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Non-Crystalline Cellulose, Inc. (NCCI)
A business plan proposal

1. Executive Summary

This proposal is a blueprint for a potential business based on an Auburn University process for making Non-Crystalline Cellulose (NCC; patent pending) developed at Auburn University. NCCI is a fictitious name of a company that the potential licensee of this technology might use. This one-stop proposal that includes a study of target markets and five-year projected cash flow covers all aspects of a startup business based on NCC and is intended to help the potential investor make informed decisions.

The objective of this business is to commercially manufacture and sell Non-Crystalline Cellulose (NCC) by employing a proprietary process invented at Auburn University. Cellulose is generally recognized as a safe and acceptable polymer class for use in food and pharmaceutical products. Auburn University's non-crystalline cellulose has superior physical properties compared to current cellulosic material widely used in the food and pharmaceutical industries in the form of microcrystalline cellulose (MCC). NCC has many uses in different industries. However, this business plan rests on replacing MCC, which has built a large market since it was granted a Generally Regarded as Safe (GRAS)¹ status in 1971 by the FDA. The reasons why NCC could capture MCC markets successfully are: (1) it uses a simple process (patent pending), (2) much higher water absorption capability, and (3) has higher dispersion capability. In pharmaceutical applications, NCC can disperse faster, allowing the medicine to take effect more quickly. The superior water absorption property of NCC makes it a better emulsifier and fat-replacer in food products. Auburn filed in March 2009 a pre-petition to FDA seeking GRAS determination for NCC. In response, FDA has asked Auburn to file a formal petition for GRAS determination.

Currently, microcrystalline cellulose (\$3.2 billion US market) is used by the food industry as a fat-replacer and by the pharmaceutical industry as an approved filler or excipient (not an active ingredient) in pills.

NCCI has two options for entering the market; one is to manufacture NCC in-house, and the other is to source NCC from a contract manufacturer. This business plan includes a financial statement in Tables 4 and 5 which demonstrate that the business is viable if two percent (1.2 million lbs/yr) of MCC's market (60 million lbs/yr) is targeted in the first five years at an initial investment of \$1 million (Table 4) or \$0.6 million (Option

¹ GRAS status permits manufacturers to use the item in food or pharmaceutical products.

2), where university royalties are 5% of sales, 6% interest on borrowings, \$6.17 outsourced cost of NCC/lb (this is partly based on an estimate by a specialty chemicals maker in the state of Georgia and sold at \$9/lb (46% markup). A summary of financials in Tables 4 and 5 is below:

A summary of the investment (See table at the end of details)

Investment options	Selling price	Cost/lb of NCC outsourced	Start of sales	Five year net present value (NPV)	Pay back period
\$1.0 million	\$9.0	\$6.17	Year 3	\$2.26 million	3.29 years
\$0.6 Million	\$9.0	\$6.17	Year 2	\$3.26 million	2.26 years

The current price for MCC is lower than the cost of production for NCC today. The lower cost for MCC is a function of the volume of production of MCC today, and the years of cost reduction since 1971, when it gained a GRAS determination from the FDA. However, NCC is many times more effective than MCC in moisture absorption, and NCC may be more effective in quickly releasing and dispersing drugs (additional tests underway to establish this). The most vulnerable market of MCC would be the high-end markets for MCC, where the properties of NCC would easily overcome any temporary cost disadvantage of NCC today. The market for NCC could grow exponentially but it is not considered in the estimates above.

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