Allied Signal

Allied-Signal Inc.
Engineered Materials Sector
Fluorine Products Division
P.O. Box 430
Metropolis, IL 62960
Telephone (618) 524-2111

March 12, 1993

Certified Mail:
P-860-073-660

Mr. Michael LaMastra
Fuel Cycle Safety Branch
Div. of Industrial and Medical
Nuclear Safety, NMSS
U.S. Nuclear Regulatory Comm.
Mail Stop 6H3, One Whiteflint N.
11555 Rockville Pike
Rockville, Maryland 20852

Dear Mr. LaMastra:

Subject: License No. SUB-526
Docket No. 40-3392

In response to your telephone inquiry of March 10, 1993, we are providing the following additional information regarding our request for a license amendment which was dated January 17, 1992:

1. The organizational changes transfer responsibility for the plant Safety and Medical Program to another Department. In addition, the new organization now includes a Health Physics Supervisor, and two (2) Health Physics Specialists with additional responsibility for the Radiation Protection Program. Prior to this change the license described two positions: a "Health Physicist", and "Assistant Health Physicist". These changes will allow our Regulatory Affairs personnel to focus more on NRC and EPA requirements.

2. We are requesting authority to receive quality control samples containing isotopes of the elements between atomic number 1 and 100. The total activity received in these samples will not exceed one (1) microcuries per year.

3. We wish to delete reference to #1 and #2 fluoride spill control ponds from our license. These ponds (which are located in the plant operating area) had contained a hazardous waste and we did not wish to pursue a RCRA permit to continue their operation. The ponds have been decommissioned; the contaminated liners and soil have been analyzed and disposed of in accordance with NRC and EPA regulations. The residual soil currently contains less than 30 pCi/gm natural uranium, and we are in the process of

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backfilling the excavation for possible use of this area in the future. Region III has been kept informed on the status of this activity.

Six (6) sets of revised pages are enclosed for this amendment. If you have any questions regarding these changes, please contact Mr. J. E. Honey or Mr. R. W. Yates of my staff.

Sincerely,

M. D. Kosmider

M. D. Kosmider
Plant Manager

MDK/sm

cc: W. S. Nix - SOL-3
E. J. Freeman - MEY-4
J. E. Honey
R. W. Yates

C.1 Standard Conditions and Special Authorizations

C-1.1 Name, Address, and Corporate Information

The UF_6 conversion plant is owned and operated by Allied-Signal, Inc. Corporate headquarters are located in Morristown, New Jersey. The plant is located in Massac County, Illinois near the City of Metropolis. The plant mailing address is:

Allied-Signal, Inc.
P. O. Box 430
Metropolis, IL 62960

C-1.2 Site Location

The Allied-Signal Metropolis Plant is located on approximately 900 acres of land in Massac County at the southern tip of Illinois, along the north bank of the Ohio River. The site perimeter is formed by U.S. Highway 45 to the north, the Ohio River to the south, an industrial coal blending plant to the west and privately owned, developed land to the east. Plant operations are conducted in a double fenced-in, restricted area covering 54 acres in the north-central portion of the site.

C-1.3 License Number and Period of Time The License is Requested For

A five-year renewal of Source Material License SUB-526 is requested.

C-1.4 Possession Limits

A source material possession limit of 150 million pounds is requested. The source material consists of natural uranium as: uranium ore concentrates, UO_2, UF_4, and UF_6 or chemical intermediates of these compounds. Product UF6 contains about 67.6% U-nat. and is possessed as a liquid, solid, or a gas. Authorization is also requested for a 100 millicurie Cs^{137} sealed calibration source and to receive quality control samples from the EPA "cross-check" program containing isotopes of the elements between atomic number 1 and 100. The total activity received in these samples shall not exceed one (1) microcurie in a calendar year.

C-1.5 Location Where Material Will Be Used

Authorized activities shall be performed within the fenced-in restricted area of the Metropolis Plant.

C-1.6 Definitions

No special or unique terminology is utilized in this Source Material License.

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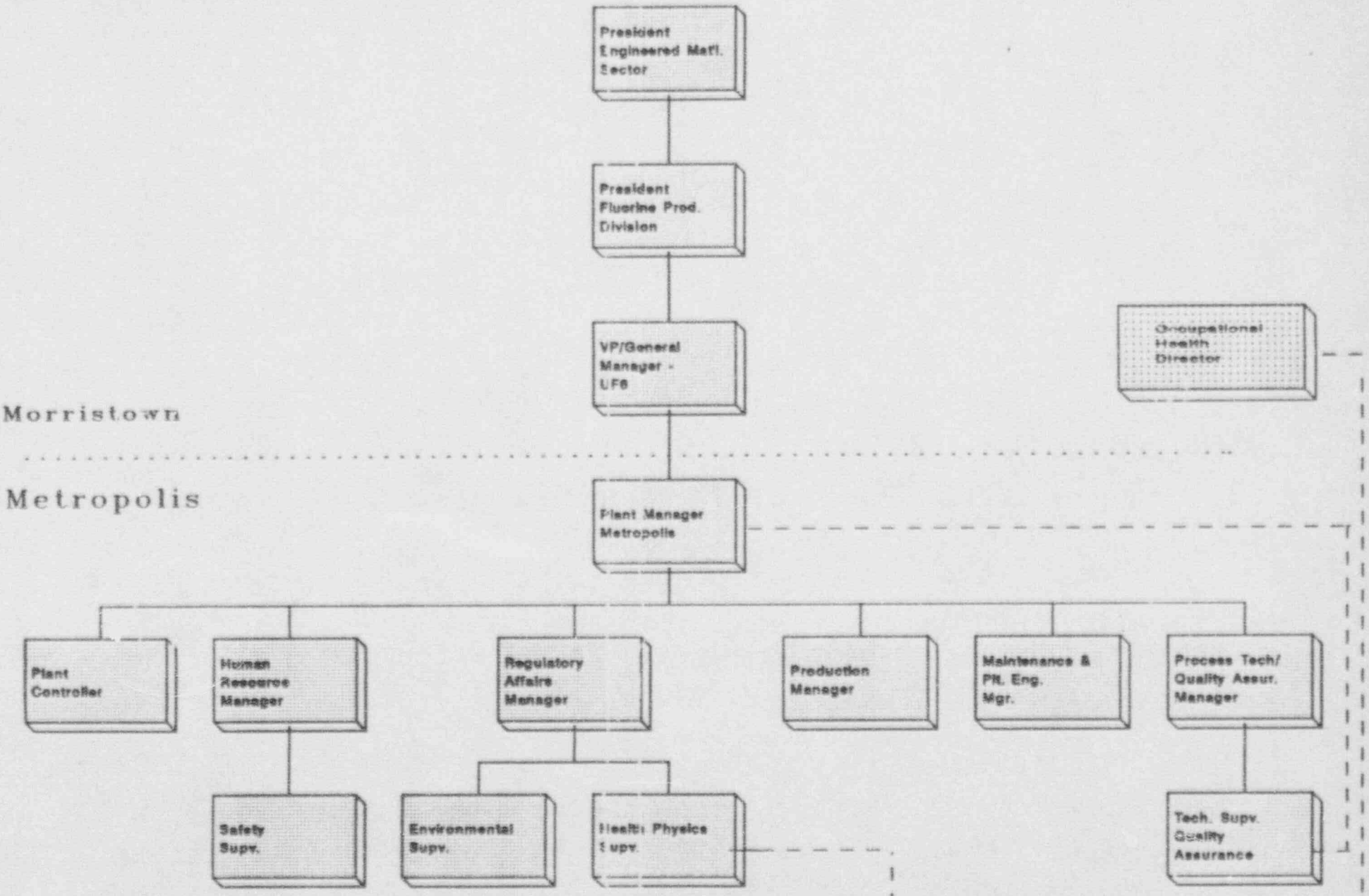

FIGURE C-2.1

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Plant Engineering. The Manager of Process Technology and Quality Assurance is responsible for Process Technology and Analytical Control Functions as well as compliance with the MTW Management Assurance Program. Reporting to the Manager is the Technical Supervisor-Quality Assurance. This supervisor's primary responsibility is the implementation of the MTW Management Assurance Program. In situations where conflict of interest exists within the Process Technology areas, this supervisor has a direct line of communication with the Plant Manager.

The Manager of Regulatory Affairs is responsible for compliance with regulatory requirements related to environmental pollution control, and radiation protection. This Manager has two Supervisors reporting directly to him: Environmental Supervisor, and the Health Physics Supervisor.

The Health Physics Supervisor's (Health Physicist) primary responsibility is for compliance with Nuclear Regulatory Commission licensing and inspection requirements; including development of radiological health programs, employee training, emergency preparedness, and stack and environmental monitoring. Responsibilities also include Occupational Health in non-uranium manufacturing areas, management liaison, and supervision of Health Physics personnel. An indirect reporting relationship is provided to the Director of Occupational Health for the Sector, who is located in Morristown, NJ.

The Sector and Corporate Headquarters Staff also provides engineering, safety, and environmental support services as required by the plant.

C-2.2 Personnel Education and Experience Requirements

The minimum qualifications for the staff positions which relate directly to administration and supervision of the radiation safety program shall be as follows:

Manager-Regulatory Affairs:

Requires a Bachelor's Degree in Engineering, Science or related discipline and 10 or more years of diversified experience in chemical manufacturing, including supervisory or management experience in the Nuclear Fuel Cycle industry. Requires extensive knowledge of Nuclear Fuel Cycle technology and regulations. Must possess sound judgment and ability to work effectively with management and government officials.

Health Physics Supervisor:

Position requirements must include a Bachelor's Degree in Physical or Biological Science and a minimum of three years Health Physics or related experience sufficient to maintain an effective radiation safety program. The designation "Health Physicist" as used in this license may refer to either the Health Physics Supervisor or a Health Physics Specialist. These positions have the authority to approve radiation work permits, radiological procedures, and to modify or shut down operations due to radiological concerns.

Health Physics Specialist:

The minimum requirements for this position include a Bachelor's Degree in Physical or Biological Science and at least one year of Health Physics or related experience.

Manager Process Technology and Quality Assurance:

Position requirements include a Bachelor's degree in Chemistry or Chemical Engineering, five years of Technical experience and three years of supervisory or management experience.

Technical Supervisor-Quality Assurance:

Position requirements include a Bachelor's degree in Chemistry, Chemical Engineering or Mechanical Engineering with at least five years of plant experience.

C-2.3 Safety Review Committees

The plant shall maintain the following safety review committees:

Safety Councils:

"A" Council Committee consisting of the Plant Manager, the departmental managers, the Health Physicist, the Safety Supervisor and four hourly employees, one each from the Production, Maintenance, Sampling and Instrument departments. The committee meets monthly to review and set plant health and safety policy.

"B" Council Committee consisting of all first-line supervisors and foremen meets monthly for training and motivation in health and safety practices.

"C" Council monthly meetings are attended by all hourly employees for instruction and review of plant safety and radiological safety procedures.

ALARA Committee:

A plant ALARA "As Low As Reasonably Achievable" committee shall be utilized by management to ensure that exposures and effluent releases are effectively controlled. This committee, consisting of the Plant Manager, the Department Managers, the Health Physi-

cist, and the President, and Vice-President of the local union, meets quarterly to review the radiological safety program performance for the previous quarter and to formulate plans for reducing

main plant effluent stream. The facility process uses calcium hydroxide to precipitate fluorides as insoluble calcium fluorIde. Precipitated solids are separated in settling basins prior to recovery of the synthetic calcium fluoride (CaF_2) which is subsequently transported to an Allied Corporation hydrofluoric acid (HF) production plant. The synthetic CaF_2 is blended with natural CaF_2 for routine HF production. The effluent from the EPF plant has a pH of approximately 12 and is automatically adjusted to a pH of approximately 8 using H_2SO_4. This stream is combined with treated sanitary waste. This combined stream is mixed with the uncontaminated cooling water and the effluent from the uranium settling ponds at the main effluent mixing basin before being discharged into the Ohio River.

Wastewater that may contain uranium, except the HF water scrubber liquors and the uranium recovery leach liquors, is routed through Settling Ponds No. 3 and No. 4 which are used as uranium spill control ponds. These ponds receive spent solutions from the Sodium Removal unit and all other uranium contaminated water including that from the Sampling Plant, that does not contain significant fluoride.

The HF water scrubber liquors are routed directly to the environmental protection facility for HF neutralization. Uranium recovery leach liquors are recycled for additional leaching. When contaminant concentrations in these liquors exceed operating specification, they are withdrawn and pumped to the environmental protection facility for fluoride removal.

The pH of the Uranium settling ponds is maintained slightly basic to minimize dissolved uranium loss. As the effluent leaves the second uranium spill control pond, the level is measured to determine flow rate and a proportional sample is taken for a 24-hour composite sample. The pH and uranium content of the composite sample is analyzed daily. The average flow from these two ponds is approximately 40 gpm. The effluent from the uranium settling ponds is then mixed with the remainder of the facility effluent before discharging into the Ohio River. A settling pond may be removed from service due to a leak, degradation of the liner, or excessive solids build-up (controlled by monitoring U content of discharge, and periodic measurement of solids level). When feasible, pond clean-out is performed during the summer months. The uranium bearing sludge removed from the settling

with the plan submitted to the Commission on July 23, 1981 and revised on January 5, 1982, July 12, 1985, November 1, 1986, December 19, 1986, March 31, 1987 and April 15, 1990.

The April 15, 1990 revision was made to comply with the regulations: "Emergency Preparedness For Fuel Cycle and Other Radioactive Material Licensees", effective date April 7, 1990. There is one deviation concerning drills; Allied has elected to perform an annual drill instead of a biennial drill as outlined in the regulation. lThe lApril 1990 plan has been revised on October 15, 1990, and February 18, 1991.

Implementing procedures are maintained as necessary to implement the plan. No changes shall be made in the plan which would decrease its effectiveness without prior Commission approval in the form of a license amendment; however, changes in the plan may be made without prior Commission approval if the change does not decrease the effectiveness of the plan. Records of plan changes made without prior approval shall be maintained for two years after the date of the change. In addition, a description of a change made without prior approval shall be provided to the Commission within six months of making such change.

C-8 Quality Assurance

The Metropolis Works Management Assurance Program has been developed to verify that specified plant operations, maintenance, regulatory and other policies, programs and procedures are being complied with. Responsibility for the implementation of this program has been delegated to the Manager of Process Technology and Quality Assurance and in turn to the Technical Supervisor - Quality Assurance.

The program shall consist of specified policies, programs and procedures from each of the departments within Metropolis works. Verification of compliance with these will be made via audit, investigation and/or surveillance by a member of the Management Assurance organization or its authorized delegate.

Although it is a separate and objective entity, it is incumbent upon the Management Assurance organization to interact with all areas of Metropolis Works while verifying compliance; identifying and reporting deviations; and recommending possible improvements or corrective action.

3.1.11 Other Operations

Other operations involving the handling of significant quantities of source material include: outdoor pads for storage of drums of ore concentrates and UF_6 product cylinders; the waste drier where residues from the uranium recovery step are de-watered prior to packaging for off-site recycle or disposal, and the Laboratory Building which houses facilities for conducting process control, product, and radiological control analyses.

Additional plant facilities which are involved directly in the UF_6 manufacturing process but do not involve the handling of any significant quantities of source material include a fluorine manufacturing building; a fluoride waste treatment facility with five large settling ponds and a calcium fluoride recovery plant to recycle synthetic CaF_2; a powerhouse; an incinerator; and two small settling ponds to collect any uranium spills.

3.2 Major Conversion Process Equipment

The major UF_6 conversion vessels are fabricated in accordance with A.S.M.E. Codes. The entire process is constructed using standard chemical plant design; however, special metals and alloys are used extensively in the UF_6 and fluorine systems. Process flow and instrumentation drawings are provided in Appendix "A", Page A-1 through A-10. These drawings also show the effluent control systems more fully discussed in Chapter 4, "Effluent Control and Waste Management Systems."

3.3 Instrumentation

The UF_6 conversion process is controlled primarily through use of process instrumentation located in the central control room. The instrumental control system utilizes alarm panels to indicate abnormal conditions in the process such as excessive pressure or vacuum, overloading of equipment, or equipment failure. In addition, the major process systems are electrically interlocked to assure the proper sequence of startup and shutdown of the process. Process equipment which fails to perform properly will trigger an alarm. The malfunctioning equipment is shut down and repaired or replaced. Process control instrumentation relevant to safety and radiation sampling points are shown in the process flow drawings contained in Appendix "A", Page A-1 through A-10.

4.2 Liquids and Solids

All liquid wastes from the facility are discharged through the main effluent via natural drainage into the Ohio River. Figure 4.2., Pages 4-11, depicts the current wastewater disposition scheme. The main plant effluent is continuously sampled, and the composite sample is analyzed daily for uranium. Administrative controls are utilized in conjunction with daily sampling to limit liquid effluent concentration of uranium. The administrative investigation limit is established at 5% of the NRC unrestricted release limit; however, experience indicates routine concentrations rarely exceed 2% of the release limit. In the event of a major spill which could significantly increase effluent water concentrations of uranium, additional controls, e.g., diking, neutralization, etc., are utilized to minimize the environmental impact. Suspended and dissolved solids, pH, and fluoride, are monitored in accordance with the NPDES permit. The daily samples of the main effluent are composited into a monthly sample that is analyzed for numerous impurities. Typical analyses of pollutant concentrations are shown in Chapter 5, "Environmental Monitoring Program."

An environmental protection facility (EPF) is utilized to remove chemical pollutants (primarily fluoride) from the main plant effluent stream. The facility process uses calcium hydroxide to precipitate fluorides as insoluble calcium fluoride. Precipitated solids are separated in settling basins prior to recovery of the synthetic CaF_2 which is subsequently transported to an Allied Chemical hydrofluoric acid (HF) production plant. The synthetic CaF_2 is blended with natural CaF_2 for routine HF production. The effluent from the EPF plant has a pH of approximately 12 and is automatically adjusted to a pH of approximately 8 using H_2SO_4. This stream is combined with treated sanitary waste. This combined stream is mixed with the uncontaminated cooling water and the effluent from the uranium settling ponds and again monitored before being discharged into the Ohio River.

Wastewater that may contain uranium, except the HF water scrubber liquors and the uranium recovery leach liquors, is routed through Settling Ponds No. 3 and No. 4 which are used as uranium spill control ponds. These ponds receive spent $(NH_4)_2SO_4$ solutions from the pretreatment facility and all other uranium-contaminated water including that from the Sampling Plant, that does not contain significant fluoride.

5. Operations

5.1 Corporate Organization and Administrative Procedures

5.1.1 Description of Organization:

The Metropolis UF_6 conversion plant is owned and operated by Allied-Signal Inc. Corporate headquarters are located in Morristown, New Jersey. The top ranking member of management at the plant site is the Plant Manager, who reports directly to the Vice President & General Manager for UF_6 in Morristown, New Jersey. The Vice President & General Manager reports to a Division President, who reports directly to the President of the Engineered Materials Sector who is also located in Morristown.

Operations of the plant are administered by a plant staff which is organized as shown in Figure 5.1.1, Page 5-2.

The Plant Manager's primary responsibility is the safe, efficient, and reliable operation of the facility. He coordinates and delegates this responsibility through his staff managers. The Production Manager is responsible for plant operations required to effectively produce a quality product. The Maintenance Manager is responsible for mechanical maintenance of plant equipment and Plant Engineering. The Manager of Process Technology and Quality Assurance is responsible for Process Technology and Analytical control Functions as well as compliance with the MTW Management Assurance Program. Reporting to the Manager is the Technical Supervisor-Quality Assurance. This supervisor's primary responsibility is the implementation of the MTW Management Assurance Program. In situations where conflict of interest exists within the Process Technology areas, this supervisor has a direct line of communication with the Plant Manager.

The Manager of Regulatory Affairs is responsible for compliance with regulatory requirements related to environmental pollution control, and radiation protection. This Manager has two supervisors reporting directly to him: The Environmental Supervisor, and the Health Physics Supervisor.

The Health Physics Supervisor's primary responsibility is for compliance with Nuclear Regulatory Commission licensing and inspection requirements; including development of radiological health programs, employee training, emergency preparedness, and stack and environmental monitoring. Responsibilities also include Occupational Health in non-uranium manufacturing areas, management liaison, and supervision of Health Physics personnel. An indirect reporting relationship is provided to the Director of Occupational Health for the Sector, who is located in Morristown, NJ.

The Sector and Corporate Headquarters Staff also provides engineering, safety, and environmental support services as required

by the plant.

5.1.2 Management Supervisory Program

Plant operations are conducted in accordance with written operating procedures contained in operating manuals or Job Safety Analyses. Examples of manuals currently in use include: Production Operating

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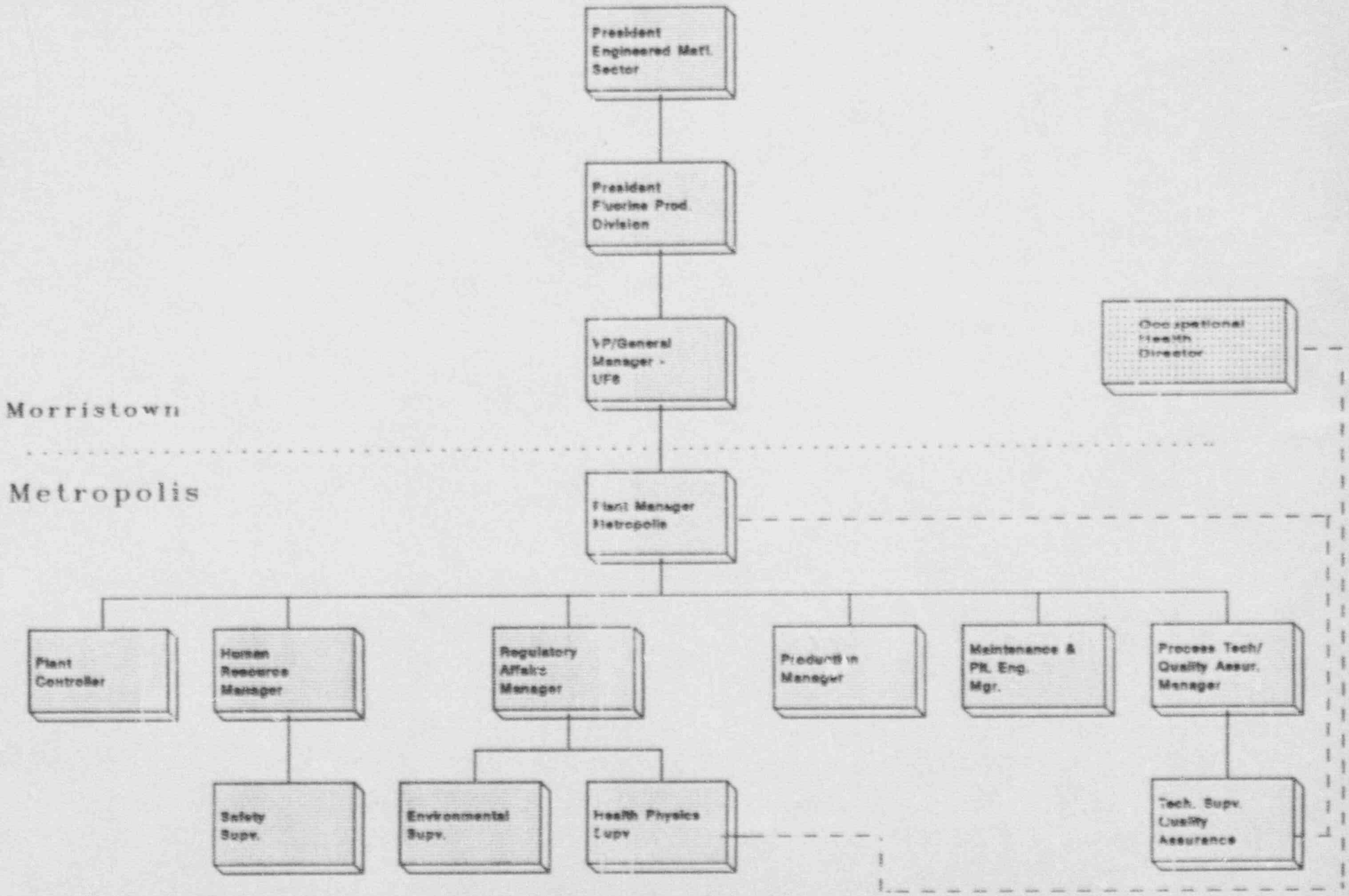

FIGURE 5.1.1

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5.2 Qualifications

A description of the qualifications and experience of the incumbent Health Physicist and Assistant Health Physicist is shown in Appendix "C". These personnel are responsible for conducting the plant radiation safety program. Additional responsibilities include occupational health in the non-uranium manufacturing areas, transportation of hazardous materials, and supervision of the health physics staff.

The minimum qualifications required for the staff positions which relate directly to administration and supervision of the radiation safety program are as follows:

Manager-Regulatory Affairs:

Requires a Bachelor's degree in Engineering, Science or related discipline and 10 or more years of diversified experience in chemical manufacturing, including supervisory or management experience in the Nuclear Fuel Cycle industry. Requires extensive knowledge of Nuclear Fuel Cycle technology and regulations. Must possess sound judgment and ability to work effectively with management and government officials.

Health Physics Supervisor:

Position requirements must include a Bachelor's degree in Physical or Biological Science and a minimum of three years Health Physics or related experience sufficient to maintain an effective radiation safety program. The dosignation "Health Physicist" as used in this license may refer to either the Health Physics Supervisor or a Health Physics Specialist. These positions have the authority to approve radiation work permits, radiological procedures, and to modify or shut down operations due to radiological concerns.

Health Physics Specialist:

The minimum requirements for this position include a Bachelor's degree in Physical or Biological Science and at least one year of Health Physics or related experience.

Manager Process Technology and Quality Assurance:

Position requirements include a Bachelor's degree in Chemistry or Chemical Engineering, five years of Technical experience and three years of supervisory or management experience.

Technical Supervisor-Quality Assurance:

Position requirements include a Bachelor's degree in Chemistry, Chemical Engineering or Mechanical Engineering with at least five years of plant experience.

5.3 Training

New employees receive a four hour indoctrination in plant safety and procedures which includes the issuance of personal safety equipment, a tour of the plant facilities, demonstrations of proper use of safety equipment and lectures covering the importance of and proper procedures for radiation protection. Additionally, each employee is issued and requested to study a copy of the "Metropolis Works Health Physics Guide". A copy is reproduced as Appendix "D". A safety indoctrination form which outlines the initial training, the assignment of lockers, the issuance of TLD badges and safety equipment, and the fitting of respirators is signed and dated by the Safety Supervisor, the Health Physicist and the new employee.