

DECLARATION OF WAYNE C. McDANIEL, Ph.D.

I. BACKGROUND AND QUALIFICATIONS

(1) My name is Wayne Charles McDaniel. I am currently Associate Director of the Technology Management and Industry Relations office at the University of Missouri-Columbia. I am also an Adjunct Professor of Electrical and Computer Engineering at the University of Missouri. During my career, I have worked extensively in biomedical engineering research involving cardiac therapy and defibrillation. I am expert in the areas of internal atrial and ventricular defibrillation, external ventricular defibrillation, experimental methods for defibrillation research, and cardiac safety of stun guns.

(2) I hold a Bachelor of Arts in Biology, a Master of Science in Electrical Engineering with a biomedical engineering emphasis, and a Doctorate of Philosophy in Electrical Engineering with a biomedical engineering emphasis from the University of Missouri-Columbia.

(3) From 2001 to 2011, I held the position of Senior Licensing and Business Development Associate of the Technology Management and Industry Relations office at the University of Missouri-Columbia. From 1987 to 2001, I was a Research Assistant Professor of Cardiothoracic Surgery at the University of Missouri-Columbia. From 1993 to 2001, I was

Acting Director of Cardiothoracic Surgery Laboratory Investigation at the University of Missouri.

(4) I have over 35 years of experience in the biomedical engineering field and have published extensively in electrical ventricular defibrillation. For over twenty-five years, I have conducted and received numerous grants for research relating to cardiac therapy and defibrillation.

(5) I was one of the pioneers of the biphasic waveform that is now used in virtually all automatic implantable cardioverter defibrillators and virtually all transthoracic defibrillators, including automatic external defibrillators.

(6) I have authored or co-authored 34 published articles relating to cardiac therapy and defibrillation, including articles titled "Transthoracic Defibrillation of Dogs with Edmark, Biphasic, and Quadriphasic waveforms," "Double-pulse transthoracic defibrillation in the calf using percent fibrillatory cycle length as spacing determinate," and "Relationship between efficacy and frequency domain characteristics of defibrillatory shocks."

(7) I have given 46 presentations at national or international meetings, including a presentation entitled "Multiphasic truncated exponential waveforms require less peak current for atrial defibrillation than optimal biphasic waveforms" to the 22nd Annual Scientific Sessions of the North American Society for Pacing and Electrophysiology, in Boston, Massachusetts in May of 2001 and a presentation entitled "Comparison of the Efficacy of Two Transthoracic Biphasic Waveform Defibrillators" to the Europace 2003 Congress in

Dec. 2003 in Paris, France. I have presented at 33 colloquiums and symposiums, including presentations on ventricular and atrial defibrillation.

(8) I am the sole inventor on U.S. Patent No. 6,738,664 entitled “Method of and apparatus for atrial and ventricular defibrillation or cardioversion with an electrical waveform optimized in the frequency domain,” which issued on May 18, 2004.

(9) A copy of my C.V. is attached as **Appendix A**.

II. STATUS AS AN INDEPENDENT EXPERT WITNESS

(10) I have been retained in this matter by Fish & Richardson P.C. to provide various opinions regarding U.S. Patent No. 5,735,879 (“the ‘879 patent”); U.S. Patent No. 5,749,905 (“the ‘905 patent”); U.S. Patent No. 6,047,212 (“the ‘212 patent”); U.S. Patent No. 5,607,454 (“the ‘454 patent”); U.S. Patent No. 5,836,978 (“the ‘978 patent”); U.S. Patent No. 5,749,904 (“the ‘904 patent”); U.S. Patent No. 5,593,427 (“the ‘427 patent”); and U.S. Patent No. 5,803,927 (“the ‘927 patent”) (collectively, “the Philips Waveform Patents”). I am being compensated at the rate of \$300 per hour for my work. My fee is not contingent on the outcome of this matter or on any of the opinions I provide below.

(11) I have been advised that Fish & Richardson represents ZOLL Lifecor Corp. in this matter. I have no financial interest in ZOLL Lifecor Corp.

(12) I have been advised that Philips Electronics North America Corp. (“Philips” or “Patent Owner”) owns the Philips Waveform Patents. I have no financial interest in Philips Electronics North America Corp. or in the Philips Waveform Patents.

III. MATERIALS CONSIDERED

(13) In arriving at the opinions set forth herein, I have reviewed the Philips Waveform Patents and relevant portions of their respective file histories.

(14) Additional materials that I have reviewed and relied upon in arriving at the opinions set forth herein are: (1) Bell (Appendix B); (2) Pless (Appendix C); (3) Kroll (Appendix D); (4) Schuder (Appendix E); (5) Swanson (Appendix F); (6) De Coriolis (Appendix G); (7) Ideker (Appendix H); (8) Fain (Appendix I); (9) Baker (Appendix J); (10) Packer (Appendix K); (11) Hahn (Appendix L); (12) Bach (Appendix M); (13) Adams (Appendix N); (14) Herleikson (Appendix O); and (15) Cameron (Appendix P).

IV. DESCRIPTION OF THE RELEVANT FIELD AND RELEVANT TIMEFRAME

(15) Based on my review of the Philips Waveform Patents and the materials listed in Appendices B-P, I conclude that the relevant field of the Philips Waveform Patents for purposes of my testimony is waveforms used for defibrillation, and apparatus and techniques for generating and delivering such waveforms. I have been advised that the relevant timeframe is August 1993, which is the date that the applications that lead to the Philips Waveform Patents were filed.

(16) As described in Section I above, I have extensive experience in the field of defibrillation waveforms, and apparatus and techniques for generating and delivering such waveforms.

V. PERSON OF ORDINARY SKILL IN THE ART

(17) I have been advised that “a person of ordinary skill in the relevant field” is a mythical person to whom an expert in the relevant field could assign a routine task with reasonable confidence that the task would be successfully carried out. Here, the relevant field is waveforms used for defibrillation, and apparatus and techniques for generating and delivering such waveforms. Because these devices are used to deliver a shock to a patient’s heart, people engaged in developing these devices and related methods need to have a high level of skill. Based upon my experience in this area, one of ordinary skill in the art in this field at the relevant time frame would have had an advanced (post-Bachelor’s) degree in electrical engineering, biomedical engineering, or some closely related field, with at least 5 years of work experience in one or more of these fields, and at least 5 years of experience in developing (e.g., designing or implementing) medical devices for defibrillation, pacing, and/or cardiac medical devices (which experience could have overlapped in whole or part with the at least 5 years of experience in the fields of electrical engineering or biomedical engineering), or the equivalent of such experience. The person of ordinary skill in the art also must have been intimately familiar with the design of, theory behind, principles of operation of, and intended use of defibrillators, as well as the principles of human physiology that underlie the indications of use for defibrillators (cardiac arrest and ventricular fibrillation), and the theories as to why the delivery of certain shocks may be useful to correct these conditions.

(18) Based on my experiences, I have a good understanding of the capabilities of a person of ordinary skill in the relevant field. Indeed, in addition to being a person of at least ordinary skill in the art, I have worked closely with many such persons over the course of my career, and I have regularly taught material fundamental to the art in my role as professor and researcher over the past 35 years.

VI. BACKGROUND OF THE RELEVANT TECHNOLOGY

(19) Sudden cardiac death is the most common mode of death in our adult population, accounting for an estimated 30 percent of all natural deaths. Sudden cardiac arrest occurs when the heart stops beating in an organized way and instead begins fibrillating in a random manner. Many of the hearts of sudden cardiac death victims appear essentially normal at the time of autopsy, causing some investigators to refer to them as hearts that were “too good to die.” One major cause of sudden cardiac death is a phenomenon called ventricular fibrillation (VF) which occurs in structurally good hearts over 900 times a day in the U.S. alone in out-of-hospital patients. In VF, the individual muscle fibers of the heart no longer contract in unison, but rather there are waves of contraction that run randomly through the heart. A direct consequence of VF is the inability of the heart to pump blood, which means the patient will suffer irreversible brain damage and then death if not treated promptly.

(20) Electrical defibrillation is a treatment of choice for ventricular fibrillation and consists of delivering a therapeutic dose of electrical energy to the patient’s heart, which

depolarizes a critical mass of the heart muscle. This depolarization terminates the dysrhythmia, allowing the patient's normal sinus rhythm to be reestablished. Defibrillators, which were first developed in the mid-1900s, are devices that restore normal contractions in the heart muscle by delivering a powerful shock via electrodes attached to the patient. The goal of a defibrillation shock is to deliver the appropriate amount of current to the patient to reestablish normal sinus rhythm, while minimizing damage to the patient's heart. The shock is generally delivered by charging an energy source, such as a capacitor over time, and then closing a switch to release the charge. A shock takes just a fraction of a second.

(21) The flow of electrical current released during the shock has a shape that can be characterized by a time versus voltage graph that shows the “waveform” of the shock. For example, if a shock is delivered freely, the “waveform” is simply an exponentially decaying shape that approaches zero after a relatively long period of time. For successful defibrillation, the amount of current delivered to the heart varies between patients on account of a given patient's body mass, temperature and diaphoresis—collectively referred to as patient impedance. To account for patient impedance, the waveform of the shock can be modified, or shaped, by altering the initial and/or terminal voltage used in delivering the shock, as well as the duration of the shock. Such shaping allows one to modify the amount of current released into the patient.

(22) Modern defibrillators can either be external units, where electrodes are placed on the patient's torso to deliver a shock to the patient's heart, or internal devices, in which

case a small electrical impulse generator is implanted into the body of a patient at risk of cardiac arrhythmia. The implantable device monitors the patient's cardiac rhythms and automatically delivers a therapeutic shock if dysrhythmia is detected. Because external defibrillators indirectly deliver therapeutic shocks to the heart (i.e., through layers of fat, tissue, and skin), it is important to be able to modify different aspects of the waveform for patients of different sizes and body types.

Brief History of Defibrillators

(23) The earliest recorded defibrillation in humans with internal electrodes was accomplished in 1947. The first electrical waveform used for defibrillation was 60 Hz alternating current (AC), which is also used as standard household current. Similarly, the first recorded defibrillation of a human with external electrodes was accomplished in 1956, also by an AC waveform defibrillator.

(24) AC waveform defibrillators were replaced in the 1960s by the development of the Lown and Edmark waveform defibrillators. These defibrillators comprised a resistor (R), an inductor (L), and a capacitor (C), and were therefore referred to as RLC defibrillators. RLC defibrillators were considered to be an advancement over AC defibrillators in that they were portable and did not need to be tethered to a power line. Both the Lown and Edmark waveforms delivered predominantly monophasic waveforms. However, under certain patient resistances, one or more negative phases would be observed. Therefore, both

Edmark and Lown waveform defibrillators would generate multiphasic waveforms under the right circumstances.

(25) In 1966, John Schuder et al. published a study of the transthoracic defibrillation efficacy of triangular and trapezoidal waveforms in dogs. This study followed a similar study of monophasic square waveforms. This study found that a long slow decay on a waveform would reduce the efficacy, whereas truncating the descending triangular waveform yielded a superior waveform. This study laid the foundation for capacitor discharge defibrillators not containing an inductor.

(26) In 1971, Schuder et al. extended this work to true capacitive discharge waveforms (as opposed to triangular waveforms above) and found that truncation of long-duration waveforms significantly improved defibrillation success. The Schuder lab pioneered this monophasic truncated exponential (MTE) waveform (which is sometimes called the Schuder waveform) for defibrillation. One advantage to the MTE waveform was the reduction of the peak current, which was believed to cause cardiac damage with the Edmark and Lown waveforms. Another advantage to the MTE waveform (when implemented in clinical devices) was that one could compensate for differing thoracic impedance values seen with different patients by delivering a constant value of delivered energy across a wide range of patient impedances. This was done by monitoring a patient-related electrical parameter and terminating the shock based on that measured value.

(27) Around the same time, the Schuder lab published a research study of the first implantable defibrillator and incorporated the MTE waveform in that defibrillator. The MTE waveform was particularly well suited for the implantable defibrillator, in that it could be generated without the use of an inductor, which would be too large and heavy for use in an implantable device.

(28) In the early 1980s, John Schuder, in collaboration with Janice Jones, theorized that a biphasic waveform would cause less post-shock dysfunction than the MTE waveform for defibrillation. Biphasic waveforms differ from monophasic waveforms in that the shock delivered to the patient's heart in a monophasic shock is delivered in one direction only from one electrode to the other. In biphasic waveform defibrillation, the shock passes in one direction from one electrode to the next and then reverses direction, traveling back to the original electrode. That is, in a biphasic waveform the pulse alternates between positive and negative polarities.

(29) The Schuder lab began a series of studies of the biphasic waveform with the first study involving what are now called biphasic truncated exponential (BTE) waveforms. The first study involving implantable electrodes was promising (published in 1981), so the Schuder lab modified its high power research defibrillator to enable it to generate biphasic waveforms for external defibrillation of human-sized animals (device made public in 1982). The first study with the modified research defibrillator involved symmetric rectangular biphasic waveforms (equal constant currents and equal phase durations), which was

published in 1983. Then a study of asymmetric rectangular biphasic waveforms (unequal constant currents and equal phase durations) was published in 1984.

(30) The studies of Schuder and Jones attracted the attention of both an implantable defibrillator manufacturer (Cardiac Pacemaker Inc.) and an external defibrillator manufacturer (Physio Control). Cardiac Pacemakers Inc. (CPI) and Physio Control worked collaboratively with the Schuder lab, the Jones lab, and other labs such as Ray Ideker's lab. About once per year during this time period, representatives of each of the labs and each of the companies met for a research conference. It was known to all researchers involved at the time that the biphasic waveforms showed promise to dramatically improve both the implantable defibrillators made by CPI and the transthoracic defibrillators made by Physio Control.

(31) In 1984 the Schuder lab published its study of asymmetric biphasic truncated exponential (BTE) waveforms (exponentially decaying currents and equal phase durations) used in the transthoracic defibrillation of 100 kg calves. This study examined the efficacy of several waveforms that were capable of being generated by a single capacitor bank. Specifically, when a single capacitor BTE waveform is generated clinically, a single capacitor bank is used, and the voltage and current delivered to a patient decay as the capacitor discharges. At some point during this discharge, the shock is interrupted and the polarity is reversed before reinitiating the shock. Then at some later point, the shock is terminated.

(32) By 1985 it was known that biphasic waveforms were an improvement over monophasic waveforms for both internal defibrillation and external defibrillation. It was further known that the best known method of generating biphasic waveforms for both internal and external defibrillation involved the use of a single capacitor biphasic truncated exponential waveform. The Schuder lab's 1984 BTE waveform study further established that the individual pulse durations ranging from 2.8 to 7.54 ms (overall pulse durations of 5.6 to 15.08 ms) showed positive results. The study also showed that the ideal capacitance values for human defibrillation were in the range of 64 to 196 microfarads. The general recognition of the biphasic waveform as a more effective defibrillation waveform was again illustrated in a 1988 paper from the Schuder lab entitled "General Superiority of Biphasic Over Uniphasic Shocks in Cardiac Defibrillation." This paper summarized all of the studies to date of biphasic waveforms for defibrillation and concluded that biphasic waveforms were more effective for defibrillation than monophasic waveforms.

(33) Following these advancements, further methods of modifying the biphasic waveform have subsequently been employed in defibrillators. For example, internal and external defibrillators containing an output circuit having four legs arranged in the form of the letter "H" have been developed. "H-bridge" circuits were employed in defibrillators to conduct a range of defibrillation pulse energies. Selectively switching on pairs of the switches in an H-bridge circuit allows the pulse to generated by a single capacitance to alternate between positive and negative polarities. Another way researchers modified

biphasic waveforms was by adjusting the truncation or “tilt” of the waveform. Tilt specifically refers to the percentage difference between the ending voltage value and the initial voltage value. Modifications to the tilt of the waveform allow for control of the amount of energy delivered to the patient, thereby reducing the energy requirements of the defibrillator and preventing myocardial damage from overexposure.

(34) In sum, by August of 1993 it was well known that one could compensate for differing patients’ impedances by (a) varying the predetermined duration of time over which discharge occurred, (b) measuring voltage decay (or equivalent electrical parameter) and stopping discharge when it reached a predetermined level, or (c) various combinations of both. At the same time, by 1993 it would have been obvious to apply knowledge and techniques learned from monophasic waveform research and implementations to biphasic waveform implementations, and to apply knowledge and techniques learned from implantable defibrillator research and implementations to external defibrillator implementations.

VII. THE ‘427 PATENT

(35) The ‘427 Patent is entitled “Electrotherapy Method,” and its disclosure relates to an electrotherapy method and apparatus for delivering an electrical shock to a patient’s irregularly beating heart to cause the heart to resume its natural beating rhythm. (‘427 Patent at 1:7-17). The electrical shock is applied as a biphasic truncated exponential waveform. (*Id.* at 5:54-6:4, FIGs. 7 and 8). To deliver the waveform, an energy source,

such as a capacitor, is charged to a predetermined voltage, and subsequently discharged through electrodes that are in electrical contact with the patient. (*Id.* 6:42-52). During the first phase of the waveform, an electrical parameter, such as voltage or current, is measured across the electrodes. (*Id.* at 5:20-33, 6:57-62). The first phase is truncated when a predetermined period lapses, or when the measured electrical parameter reaches a predetermined level, whichever occurs first. (*Id.* at 5:54-6:4, 7:63-67, FIGs. 6-8). The second phase of the waveform can have a fixed duration, a duration based on an electrical parameter measured during the second phase, or a duration based on a discharge parameter, such as terminal voltage or duration, of the first phase. (*Id.* at 5:37-40, 6:20-22, 7:29-32).

(36) The '427 Patent claims priority to an application filed August 6, 1993. The stated main difference between earlier electrotherapy apparatus and methods and the '427 Patent is the disclosure in the '427 Patent of an external defibrillator and defibrillation method that automatically compensates for patient impedance differences by changing the nature of the delivered electrotherapeutic pulse. (*Id.* at 2:35-39, 2:53-57). Automatically compensating for patient impedance differences maximizes therapeutic efficacy across an entire population of patients. (*Id.* at 2:26-30). Methods and apparatus for automatically compensating for patient impedance differences were well-known by the time of the '427 Patent's priority date.

(37) I have reviewed Bell (Appendix B). Bell is one of many prior art examples disclosing an external defibrillator that measures electrical parameters, e.g., voltage and current, while delivering a shock to the patient and uses the measured electrical parameters to determine when to stop delivering the shock. (Bell at 2:5-13, 3:3-13, FIGs. 1 and 2). Bell further discloses that the output pulse width is limited to a maximum value for any given setting. (*Id.* at 4:15-18). Bell explains that in the case of a high patient resistance, the defibrillator would attempt to deliver the selected energy but would take too long and the time out input will terminate the discharge before the measured voltage and current indicate that the selected energy value is reached. (*Id.* at 4:30-40). Based on my knowledge and experience in this field and my review of Bell, I believe that a person having ordinary skill in the art would have recognized that Bell provides a method for applying electrotherapy to a patient including discharging the energy source across the electrodes in the predetermined polarity until the end of a predetermined time period or until an electrical unit measured across the electrodes reaches a predetermined level, whichever occurs first.

(38) In my opinion, it was also well-known that the voltage measured across the electrodes decays due to the natural discharge pattern of the capacitors from which the voltage originates. It was also well-known that the voltage on the capacitor bank, as it decays, is mathematically related to the energy delivered to the patient. Therefore, detecting that a measured voltage has decayed to a predetermined terminal voltage level is the functional equivalent of monitoring the delivered energy and detecting when the

selected delivered energy value is reached. This voltage-energy relationship is described in the Pless reference (Appendix C). In particular, Pless discloses that a desired tilt, which is the ratio of the ending voltage value V_f to the starting voltage value V_i , can also be expressed as a desired energy since $J = 0.5 * C(V_i^2 - V_f^2)$. (Pless at 1:34-47, 3:18-23).

Based on my knowledge and experience in this field and my review of Bell and Pless, I believe that a person having ordinary skill in the art at the time would have recognized that discharging the capacitors across the electrodes until the delivered energy reaches the selected energy value is the mathematical equivalent of discharging capacitors across the electrodes until the voltage measured across the electrodes decays to a predetermined terminal voltage level corresponding to the selected energy value.

(39) Regarding the phrase “discharging . . . in the reversed polarity” as recited in claims 2-6 of the ‘427 Patent, a biphasic waveform had become known in the time between Bell and the filing of the ‘427 Patent as a preferred waveform for achieving defibrillation. I note that the ‘427 Patent recognizes that several prior art patents describe biphasic waveforms. (‘427 Patent at 1:52-58). Pless also describes generating biphasic waveforms. (Pless at 3:4-7). Pless’ biphasic waveform can have a negative pulse with a timed duration (*Id.* at 7:35-41), a negative pulse that is terminated when the capacitor voltage decays to less than a selected trailing voltage (*Id.* at 5:11-22), or a negative pulse with a duration that is a percentage of the duration of the positive pulse (*Id.* at 3:32-35). Based on my knowledge and experience in this field and my review of Bell and Pless, I believe that a

person having ordinary skill in the art at the time would have been motivated to combine Pless' biphasic waveform with Bell's waveform control scheme because of the recognized increased effectiveness of biphasic waveforms over monophasic waveforms. Moreover, a person of skill would have been motivated to make such a combination despite the fact that Bell teaches an external defibrillator while Pless teaches an implantable defibrillator because the biphasic waveform was generally accepted as more effective than the monophasic waveform regardless of whether the electrodes were external or implantable.

(40) Claims 9-18 of the '427 Patent include features relating to a multiphasic waveform. As described in ¶ 39 above, such waveforms had become known in the time between Bell and the filing of the '427 Patent as a preferred waveform for achieving defibrillation, as recognized by the '427 Patent and described in Pless. Further, Kroll (Appendix D) describes a biphasic waveform having a phase of optimum duration. (Kroll at 6:60-62). Kroll also describes producing a second pulse with a duration that is a fraction of the duration of the first pulse (*Id.* at 7:1-3) and producing a second pulse that meets a fixed-duration specification (*Id.* at 7:5-8). Based on my knowledge and experience in this field and my review of Bell and Kroll, I believe that a person having ordinary skill in the art at the time would have been motivated to combine Kroll's biphasic waveform with Bell's waveform control scheme because of the increased effectiveness of biphasic waveforms over monophasic waveforms. Moreover, a person of skill would have been motivated to make

such a combination despite the fact that Bell teaches an external defibrillator while Kroll teaches an implantable defibrillator.

(41) Schuder (Appendix E), like Pless and Kroll, describes a multiphasic waveform. Schuder describes bidirectional truncated exponential waveforms implemented in clinical sized apparatus for transthoracic defibrillation (Schuder at 520, ¶3) and producing a negative pulse with a timed duration (Id. at 520, ¶4; Table I). Based on my knowledge and experience in this field and my review of Bell and Schuder, I believe that a person having ordinary skill in the art at the time would have been motivated to combine Schuder's biphasic waveform with Bell's waveform control scheme because of the recognized increased effectiveness of biphasic waveforms over monophasic waveforms.

(42) I have been asked to compare claim 1 of the '427 Patent with claim 4 of the '879 Patent. Claim 4 of the '879 Patent discloses a method for applying electrotherapy to a patient, as does Claim 1 of the '427 Patent. The only substantive difference between Claim 4 of the '879 Patent and Claim 1 of the '427 Patent is that the '427 claim recites discharging until the end of a time period or until the electrical unit decays to a terminal level (whichever occurs first), while the '879 claim recites discharging until the end of a time period and until the electrical unit decays to a terminal level. Based on my knowledge and experience in this field, and in view of the prior art discussed above, I believe that a person having ordinary skill in the art at the time would have considered the differences between the two claims to reflect nothing more than an obvious design choice because the difference

between an “and” and an “or” is simply a selection from a very finite, two-member group with no unpredictable results.

(43) I have been asked to compare claim 9 of the ‘427 Patent with claim 9 of the ‘454 Patent. Claim 9 of the ‘454 patent discloses a method for applying electrotherapy to a patient, as does Claim 9 of the ‘427 Patent. The ‘454 claim also discloses the “discharging” and “monitoring” features of the ‘427 claim. The ‘454 claim’s “shaping” feature is an example of the ‘427 claim’s “adjusting” feature. The only substantive difference between the claims is that the ‘427 claim recites discharging until the end of a time period or until the electrical parameter reaches a predetermined level, whichever comes first, while the ‘454 claim recites both (a) controlling phase duration by a monitored electrical parameter and (b) selecting a phase duration based on monitored elapsed time. In both the ‘454 claim and the ‘427 claim, both the electrical parameter and the elapsed time serve as limits on phase duration, and thus the discharge would occur until either factor was triggered, whichever occurs first.

(44) I declare that all statements made herein of my own knowledge are true and that all statement made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statement and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

(45) I declare under penalty of perjury that the foregoing is true and correct.

/Wayne C. McDaniel/

Wayne C. McDaniel

/September 23, 2013/

Date