UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16 UNDER THE SECURITIES EXCHANGE ACT OF 1934

For the month of September 2017

Commission File Number: 001-36826

ADVANCED ACCELERATOR APPLICATIONS S.A.

(Exact name of registrant as specified in its charter)

20 rue Diesel
01630 Saint Genis Pouilly, France
(Address of principal executive office)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F:

Form 20-F ☒ Form 40-F ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1):

Yes ☐ No ☒

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7):

Yes ☐ No ☒

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ADVANCED ACCELERATOR APPLICATIONS S.A.

By: /s/ Heinz Mäusli
Name: Heinz Mäusli
Title: Chief Financial Officer

Date: September 6, 2017

ADVANCED ACCELERATOR APPLICATIONS S.A.

EXHIBIT INDEX

Exhibit No.	Description
99.1	Press Release dated September 6, 2017 titled "Advanced Accelerator Applications Announces First Patient in Bridging Study in Japan for Lutetium Lu 177 Dotatate (Lutathera®)"

PRESS RELEASE

Advanced Accelerator Applications Announces First Patient in Bridging Study in Japan for Lutetium Lu 177 Dotatate* (Lutathera®)

September 6, 2017, Saint-Genis-Pouilly, France - Advanced Accelerator Applications S.A. (NASDAQ:AAAP) (AAA or the Company), an international specialist in Molecular Nuclear Medicine (MNM), today announced that the first patient has been treated in a Phase I clinical study of lutetium Lu 177 dotatate* in patients with inoperable, somatostatin receptor positive, progressive pancreatic, gastrointestinal, or pulmonary neuroendocrine tumors (NETs) in Japan.

The primary objective of this open-label, uncontrolled, single-center, bridging study is to evaluate the safety, tolerability, pharmacokinetics, and dosimetry of lutetium Lu 177 dotatate* in Japanese patients. Six subjects will be included in the Phase I study.

Stefano Buono, Chief Executive Officer of AAA, commented, “This is an important step forward in bringing lutetium Lu 177 dotatate* (Lutathera®) to the Japanese population. Asia represents a significant opportunity for us and we are pleased to work with a strong regional partner like FUJIFILM RI Pharma that has extensive expertise in commercializing novel radiopharmaceuticals.”

On July 21, the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) issued a positive opinion recommending the marketing authorization of lutetium Lu 177 dotatate* (Lutathera®) for the treatment of unresectable or metastatic, progressive, well differentiated (G1 and G2), somatostatin receptor positive gastroenteropancreatic neuroendocrine tumours (GEP-NETs) in adults.

The Company also recently announced that the US Food and Drug Administration (FDA) acknowledged receipt and completeness of the resubmission of the New Drug Application (NDA) for investigational drug lutetium Lu 177 dotatate* (Lutathera®) and provided a Prescription Drug User Fee Act (PDUFA) date of January 26, 2018.

* USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide

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About USAN: lutetium Lu 177 dotatate / INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®)

USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®) is an investigational ^{177}Lu-labeled somatostatin analog peptide. USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®) belongs to an emerging form of treatments called Peptide Receptor Radionuclide Therapy (PRRT), which involves targeting tumors with radiolabeled molecules that bind to specific receptors expressed by the tumor. This novel compound has received orphan drug designation from the European Medicines Agency (EMA) and the US Food and Drug Administration (FDA). Currently, USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®) is administered on a compassionate use and named patient basis for the treatment of NETs and other tumors over-expressing somatostatin receptors in ten European countries and in the US under an Expanded Access Program (EAP). The Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) has issued a positive opinion for the treatment of gastroenteropancreatic neuroendocrine tumours (GEP-NETs) in adults and a New Drug Application submission to the FDA is currently under review.

About Advanced Accelerator Applications S.A.

Advanced Accelerator Applications is an innovative radiopharmaceutical company that develops, produces and commercializes Molecular Nuclear Medicine products. AAA's lead investigational therapeutic candidate, USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®), is a novel MNM compound in development for the treatment of neuroendocrine tumors, a significant unmet medical need. Founded in 2002, AAA has its headquarters in Saint-Genis-Pouilly, France. AAA currently has 21 production and R&D facilities able to manufacture both diagnostics and therapeutic MNM products, and more than 500 employees in 13 countries (France, Italy, the UK, Germany, Switzerland, Spain, Poland, Portugal, The Netherlands, Belgium, Israel, the US and Canada). AAA reported sales of €109.3 million in 2016 (+23% vs. 2015) and €69.2 million in 1H17 (+27% vs. 1H16). AAA is listed on the Nasdaq Global Select Market under the ticker "AAAP". For more information, please visit: www.adacap.com.

About Molecular Nuclear Medicine ("MNM")

Molecular Nuclear Medicine is a medical specialty using trace amounts of active substances, called radiopharmaceuticals, to create images of organs and lesions, and to treat various diseases, like cancer. The technique works by injecting targeted radiopharmaceuticals into the patient's body that accumulate in the organs or lesions and reveal specific biochemical processes. MNM can be divided in two branches: Molecular Nuclear Diagnostics and Molecular Nuclear Therapy. Molecular nuclear diagnostics employs a variety of imaging devices and radiopharmaceuticals. PET (Positron Emission Tomography) and SPECT (Single Photon Emission Computed Tomography) are highly sensitive imaging technologies that enable physicians to diagnose different types of cancer, cardiovascular diseases, neurological disorders and other diseases in their early stages. Molecular nuclear therapy uses radioactive sources (radionuclides) to treat a range of tumor types. Using short-range particles, this therapy can target tumors with little effect on normal tissues.

Cautionary Statement Regarding Forward-Looking Statements

This press release contains forward-looking statements. All statements, other than statements of historical facts, contained in this press release, including statements regarding the Company's strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements that appear in a number of places in this press release include the Company's current expectation regarding future events and various matters, including expected timing of filings with the FDA and EMA, and approval dates. These forward-looking statements involve risks and uncertainties that may cause actual results, events or developments to be materially different from any future results, events or developments expressed or implied by such forward-looking statements. Such factors include, but are not limited to, changing market conditions, the successful and timely completion of clinical studies, the timing of our submission of applications for regulatory approvals, EMA, FDA and other regulatory approvals for our product candidates, the occurrence of side effects or serious adverse events caused by or associated with our products and product candidates; our ability to procure adequate quantities of necessary supplies and raw materials for USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®) and other chemical compounds acceptable for use in our manufacturing processes from our suppliers; our ability to organize timely and safe delivery of our products or product candidates by third parties; any problems with the manufacture, quality or performance of our products or product candidates; the rate and degree of market acceptance and the clinical utility of USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®) and our other products or product candidates; our estimates regarding the market opportunity for USAN: lutetium Lu 177 dotatate/INN: lutetium (^{177}Lu) oxodotreotide (Lutathera®), our other product candidates and our existing products; our anticipation that we will generate higher sales as we diversify our products; our ability to implement our growth strategy including expansion in the US; our ability to sustain and create additional sales, marketing and distribution capabilities; our intellectual property and licensing position; legislation or regulation in countries where we sell our products that affect product pricing, taxation, reimbursement, access or distribution channels; regulatory actions or litigation; and general economic, political, demographic and business conditions in Europe, the US and elsewhere. Except as required by applicable securities laws, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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