

**111 Lyon Street, N.W.
Grand Rapids, Michigan 49503**

(989) 839-5350

(Telephone Number, Including Area Code, of Agent for Service)

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act (Check one):

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, 3,509,323 par value \$1.00	(1)	(2)	(2)	(2)

In addition, pursuant to Rule 416(a) under the Securities Act of 1933, this registration statement also covers such indeterminate number of additional shares as may be authorized in the event of an adjustment as a result of an increase in the number of issued shares of Common Stock resulting from the payment of stock dividends or stock splits or certain other capital adjustments.

This Post-Effective Amendment No. 1 to Form S-4 on Form S-8 Registration Statement relates to up to 3,509,323 shares of Chemical Financial Corporation's common stock, par value \$1 per share, issuable upon the exercise of certain outstanding stock options (the "Options") under the Talmer Bancorp, Inc. 2009 Equity Incentive Plan (the "Plan"), and assumed by Chemical Financial Corporation pursuant to the Merger described below under "Explanatory Note." Chemical Financial Corporation has previously registered such shares and paid the required registration fee pursuant to the Form S-4 Registration Statement (Registration No. 333-210520) filed on March 31, 2016.

EXPLANATORY NOTE

Effective August 31, 2016, the merger (the "Merger") of Talmer Bancorp, Inc. ("Talmer") with and into Chemical Financial Corporation ("Chemical") was completed pursuant to an Agreement and Plan of Merger, dated January 25, 2016 (the "Merger Agreement"). As a result, each former share of Talmer common stock was converted into the right to receive 0.4725 shares of Chemical common stock and \$1.61 in cash. In addition, each outstanding Option ceased to represent a stock option for Talmer common stock and was converted into a stock option for Chemical common stock (subject to adjustment as described in the Merger Agreement) and Chemical assumed the Plan. The Options continue to have, and are subject to, the same terms and conditions set forth in the Plan (or any other agreement to which an Option was subject immediately prior to the effective time of the Merger), except as otherwise provided in the Merger Agreement.

Pursuant to this Post-Effective Amendment No. 1 to Form S-4 on Form S-8 Registration Statement, Chemical is registering 3,509,323 shares of its common stock issuable upon the exercise of Options under the Plan. Chemical previously registered such shares and paid the required registration fee pursuant to the Form S-4 Registration Statement (Registration No. 333-210520) filed on March 31, 2016.

PART I

The document(s) containing information required in Part I of this registration statement will be provided to each participant in the Plan as specified by Rule 428(b)(1) promulgated by the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933. Such document(s) are not being filed with the Commission but constitute (together with the documents incorporated by reference in this Registration Statement pursuant to Item 3 of Part II hereof) a prospectus that meets the requirements of Section 10(a) of the Securities Act of 1933.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed by Chemical Financial Corporation ("Chemical" or "Registrant") with the Securities and Exchange Commission are incorporated in this registration statement by reference:

- (a) Chemical's Annual Report on Form 10-K filed with the Commission on February 26, 2016.
- (b) Chemical's Quarterly Reports on Form 10-Q filed with the Commission on April 27, 2016 and July 28, 2016.
- (c) Chemical's Current Reports on Form 8-K filed on January 26, 2016, February 2, 2016, February 11, 2016, April 19, 2016, May 31, 2016, July 7, 2016, July 20, 2016, August 10, 2016 and September 1, 2016 (except, with respect to each of the foregoing, for portions of such documents which are deemed to be furnished and not filed).
- (d) The description of Chemical's common stock in Chemical's Form S-3 Registration Statement filed June 12, 2014, including any amendments or reports filed for the purpose of updating the description.

All documents subsequently filed by Chemical pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, prior to the filing of a post-effective amendment which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be a part of this registration statement from the date of filing of such documents (except, with respect to each of the foregoing, for portions of such documents which are deemed to be furnished and not filed).

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this registration statement to the extent that a statement contained herein, or in any other subsequently filed document that also is incorporated or deemed to be incorporated by reference herein, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this registration statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Chemical is obligated under its Restated Articles of Incorporation and its Bylaws to indemnify its directors, officers, employees or agents and persons who serve or have served at the request of Chemical as directors, officers, employees, agents or partners of another corporation or other enterprise to the fullest extent permitted under the Michigan Business Corporation Act (the "MBCA").

Sections 561 through 571 of the MBCA contain provisions governing the indemnification of directors and officers by Michigan corporations. That statute provides that a corporation has the power to indemnify a person who was or is a party or is threatened to be made a party to a threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative and whether formal or informal (other than an action by or in the right of the corporation) by reason of the fact that he or she is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, partner, trustee, employee or agent of another foreign or domestic corporation, partnership, joint venture, trust or other enterprise, whether for profit or not, against expenses (including attorneys' fees), judgments, penalties, fines and amounts paid in settlement actually and reasonably incurred by him or her in connection with the action, suit or proceeding, if the person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation or its shareholders, and with respect to a criminal action or proceeding, if the person had no reasonable cause to believe his or her conduct was unlawful. The termination of an action, suit or proceeding by judgment, order, settlement or conviction, or upon a plea of *nolo contendere* or its equivalent, does not, of itself, create a presumption that the person did not act in good faith and in a manner that he or she reasonably believed to be in or not opposed to the best interests of the corporation or its shareholders, and, with respect to a criminal action or proceeding, had reasonable cause to believe that his or her conduct was unlawful.

Indemnification of expenses (including attorneys' fees) and amounts paid in settlement is permitted in derivative actions, except that indemnification is not allowed for any claim, issue or matter in which such person has been found liable to the corporation unless and to the extent that a court decides indemnification is proper. To the extent that a director or officer has been successful on the merits or otherwise in defense of an action, suit or proceeding, or in defense of a claim, issue or matter in the action, suit or proceeding, the corporation shall indemnify him or her against actual and reasonable expenses (including attorneys' fees) incurred by him or her in connection with the action, suit or proceeding, and any action, suit or proceeding brought to enforce the mandatory indemnification provided under the MBCA. The MBCA permits partial indemnification for a portion of expenses (including reasonable attorneys' fees), judgments, penalties, fines and amounts paid in settlement to the extent the person is entitled to indemnification for less than the total amount.

A determination that the person to be indemnified meets the applicable standard of conduct and an evaluation of the reasonableness of the expenses incurred and amounts paid in settlement shall be made: (i) by a majority vote of a quorum of the board of directors who were not parties or threatened to be made parties to the action, suit or proceeding; (ii) if a quorum cannot be so obtained, by a majority vote of a committee of not less than two directors who are not, at the time, parties or threatened to be made parties to the action, suit or proceeding; (iii) by independent legal counsel; (iv) by all independent directors not parties or threatened to be made parties to the action, suit or proceeding; or (v) by the shareholders (excluding shares held by interested directors, officers, employees or agents). An authorization for payment of indemnification may be made by: (a) the board of directors by (i) a majority vote of two or more directors who are not parties or threatened to be made parties to the action, suit or proceeding, (ii) a majority vote of a committee of two or more directors who are not parties or threatened to be made parties to the action, suit or proceeding, (iii) a majority vote of one or more "independent directors" who are not parties or threatened to be made parties to the action, suit or proceeding, or (iv) if the corporation lacks the appropriate persons for alternatives (i) through (iii), by a majority vote of the entire board of directors; or (b) the

shareholders. Under the MBCA, Chemical may indemnify a director without a determination that the director has met the applicable standard of conduct unless the director received a financial benefit to which he or she was not entitled, intentionally inflicted harm on the corporation or its shareholders, violated Section 551 of the MBCA (which prohibits certain dividends, distributions and loans to insiders of the corporation), or intentionally committed a criminal act. A director may file for a court determination of the propriety of indemnification in any of the situations set forth in the preceding sentence.

In certain circumstances, the MBCA further permits advances to cover such expenses before a final disposition of the proceeding, upon receipt of an undertaking, which need not be secured and which may be accepted without reference to the financial ability of the person to make repayment, by or on behalf of the director, officer, employee or agent to repay such amounts if it shall ultimately be determined that he or she has not met the applicable standard of conduct. If a provision in the articles of incorporation or bylaws, a resolution of the board or shareholders, or an agreement makes indemnification mandatory, then the advancement of expenses is also mandatory, unless the provision, resolution or agreement specifically provides otherwise.

The indemnification provisions of the MBCA are not exclusive of the rights to indemnification under a corporation's articles of incorporation or bylaws or by agreement. However, the total amount of expenses advanced or indemnified from all sources combined may not exceed the amount of actual expenses incurred by the person seeking indemnification or advancement of expenses. The indemnification provided for under the MBCA continues as to a person who ceases to be a director, officer, employee or agent.

The MBCA permits Chemical to purchase insurance on behalf of its directors, officers, employees and agents against liabilities arising out of their positions with Chemical, whether or not such liabilities would be within the above indemnification provisions. Pursuant to this authority, Chemical maintains such insurance on behalf of its directors, officers, employees and agents.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

The following exhibits are filed or incorporated by reference as part of this registration statement:

Exhibit

Number Document

- | | |
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| 4.1 | Restated Articles of Incorporation. Previously filed as Exhibit 3.1 to Chemical's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015 filed with the SEC on April 30, 2015. Here incorporated by reference. |
| 4.2 | Bylaws. Previously filed as Exhibit 3.2 to Chemical's Annual Report on Form 10-K for the year ended December 31, 2013, filed with the SEC on February 26, 2014. Here incorporated by reference. |
| 4.3 | Long Term Debt. Chemical has outstanding long-term debt which at the time of this report does not exceed 10% of Chemical's total consolidated assets. Chemical agrees to furnish copies of the agreements defining the rights of holders of such long-term debt to the Security and Exchange Commission upon request. |
| 5.1 | Opinion of Warner Norcross & Judd LLP. |
| 23.1 | Consent of KPMG LLP. |
| 23.2 | Consent of Warner Norcross & Judd LLP (included in Exhibit 5.1 and here incorporated by reference). |
| 24.1 | Powers of Attorney for Messrs. Klein and Weiss and Ms. Mahone. Powers of Attorney for Messrs. Wheatlake, Anderson, Lievense, Moore, Pelizzari, and Stauffer previously filed as Exhibit 24 to Chemical's Registration Statement on Form S-4, filed with the SEC on March 31, 2016, and Power of Attorney for Mr. Fitterling previously filed as Exhibit 24 to Chemical's Pre-Effective Amendment No. 2 to Form S-4, filed with the SEC on June 2, 2016. Here incorporated by reference. |
| 99.1 | Talmer Bancorp, Inc. 2009 Equity Incentive Plan |

Item 9. Undertakings.

- (a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the

registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer, or controlling person of the Registrant in the successful defense of any action, suit, or proceeding) is asserted by such director, officer, or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be

governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Midland, State of Michigan, on September 1, 2016.

CHEMICAL FINANCIAL CORPORATION

/s/ David B. Ramaker
David B. Ramaker
Chief Executive Officer and
President

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

September 1, 2016 By/s/ David B. Ramaker
David B. Ramaker
Chief Executive Officer, President and Director
(Principal Executive Officer)

September 1, 2016 By/s/ Dennis L. Klaeser
Dennis L. Klaeser

Executive Vice President, Chief Financial Officer and Treasurer

(Principal Financial Officer and Principal Accounting Officer)

September 1, 2016 By*/s/ Franklin C. Wheatlake
Franklin C. Wheatlake

Lead Director

September 1, 2016 By*/s/ Gary E. Anderson
Gary E. Anderson

Director

September 1, 2016 By */s/ James R. Fitterling
James R. Fitterling

Director

September 1, 2016 By */s/ Ronald A. Klein
Ronald A. Klein

Director

September 1, 2016 By */s/ Richard M. Lievens
Richard M. Lievens

Director

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September 1, 2016 By */s/ Barbara J. Mahone
Barbara J. Mahone

Director

September 1, 2016 By */s/ John E. Pelizzari
John E. Pelizzari

Director

September 1, 2016 By */s/ David T. Provost
David T. Provost

Director

September 1, 2016 By */s/ Larry D. Stauffer
Larry D. Stauffer

Director

September 1, 2016 By */s/ Gary Torgow
Gary Torgow

Chairman of the Board and Director

September 1, 2016 By */s/ Arthur A. Weiss
Arthur A. Weiss

Director

By/s/ David B. Ramaker
David B. Ramaker

Attorney-in-Fact