Form AEC—410
(1-61)

UNITED STATES
ATOMIC ENERGY COMMISSION

SOURCE MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954, and Title 10, Code of Federal Regulations, Chapter 1, Part 40, "Licensing of Source Material," and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, possess and import the source material designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954 and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission, now or hereafter in effect, including Title 10, Code of Federal Regulations, Chapter 1, Part 20, "Standards for Protection Against Radiation," and to any conditions specified below.

Licensee	3. License No.
1. Name **McDonnell Aircraft Corporation**	**STB-49, as renewed**
2. Address **Municipal Airport St. Louis, Missouri**	4. Expiration Date **February 28, 1967**
	5. Docket No. **40-29**

6. Source Material	7. Maximum quantity of source material which licensee may possess at any one time under this license
Thorium	**110,000 pounds**

CONDITIONS

8. Authorized use (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.)

Thorium magnesium alloy sheets, castings and parts containing not more than 4% thorium for aircraft, missile and space vehicle manufacture in accordance with the procedures described in the licensee's application dated April 29, 1960 and supplement dated February 10, 1964.

Date of issuance 4/1/64 3/6/64

For the U. S. ATOMIC ENERGY COMMISSION

★ U.S. GOVERNMENT PRINTING OFFICE: 1961—O-581691

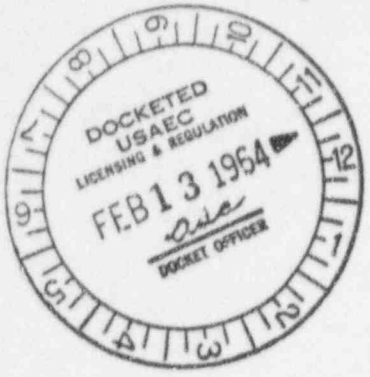
Division of Licensing & Regulatio

DOCKET NO. 40-29

McDONNELL Aircraft Corporation

L&R File Copy

Lambert-Saint Louis MUNICIPAL AIRPORT • BOX 516, ST. LOUIS 66, MO.



11 FEB 1964

Ref: USAEC-220-1944

United States Atomic Energy Commission
Washington 25, D. C.

Attention: Donald A. Nussbaumer, Chief
Source & Special Nuclear Materials Branch
Division of Licensing & Regulation

Subject: Application for Renewal of Source Material License Number STB-49

Enclosures: (1) Form AEC-2 (4 copies)
(2) Certification of Status of Source Material (3 copies)

1. Enclosures (1) and (2) are submitted in application for renewal of Source Material License #STB-49 issued to McDonnell Aircraft Corporation.

2. We would like to modify this license to the extent that it would include authorization to possess up to 500 pounds of thorium compounds to be used in research on manufacture and properties of refractory coating for space vehicles. The compounds include oxides, nitrates, oxalates, sulfates and halides.

3. Should further information be required, please do not hesitate to contact us.

Sincerely yours,

MCDONNELL AIRCRAFT CORPORATION

W. L. Kester

W. L. Kester
Scientist
Research Division

COMPLIANCE PROVIDED
COMPLIANCE
2/24/64

A1261

ACKNOWLEDGED

WLK:emc

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FORM AEC-2
(2-61)
Previous editions are obsolete.

DOCKET No. 40-29

FORM APPROVED
BUREAU OF BUDGET NO. 38-R002.8.

UNITED STATES ATOMIC ENERGY COMMISSION

L&R File Copy

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one)
- ☐ (a) New license
- ☐ (b) Amendment to License No. _____
- ☒ (c) Renewal of License No. STB-49
- ☐ (d) Previous License No. _____

2. NAME OF APPLICANT
McDonnell AirCraft Corporation

3. PRINCIPAL BUSINESS ADDRESS
P. O. Box 516
St. Louis, Missouri 63166

DOCKETED
USAEC
LICENSING & REGULATION
FEB 13 1964
DOCKET OFFICER

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED
McDonnell Aircraft Corporation — St. Louis, Missouri

5. BUSINESS OR OCCUPATION
Aircraft Manufacturer

6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP
Corporation

(b) AGE

7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED

1) Magnesium - thorium sheets, Castings & Parts for Aircraft, Missiles & Space Vehicle Manufacture.

2) ThO_2 used in Refractory Heat Shields.

8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE

(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (*Including % U or Th.*)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (*in pounds*)
NORMAL URANIUM	----		
URANIUM DEPLETED IN THE U-235 ISOTOPE	----		
THORIUM	Thorium Compounds	Mg Alloy, 4% Th	Alloy 110,000 lb. Other 500 lb.

(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (*in pounds*)

110,000 lb. Mg-Th Alloy, 500 pounds Thorium Oxide, Nitrate, Sulfate, Oxalate, Halides.

9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL HAZARDS ASSOCIATED WITH EACH STEP OF THOSE OPERATIONS.

Same as Previous Application

RECEIVED
FEB 13 1964

10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF APPLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL).

Same as Previous Application

11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air-monitoring and other survey equipment as appropriate. The description of radiation detection instruments should include the type of radiation detected and the range(s) of each instrument.)

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Same As Previous Application

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE (for film badges, specify method of calibrating and processing, or name supplier.)

Same As Previous Application

703

16—76548-1

11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, GASES, ETC.

Same As Previous Application

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE:
(a) PROCEDURES FOR USE OF NUCLEAR MATERIALS AND SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

Same As Previous Application

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

Same As Previous Application

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

Same As Previous Application

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here* ☐ *and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated.

(b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(*This item must be completed by applicant*)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 1, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

McDonnell Aircraft Corporation
(*Applicant named in Item 2*)

Dated 10 February 1964

BY: [signature]

Scientist
(*Title of certifying official authorized to act on behalf of the applicant*)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U.S. GOVERNMENT PRINTING OFFICE 16—76548-1

FORM AEC-2
(2-61)
Previous editions are obsolete.

FORM APPROVED
BUREAU OF BUDGET NO. 38-R002.8.

UNITED STATES ATOMIC ENERGY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one)
- ☐ (a) New license
- ☐ (b) Amendment to License No. _____
- ☒ (c) Renewal of License No. STB-49
- ☐ (d) Previous License No. _____

2. NAME OF APPLICANT
McDonnell AirCraft Corporation

3. PRINCIPAL BUSINESS ADDRESS
P. O. Box 516
St. Louis, Missouri 63166

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED
McDonnell Aircraft Corporation St. Louis, Missouri

5. BUSINESS OR OCCUPATION
Aircraft Manufacturer

6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP
Corporation

(b) AGE

7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED
1) Magnesium - thorium sheets, Castings & Parts for Aircraft, Missiles & Space Vehicle Manufacture.

2) ThO_2 used in Refractory Heat Shields.

8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE

(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (*Including % U or Th.*)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (*in pounds*)
NORMAL URANIUM	----		
URANIUM DEPLETED IN THE U-235 ISOTOPE	----		
THORIUM	Thorium Compounds	Mg Alloy, 4% Th	Alloy 110,000 lb. Other 500 lb.

(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (*in pounds*)
110,000 lb. Mg-Th Alloy, 500 pounds Thorium Oxide, Nitrate, Sulfate, Oxalate, Halides.

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Same as Previous Application

10. DESCRIBE THE MINIMUM TECHNIC[illegible] QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE [illegible]EQUIRED OF APPLICA[illegible]'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL).

Same as Previous Application

11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air-monitoring and other survey equipment as appropriate. The description of radiation detection instruments should include the type of radiation detected and the range(s) of each instrument.)

Same As Previous Application

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE (for film badges, specify method of calibrating and processing, or name supplier.)

Same As Previous Application

16—70548-1

11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, GASES, ETC.

Same As Previous Application

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE:
(a) PROCEDURES FOR USE OF NUCLEAR MATERIALS AND SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

Same As Previous Application

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

Same As Previous Application

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

Same As Previous Application

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here* ☐ *and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated.

(b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(This item must be completed by applicant)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 1, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

McDonnell Aircraft Corporation
(Applicant named in Item 2)

Dated 10 February 1964

BY: M. L. Lester

Scientist
(Title of certifying official authorized to act on behalf of the applicant)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a crimnal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U.S. GOVERNMENT PRINTING OFFICE 16—76548-1

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

IN REPLY REFER TO:
40-29

L&R File Copy

CERTIFICATION OF STATUS OF SOURCE MATERIAL ACTIVITIES UNDER UNITED STATES ATOMIC ENERGY COMMISSION LICENSE No. STB-49

LICENSEE: McDonnell Aircraft Corporation

ADDRESS: Box 516
St. Louis, Missouri 63166

The licensee and any individual executing this certification on behalf of the licensee certify that (check appropriate item(s) below):

_____ No source materials have been procured and/or possessed by licensee.

All source materials procured and/or possessed by licensee under source material license No. STB-49

_____ (1) have been or will be, prior to expiration of the above license, transferred to _____
(Institution, firm, hospital, person, etc.)

_____

which has source material license No. _____

_____ (2) have been or will be disposed of in compliance with 10 CFR 20 prior to expiration of this license.

_____ (3) will be possessed under the general license of Section 40.22, 10 CFR 40.

X (4) Other License is to be renewed in order to permit continued possession of material.

Wm. L. Kester
Certifying Official

Date: 10 February 1964

Please return three copies to:
U. S. Atomic Energy Commission
Division of Licensing & Regulation
Washington 25, D. C.

703

DOCKET NO. 40-29

File Copy

McDONNELL Aircraft Corporation

Lambert Saint Louis MUNICIPAL AIRPORT • BOX 516 ST LOUIS 66, MO.

19 AUG 1964

Ref: USAEC-220-2251

United States Atomic Energy Commission
Washington, D. C.

Attention: Director
Division of Licensing and Regulation

Subject: Application for Source Material License

Enclosures: (1) Form AEC-2 (4 copies)

1. Request is made herewith for modification of source material license STB-49 to include authorization to possess and use Thorium Oxide in powder and solid (ceramic) form.

2. Should you require any further information do not hesitate to contact us.

Very truly yours,

MCDONNELL AIRCRAFT CORPORATION

W. L. Kester
Scientist
Research Division

WLK:emc

DOCKETED USAEC AUG 21 1964 REGULATORY MAIL SECTION

RECEIVED AUG 21 1964 U.S. ATOMIC ENERGY COMMISSION Regulatory Mail Section

COPY PROVIDED COMPLIANCE 8/27/64

ACKNOWLEDGED

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DOCKET NO. 40-29

FORM AEC-2
(2-61)
Previous editions are obsolete.

FORM APPROVED
BUREAU OF BUDGET NO. 38-R002.8

File Copy

UNITED STATES ATOMIC ENERGY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

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1. (Check one)
- ☐ (a) New license
- ☒ (b) Amendment to License No. STB-49
- ☐ (c) Renewal of License No. _____
- ☐ (d) Previous License No. _____

2. NAME OF APPLICANT
McDonnell Aircraft Corporation

3. PRINCIPAL BUSINESS ADDRESS
P. O. Box 516
St. Louis, Missouri 63166

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED
McDonnell Aircraft Corporation St. Louis, Missouri

5. BUSINESS OR OCCUPATION
Mfr. Aircraft and Missiles

6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP

(b) AGE

7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED
Development of Heat Shields for Re-entry of Spacecraft and Missiles

8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE

(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (*Including % U or Th.*)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (*in pounds*)
NORMAL URANIUM			
URANIUM DEPLETED IN THE U-235 ISOTOPE		Powder and cast ceramic	
THORIUM	Oxide	containing up to 100% Thorium Oxide	1000

(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (*in pounds*)
4000

9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL HAZARDS ASSOCIATED WITH EACH STEP OF THOSE OPERATIONS.

See Attachment

DOCKETED USAEC AUG 21 1964 REGULATORY MAIL SECTION DOCKET CLERK HM

RECEIVED AUG 21 1964 ATOMIC ENERGY COMMISSION Regulatory Mail Section

10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF APPLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL).

See Attachment

11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air-monitoring and other survey equipment as appropriate. The description of radiation detection instruments should include the type of radiation detected and the range(s) of each instrument.)

See Attachment

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE (for film badges, specify method of calibrating and processing, or name supplier.)

See Attachment

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11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, GASES, ETC.

See Attachment

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE:
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See Attachment

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

See Attachment

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See Attachment

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here* ☐ *and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated. None

(b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

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(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(*This item must be completed by applicant*)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 1, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

McDonnell Aircraft Corporation
(*Applicant named in Item 1*)

Dated 17 August 1984

BY: _____

Chairman, Envlogo Committee
(*Title of certifying official authorized to act on behalf of the applicant*)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

GPO: 1982—O-659930

FORM AEC-2
(2-61)
Previous editions are obsolete.

FORM APPROVED
BUREAU OF BUDGET NO. 38-R002.8.

UNITED STATES ATOMIC ENERGY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one)
- ☐ (a) New license
- ☒ (b) Amendment to License No. STB-19
- ☐ (c) Renewal of License No. _____
- ☐ (d) Previous License No. _____

2. NAME OF APPLICANT
McDonnell Aircraft Corporation

3. PRINCIPAL BUSINESS ADDRESS
P. O. Box 516
St. Louis, Missouri 63166

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED
McDonnell Aircraft Corporation St. Louis, Missouri

5. BUSINESS OR OCCUPATION
Mfr. Aircraft and Missiles

6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP

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NORMAL URANIUM			
URANIUM DEPLETED IN THE U-235 ISOTOPE			
THORIUM	Oxide	Powder and cast ceramic containing up to 100% Thorium Oxide	1000

(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (*in pounds*)
1000

9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL HAZARDS ASSOCIATED WITH EACH STEP OF THOSE OPERATIONS.
See Attachment

RECEIVED AUG 3 1964 U.S. ATOMIC ENERGY COMMISSION Regulation Mail Section

10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF APPLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM OF APPLICANT, IF APPLICANT IS AN INDIVIDUAL).
See Attachment

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See Attachment

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE (for film badges, specify method of calibrating and processing, or name supplier.)
See Attachment

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11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, GASES, ETC.

See Attachment

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE:
(a) PROCEDURES FOR USE OF NUCLEAR MATERIALS AND SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

See Attachment

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

See Attachment

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

See Attachment

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here* ☐ *and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated. None

(b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(*This item must be completed by applicant*)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 1, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

McDonnell Aircraft Corporation
(*Applicant named in Item 2*)

Dated 17 August 1964

BY: Wm. K. [illegible]

Chairman, Isotope Committee
(*Title of certifying official authorized to act on behalf of the applicant*)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

GPO: 1952—O-659930

Form AEC-2
Attachment

9. Thorium oxide in the form of ceramics will be used to study the temperature effects upon heat shields under simulated and actual re-entry of spacecraft into the earth's atmosphere.

   Use will be made of plasma jet and hypersonic wind tunnels to test the characteristics of thorium oxide ceramics under various high temperature conditions.

10. The program is under the direct supervision of Mr. Thaddeus Grimm and is monitored for radiation safety by the Radiological Safety Officer, Mr. Tom Linck (qualifications given in application for byproduct material license #24-2261-3).

11. (a) Areas used in fabrication and use of thorium oxide ceramics are monitored for contamination by

    1. smear tests
    2. air sampler

    (b) The smears and filters from the air sampler are checked either by use of a 2π geometry flow counter capable of detecting alpha particles or by use of a well type scintillation counter having at least a 2" x 2" sodium iodide crystal for detection of gamma radiation. Standard 0-200 mr Victoreen pocket dosimeters are carried by personnel although these are of questionable value in this process.

    Radiation detectors are standardized using sources of known activity from a Nuclear-Chicago Model SK-3 standards kit.

    (c) All operations are carried out either in a chemical hood or in a special test area containing a filtered exhaust system. In those instances where dust may produce a hazard, personnel are required to wear industrial face masks.

12. (a) Thorium oxides do not represent a fire or explosion hazard, hence no special precautions are taken in their storage. Normally, the materials are kept in a locked underground storage vault along with byproduct materials.

    (b) Emergency procedures are identical to those given in our original application for byproduct material license 24-2261-3.

    In the event of a spill or other gross contamination all affected areas are sealed off until such time as the contamination can be reduced to tolerable levels.

    (c) The description of the radiation safety program has been given in detail in our application for byproduct material license 24-2261-3.

BGL:CEM
40-29
STB-49, Amendment No. 1

SEP 9 1964

McDonnell Aircraft Corporation
Municipal Airport
Box 516
St. Louis, Missouri 63166

Attention: Mr. W. L. Kester, Scientist
Research Division
Your reference: USAEC-220-2251

Gentlemen:

As requested in your application dated August 17, 1964, Items 7 and 8 of Source Material License No. STB-49, dated March 6, 1964, are hereby amended to read as follows:

"7. 114,000 pounds

"8. Thorium magnesium alloy sheets, castings and parts containing not more than 4% thorium for aircraft, missile and space vehicle manufacture and thorium oxide for development of heat shields for re-entry of spacecraft and missiles in accordance with the procedures described in the licensee's application dated April 29, 1960 and supplements dated February 18 and August 17, 1964, except that exemptions and specific authorizations pursuant to Commission regulations are not granted."

All other conditions of this license shall remain the same.

Your application refers to the use of respirators. Please note that pursuant to subparagraph 20.103(c)(1), 10 CFR 20, allowance may not be made for the use of protective equipment such as respirators in determining exposures of individuals to airborne concentrations of radioactivity without specific Commission approval. This does not

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mean, however, that such equipment may not be used to further control exposure to airborne radioactivity below Part 20 limits.

FOR THE ATOMIC ENERGY COMMISSION

Robert L. Layfield
Source and Special Nuclear Materials
Branch
Division of Materials Licensing

DISTRIBUTION:
Doc. Room
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OFFICE ▶	DML	DML				
SURNAME ▶	CMacDonald:jb	RLayfield				
DATE ▶	9/4/64	9/9/64				

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

IN REPLY REFER TO: 40-29
DML:MD

McDonnell Aircraft Corporation
Municipal Airport
P. O. Box 516
St. Louis, Missouri 63166

DEC 9 1966

SUBJECT: NOTICE OF LICENSE EXPIRATION

Gentlemen: ATTENTION: Mr. W. L. Easter

Notice is given that Source Material License Number STB-39 expires on

February 28, 1967

If you desire to continue your program using source material(s), an application for renewal of the license should be filed with this office. It is to your advantage to file such an application at least thirty (30) days before the expiration date of your existing license. The application should be submitted using Form AEC-2, enclosed, in accordance with the instructions provided with the form. Your program will then be covered by your existing license until action is taken on your application for license renewal. (Title 10, Code of Federal Regulations, Part 40, Section 40.43(b)). If an application is received less than 30 days prior to the expiration date of your license and cannot be processed before your existing license expires, this could result in your possessing source material without a valid license.

If you do not wish to renew your license, please complete the enclosed form "Certification of Status of Source Material Activities under United States Atomic Energy Commission Source Material License Number STB-39", and return it to this office.

If you have obtained an amendment which has extended the expiration date of the above license or if a new license has been issued which supersedes the above license, please disregard this notice.

This notice of your license expiration is sent for your convenience and it should not be interpreted that similar notices will be sent in the future. The responsibility for timely submission of an application for license renewal remains with the licensee.

Very truly yours,

Donald A. Nussbaumer 12/6

Donald A. Nussbaumer, Chief
Source & Special Nuclear Materials Branch
Division of Materials Licensing

Dictator 12/6/66

Approved

Enclosures:
10 CFR, 20 & 40
Form AEC-2
"Certification . . ."

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