred when using moldicide; and,

CH5.3.3.6 **Avoid quick easy cures** – “Fast Cures,” such as spraying with Lysol® or cleaning with fungicides that can have adverse effects on records and people. Leave chemical “cures” to the people with training and proper equipment.

CH5.3.4 Biohazard Contamination

Records contaminated or potentially contaminated with biological hazards such as bacteria, viruses, or toxins present unique problems that should be dealt with only by professionally trained personnel. Experts are needed to test for and perform whatever cleanup is necessary. The following principles and steps apply.

CH5.3.4.1 Segregate the materials:

- a. Biological agents are infectious through inhalation, ingestion, penetration through the skin or open cuts, or through contact with the mucous membranes of the eyes or nose;
- b. Affected records should be kept in sealed rooms, or if in small quantities, in containers such as biohazard bags;
- c. Handling records should be kept to an absolute minimum and,
- d. Protective clothing, such as gloves and masks, should be worn by all staff working with the records.

CH5.3.4.2 **Call authorities** – biohazards or potential biohazards are not to be taken lightly and experts are required.

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APPENDIX A. DEFINITIONS

See Definitions in MPR 1440.2.

APPENDIX B. ACRONYMS

| | |
|--------|--|
| CD | Compact Disc |
| C.F.R. | Code of Federal Regulations |
| COOP | Continuity of Operations |
| DNS | Domain Name System |
| EOC | Emergency Operations Center |
| F | Fahrenheit |
| FCD | Federal Continuity Directive |
| HVAC | Heating, Ventilation, and Air Conditioning |
| IP | Internet Protocol |
| IT | Information Technology |
| LAN | Local Area Network |
| MAF | Michoud Assembly Facility |
| MCP | Marshall Center Plan |
| MEI | Mission Essential Infrastructure |
| MEO | Mission Essential Operation |
| MGM | Marshall Guidance Manual |
| MPR | Marshall Procedural Requirements |
| MSFC | Marshall Space Flight Center |
| NARA | National Archives and Records Administration |
| NASA | National Aeronautics and Space Administration |
| NIST | National Institute of Standards and Technology |
| NPD | NASA Policy Directive |
| NPR | NASA Procedural Requirements |
| NRRS | NASA Records Retention Schedules |
| PC | Portable Computer |
| R&D | Research and Development |
| Rh | Relative Humidity |
| SP | Special Publication |
| U.S.C. | United States Code |
| URL | Universal Resource Locator |
| WAN | Wide Area Network |

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APPENDIX C. REFERENCES

- C.1 Disposal of Records Constituting Menace to Health, Life, or Property, 44 U.S.C. § 3310
- C.2 Managing Vital Records, 36 C.F.R. Part 1223
- C.3 Federal Executive Branch National Continuity Program and Requirements, FCD-1
- C.4 NPD 1040.4, NASA Continuity of Operations (COOP)
- C.5 NPD 1440.6, NASA Records Management
- C.6 NPR 1040.1, NASA Continuity of Operations (COOP) Planning Procedural Requirements
- C.7 NPR 1441.1, NASA Records Management Program Requirements
- C.8 NPR 9660.1, Vital Financial Records for Emergency Operations
- C.9 NRRS 1441.1, NASA Records Retention Schedules
- C.10 MPR 1440.2, MSFC Records Management Program
- C.11 MCP 1040.1, Center Continuity of Operations (COOP) Management Team (CCMT) Plan
- C.12 NARA's Vital Records and Records Disaster Mitigation and Recovery (URL: <https://www.archives.gov/records-mgmt/vital-records/>)
- C.13 NIST SP 800-34, Contingency Planning Guide for Federal Information Systems