BINGHAM UNIVERSITY, KARU

General Studies Division

BST 204 ASSIGNMENT

Section A: Ethics In The Field Of Chemical Engineering With Its Impacts On The Members (Professionals) And The Society At Large

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Abstract:

The code of engineering ethics which directs the sort of administrations given by the engineer should always tell the truth, be unbiased, be fair and equity, and be committed to the insurance of the general wellbeing of the public, security and government assistance has similar treatment, that the last five instructions (Ten Commandments) that God had given to Moses to His people, to treat each other decently. This research work will contend that the Christian engineer, keeping the Ten Commandments, will quite often go past the code of a chemical engineer in their ordinary obligation as a practicing chemical engineer to the society in general and environment.

Introduction:

Chemical Engineering is a significant and learned profession. Regularly an student will go through four years of undergrad preparing prompting a four year college education in an engineering program sometimes five in some other countries. In the United States of America, each engineering program is expected to fulfill the standards of the Engineering Accreditation Commission (EAC) of the Authorization Board for Engineering and Technology (ABET) to be ABET licensed. The ABET licensed program incorporates teaching understudies to meet a rundown of indicated results, including those connected with engineering morals, for example, understudies must have: c) a capacity to plan a framework, part, or interaction to address wanted issues inside reasonable limitations, for example, monetary, ecological, social, political, moral, wellbeing and security, manufacturability, and supportability) a comprehension of proficient and moral obligation.

In engineering profession, there is no overall engineering society that most engineers identify with [2]. Each discipline within the engineering has a professional society, such as the America Society of Mechanical Engineers (ASME), American Institute of Chemical Engineers (AICHE), and the Institute of Electrical and Electronics Engineers (IEEE). The National Society of Profession Engineers (NSPE) is the only Engineering organization which represents professional engineers across all engineering disciplines. An aspect of this professional society is the code of engineering ethics that the NSPE have adopted. The code of ethics, which is representative of the codes for other engineering disciplines, provides a framework for ethical judgment for the professional engineer. The codes of engineering ethics express the rights, duties and obligations of the engineer as they carry out their work.

In biblical arena, God, through Moses, has given us the moral laws, the Ten Commandments, as

we live among man. The first four laws direct our attention to the Lord, the creator God; whereas the last six laws basically express how we should treat our neighbor. Examination of the codes of engineering ethics and the moral laws showed that both have similar views on how to treat our fellow humans. But the Christian engineer, with the love for the Creator God and in keeping the moral laws,

clearly goes beyond the codes of engineering ethics in the treatment of fellow beings, the society and the environment.

Being a professional chemical engineer means that the wider public trusts you to be competent and to adhere to certain ethical standards .The aim of a chemical engineer is to be of service to the community and society expects the highest professional standards. Ethics lies at the heart of our discipline. Moreover, engineering ethics emphasizes that engineers shall not promote their own interests at the expense of the dignity and integrity of the profession. It's about doing what's right for other people, ensuring their safety and welfare. That's why professional engineering organizations like the NSPE (National Society of Professional Engineers), IEEE (Institute of Electrical and Electronics Engineers), and ASME (American Society of Mechanical Engineers) have established longstanding rules, standards, and policies to govern the behavior of their members. Engineers, in the fulfillment of their professional duties, shall:

- Hold paramount the safety, health, and welfare of the public.
- Perform services only in areas of their competence.
- Issue public statements only in an objective and truthful manner.
- Act for each employer or client as faithful agents or trustees.
- Avoid deceptive acts.

Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.. Ethics has been a keen point of focus with a series of recent meetings by senior engineers in the community working together to help enhance ethical behavior. In 2003 the Royal Academy of Engineering and the Engineering Council issued their Statement of Ethical Principles. There are four basic principles: honesty and integrity; respect for life, law, the environment and public good; accuracy and rigor; and leadership and communication. IChemE offers some materials and training, and during accreditation, ethics is now a cross-cutting topic alongside safety and sustainability.

More recently the Royal Academy of Engineering and the Engineering Council established the Engineering Ethics Reference Group to have "a strategic-level remit with a leadership and advisory role, to shape the profession's ethics-related activity and steer an enhanced culture of ethical behaviour amongst those working in engineering". In February the group delivered its report (https://bit.ly/3DpC1CG) along with a series of actions. We were members of this group, with David Bogle as its Chair.

Ethics before action

The report puts forward a series of actions under four headings: Leadership; Professionalism; Education and Training; and Engagement. Leadership is essential for sustaining a culture which encourages ethical behaviors within all aspects of engineering practice. Leadership can be practiced across all levels of the engineering profession not merely by senior members. At all levels – from the most junior to the most senior – we all have a role in questioning practice where we think there may be challenging ethical

issues. It requires all to reinforce this culture. Professionalism refers to embedding ethical practice in engineers' work and in reflecting on our own practices. Education and training refers to the formal elements of preparation and continual development of ethical practice. Engagement actions aim to enhance communications with wider society.

All four are central to ensuring that chemical engineers think ethics before taking action. In this series we will be hearing from some senior members of the chemical engineering community who will be discussing their experience and perspective on engineering ethics.

The codes of engineering ethics express the rights, duties and obligations of the engineer as they carry out their work. In biblical arena, God, through Moses, has given us the moral laws, the Ten Commandments, as we live among man. The first four laws direct our attention to the Lord, the creator God; whereas the last six laws basically express how we should treat our neighbor.

The Ten Commandments

The Ten Commandments were given to the Israelites following their liberation from slavery in Egypt. These commandments were considered the moral statutes given by God, through Moses on the Mount Sinai (Exodus 19:23) or "Horeb" ((Deuteronomy 5:2) in the form of two stone tablets, so that the Israelites could enjoy fruitful and holy lives. These Ten Commandments were later summed up in the New Testament when Jesus was confronted by a lawyer asking Him which was the greatest commandment in the Law. Jesus pointed out that we should love the Lord ... and our neighbor as ourselves as been the two commandments that sums up the whole law and the Prophets." (Matthew 22:36-40). A reflective reading of Christ's teaching reveals that the first four commandments given to the children of Israel are contained in the statement: "Love the Lord your God with all your heart and with all your soul and with all your mind." It continues that the last six commandments are enclosed in the statement: "Love your neighbor as yourself Examination of the Code of Engineering Ethics and the Ten Commandments. Careful examination of any of the engineering codes of ethics, and you will find that they overlapped the Ten Commandments [4]: Each of the canon law, further described using the Rule of the Practice and the Professional Obligation, shows that they are similar to what the moral laws are telling the children of God what to do or what not to do and are listed below.
1. Hold paramount the safety, health, and welfare of the public.

The Rule of the Practice (see Appendix 1) indicates that if an engineer's judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate. This statement clearly shows that the life of an individual or a property should be safe guard. The sixth commandment dictates that an engineer should not murder another human being. This implies that the life of people is precious and needs to be guarded and respected.

2. Perform services only in areas of their competence.

According to the Rule of Practice, engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved. They are not to affix their signatures to any plans or documents dealing with subject matter in which they lack the competence, nor to any plan or document not prepared under their direction and control. This is similar to the ninth commandment that you should not bear false witness, which if stated positively enforces the need for truthfulness.

3. Issue public statements only in an objective and truthful manner

Engineers shall be objective and truthful in their professional reports, or testimony and they may express publicly technical opinions that are founded upon knowledge of the facts and competence in the subject matter. This is again similar to the ninth command not to bear false witness.

4. Act for each employer or client as faithful agents or trustees

With reference to the Rule of Practices, the engineers shall disclose all known or potential conflicts of interest that could influence or appear to influence their judgment or the quality of their services. They shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties. Again the ninth commandment points to the engineer not to bearing false witness for the quality of services done.

5. Avoid deceptive acts

Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications. They shall not misrepresent or exaggerate their responsibility in or for the subject matter of prior assignments. Brochures or other presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, joint ventures, or past accomplishments. Yet again the ninth commandment comes strongly in this canon law.

6. Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession. The last of the canon is further expanded in the third section: Professional Obligations as shown in Appendix 1. As worded in the Profession obligation to the society, the engineer basically has to be truthful, do not bear false witness or
lie or steal what is not your work or design. All these are again part of the Ten Commandments.

As pointed out above, there is nothing in the engineering code of ethics that directly conflicts with a Christian understanding of moral responsibility [1). The Christian engineers certainly want to use their knowledge and skill for the enhancement of human welfare, and to be truthful, faithful, and fair. The emphasis on safety in design work is central to the engineering ethos. It is important to know that engineers without experience of God's saving grace can still do well in this fallen world. But this Codes of Engineering Ethics, which is service oriented, intended to benefit both the provider and the recipient of

the service or the community and does not foster values such as faithfulness, diligence, equality, respect, integrity, compassion, Christ-likeness and acceptance. Christian engineers going beyond the codes of ethics in their service to man and protecting the earth.The Christian engineer would add a value based service that is centered on and informed by Christian values in place of the service oriented commitment to the society and the environment. The bible does promote certain Christian values that become the basis and part of a value-based service. Tankiso Letseli [5) suggests the following characteristics that can be applied to a Christian engineer.

1. Faithfulness: The Christian engineer should instill this value in keeping

Promises, honoring appointments, submitting accurate reports and not telling lies.

2. Diligence: The Christian engineer should be diligent in carrying out a duty and

not just for the sake of meeting the minimum requirement.

3. Integrity: The Christian engineer will continually adhere to the Bible morals and principles. The gospel flourishes when those witnessing for them demonstrate integrity as mentioned in the Bible when Ananias, a devout man, according to the law, having a good report of all the Jew which dwelt there. (Acts 22:12).

4. Compassion: The Christian engineer should have this Christ-like value which causes one to suffer with the suffering.

5. Respect: The Christian engineer should consider others ahead of self. "Do nothing from selfishness or empty conceit, but with humility of mind regard one another as more important than you (Phil 2:3).

6. Acceptance: The Christian engineer, following the example of Christ, should love our neighbor as we love ourselves. As we do not need to buy or earn our acceptance in Christ, our neighbor does not need to earn our love and acceptance.

Steward for the environment

As a Christian engineer, as a steward of God's earth, in designing of an instrument or machinery, he/she should also consider carefully the effect that the instrument /machinery have on the earth or man or animal in general. At the same time, when the instrument/machinery is to be retired or replaced, the Christian engineer should think ahead whether the product can be recycled or reuse or can the parts be dismantled off properly without affecting the earth such as in landfills. The Bible in Genesis 1 :26 reads: "Then God said, 'Let us make man in our image, according to Our likeness, and Jet them rule over the fish of the sea and over the birds of the sky, over the cattle and over all the earth, and over every creeping thing that creeps on the earth".

So to be created in the image of God is that God himself is a king and ruler over his creation and that the human is to exercise that role in the world. However, the Bible tells us that the world is important to

God, that he upholds it, and that he cares for it. So when this passage talks about man ruling over all the earth, it is not ruling in the sense of subjugation and abuse that is intended, but ruling in the sense of husbanding and caring for the world. Using its resources, yes, but also protecting them and preserving them for future generations [6]. Again, the bible explicitly requires the preservation and protection of the natural environment. For example, in Deuteronomy 22:6 we read: "If you come across a bird's nest beside the road, either in a tree or on the ground, and the mother is sitting on the young or on the eggs, do not take the mother with the young. You may take the young, but be sure to let the mother go, so that it may go well with you and you may have a long life."

The engineering ethics methods tend to address individual decision-making within a limited context (micro issues), rather than system level consequences of organizational or corporate decision-making in society. As such,the codes (currently, at least) do not address all the principles Christians care about. An obvious example is the lackof inclusion in the NSPE code of any ethical responsibilityto the environment and sustainability. The Christian values approach should encourage reflection on the overallideals of the profession. In this way, students are encouraged to think beyond the micro issues of a particular ethical dilemma toward broader issues of how technology can benefit society.

The weaknesses of the Christian valuesapproach include the fact that it tends tofocus on broad principles that are difficultto apply to specific technical problems. It iseven more difficult to apply these principles when they seem by nature to conflict (forexample, justice and mercy). These valuesare naturally considered to be maximal innature, that is, the claims of faith have priority over all of our decisions. In an extreme case, taking the demands of livingour Christian commitments seriously cancause a student to consider leaving engineering in favor of professions that seemmore obviously tied to their Christian calling, like missions or full-time church work.It can be helpful in these cases to emphasize that engineering as a profession is dedicated to serving society, and that Christian engineers can participate in the profession as a means for Christian service.

In today’s postmodern cultural context,engineering professors do not want to beaccused of sermonizing or indoctrinatingstudents into particular worldview perspectives, which would imply intolerance ofother systems. It is much safer to simply focus on the professional expectations whichare particular to engineering work and which have broad application independent of worldview. From the professional ethics standpoint, engineering ethics can be taught the same way—wherever you are and whoever your students are. Some Christians also view engineering ethics this way, and do not see a need to make explicit connections between faith and ethics.

There is nothing in the engineering codeof ethics that directly conflicts with a Christian understanding of moral responsibility.For the most part, these are goals that Christians can readily appropriate. Christians certainly want to use their knowledgeand skill for the enhancement of human welfare, and to be

truthful, faithful, and fair.The emphasis on safety holding priority in design work is central to the engineering ethos.

A Reformed understanding of common grace allows us to recognize that even those engineers without experience of God's saving grace can still do good in this fallen world.An engineering curriculum constructed to meet the goalsspecified in the code should therefore also be consistentwith what a Christian engineer would want to teach. Certainly our ultimate loyalty does not belong to our clients or employers, to our profession, or even to the public. But, in most cases, serving these constituencies faithfully can be an expression of our ultimate loyalty to God. This should mitigate the fear that appropriating this "secular" approach is a danger to Christian values.

The protector of human life

The Christian engineer, in designing or building a project or structure will make sure that the usage of the project or structure will not in any way result in any injuries or

death. The Bible in Deuteronomy 22:8 reads: 'When you build a new house, make a parapet around your roof so that you may not bring the guilt of bloodshed on your house if someone falls from the roof.'' A parapet is a wall-like barrier at the edge of a roof, terrace, balcony or other structure. Where extending above a roof, it may simply be the portion of an exterior wall that continues above the line of the roof surface, or may be a continuation of a vertical feature beneath the roof such as a fire wall or party wall, according to Wikipedia. Most houses in biblical times had flat roofs, see figure 1, which were used for storage and drying fruit and people also slept there in summertime [7]. It is also a place and they would entertain people on them, in much the same way that we would use a balcony, patio or a deck. And there is a specific provision here for human safety so that people don't fall off and hurt themselves Doing what is right and proper in the sight of the Lord. People tend to act with a lack of integrity and often this is because of the personal desire to prosper at the expense of others. Biblically there is nothing wrong with making money. It is the love of money that is the root of all evil (1 Tim 6:10). The 1Oth commandment forbids an individual to desire the neighbors' possessions for himself/herself. But the problem is, given this propensity of man to be selfish and abuse others sometimes the pursuit of money and personal pleasure gets in the way of other considerations so that they are obscured or overridden [6]. All projects will involve some form of money and someone is paying you for your service. That someone, mostly businesses or rich people will want to get the job done fast and It is right at this point that you might find a clash of interests. Dr Michael Finn [6] provided an illustration of this problem:

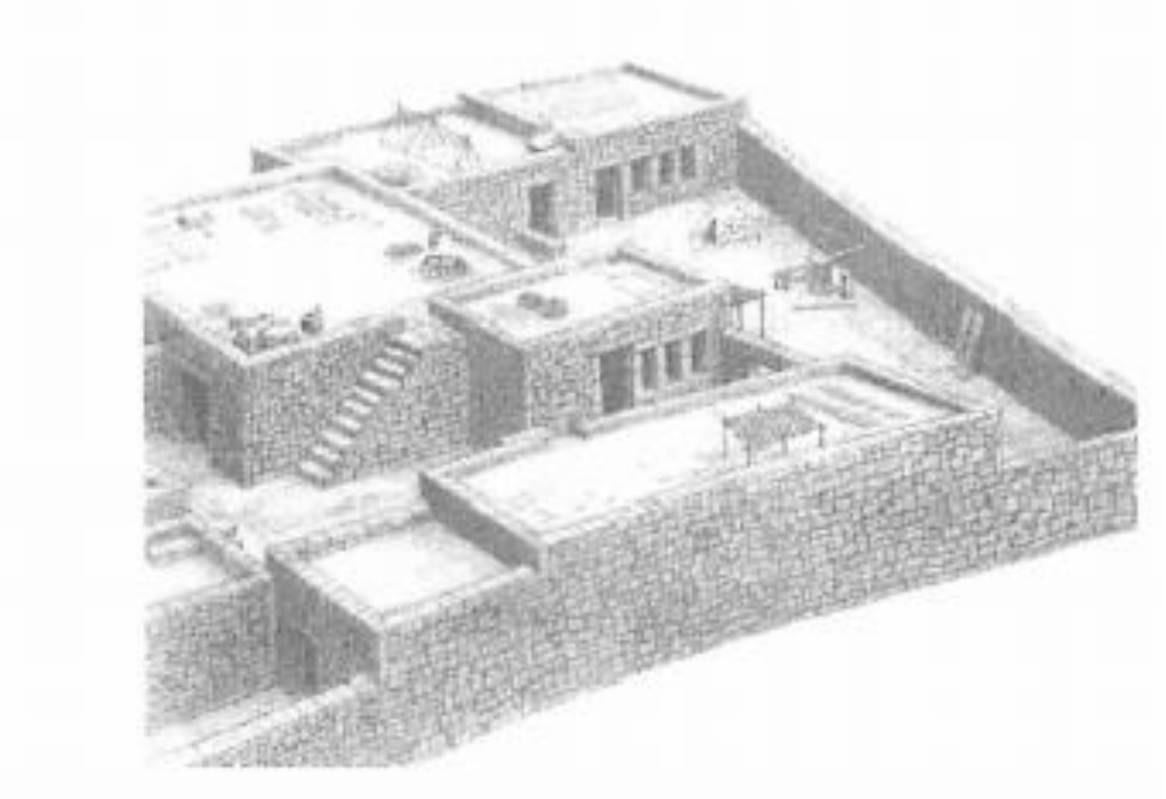

Figure 1, Reconstruction of a 1st century farmhouse complex with oven and olive press (upper right); the courtyard and roof are clearly work areas; the roof has a shaded work space and separate areas for drying flax, farm produce, etc. Image taken from reference [8].

What say the money for the project does not go far enough? You would like to make sure that all the safety regulations are met, but there is a pressure on the funding and you may be asked to cut corners. You are employed. You want to get paid for the job - you want to reach your own financial goals. Will you risk losing a contract because you cannot put your name to a report that overlooks minor safety regulations?

What say your client comes back to you and says that he can go to engineer 8 down the road and he will design the same building with half the wall thickness and much less steel reinforcing? Again, the pressure comes on for you to trim down your specifications because you don't want to lose the contract. "He who has the gold makes the rules"? Well, that may be the way that things happen sometimes, but if you are going to maintain your own standards of professional integrity, you must beware of that particular "golden rule"". "All that is gold does not glitter." Money is not everything. Jesus put it in Mark 8:36, "What good is it for a man to gain the whole world, yet forfeit his soul?" The Christian engineer,

following the Master Engineer (God), needs to do what is right and proper and not 'covet that contract' by cutting back on material quality or trimming the specifications to lower the quote for a contract. A Christian engineer will do the right thing because of who they are and what they believe. The Bible points us to Proverbs 21:3: "To do what is right and just is more acceptable to the Lord ... ", and to Micah 6:8: "He has showed you, 0 Man, what is good, And what does the Lord require of you? To act justly and to love mercy and to walk humbly with your God". Modifying the words of Richard T. Hughes [9]: a Christian engineer functions as an engineer who is also a Christian, and as a Christian who is also an engineer. As a Christian, when we give ourselves wholly to God, and in our work follow His directions, He makes Himself responsible for its accomplishment. He would not have us conjecture as to the success of our honest endeavors. Not once should we even think of failure. We are to co-operate with One who knows no failure

Conclusion

The Christian engineer who has the love for the Creator God and kept the Ten Commandments will certainly going beyond the codes of ethics in their service to man and the earth. They will provide value-based service to the society and the environment .and the Christian engineer will have the following characteristics such as faithfulness, diligence, integrity, compassion, respect and acceptance. The Christian engineer should consider the following roles:

1. Steward for the environment

2. The protector of human life

3. Doing what is right and proper in the sight of the Lord

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Section B

2. In reference to Dr. J.T Dyaji “Godly leadership is governance with eternity in view” Test material extensively discuss the following in your group question.

I. What is leadership?

II. How can i be an outstanding leader?

III. Explain leadership styles.

Iv. What are the necessary factors needed for one to make impacts in governance?

b. Leadership is manifesting faith and action.

Answers

What is leadership?

Leadership is the ability of an individual or a group of individuals to influence and guide followers or other members of an organization. In view of Dr J T Dyaji "Godly leadership is governance with eternity it can be seen that so many theologians and psychologist have presented different definitions of leadership but none has been quite exhaustive they seem to complement one another because the term touches on all aspects od the development of the human personality from the professional print of view , A definition of leadership can be seen as the ability to influence others to do what a leader wants regardless if the consequences from this perspective leadership is strictly a matter of influence.

How can i be an outstanding leader?

Biblically, leadership is an art, act and a God given gift through the Holy spirit for dispensing our roles as service to God and humanity through the relational principle. Therefore for one to be a good leader one has to work in accordance with God’s word(the bible) and the direction of the holy spirit, Also one must be able to mediate and reflect righteousness , justice , equity, fairness, peace and freedom (Rom 12vs 6, 8).

Leadership styles

A leadership style refers to a leader's characteristic behaviors when directing, motivating, guiding, and managing groups of people. Great leaders can inspire political movements and social change. They can

also motivate others to perform, create, and innovate, which can be seen biblically in the types of leaders listed below;

- A psuchikos leader(1cor 2:14)

This is a natural or unspiritual type of leader who is un-regenerated or does not have a personal relationship with God in Christ. This kind of leader is controlled by natural instincts (2 pet2:12) opposes God and his truth and can be manipulative and exploitative.

- A sarkikos leader (1cor 3:13)

This kind of leader comes from the kind of sarkikos people who are carnal and worldly in their walk and works such people governs through the spirit of the flesh. Consequently, this kind of leader is not an overcome because he creates avenues for the devil to influence the lives of his subordinates while he still claims to be part of God's people (1cor 10:21)

- A Pneumatikos leader(1cor 2:5:3-1)

This kind of leader is know as a godly leader whose heart has become degenerated, transformed, circumcised and controlled by the holy spirit through faith and union with Jesus Christ as their lord and savior. This leader delegates responsibilities by the direction if the holy spirit living within him . He dispenses justice, righteousness and love as his virtues of governance.

<u>Necessary factors needed for one to make impacts in governance</u>

For one to make an impact in governance some necessary factors should be considered which includes;

- participation

People are free independent to use the media responsively to be able to voice their own opinions through legitimate immediate organization or representatives

- Transparency Information should be accessible to the public and should be understandable and monitored

- Responsiveness

Institutions and processes should serve app stakeholders by blending power and service.

- Effectiveness and Efficiency

Processes and institutions should be able to produce results rhat meet needs of their community , county , state while making the best of their resources.

- . Rule of law

Legal frame work should be enforced impartially especially on human right laws and limiting the distribution effect of money in politics.

- Accountability

Governmental institutions, private sectors and civil society organization should be held accountable to the public and institutional stakeholders.

- Equity and inclusiveness

People should have opportunity to improve or take responsibility to maintain their well-being.

- Consensus oriented

Mediates differing interests to meet the broad consensus on the best interests of a community or nation at large.

Conclusion

As seen in the explained terms on what is leadership, being an outstanding leader, leadership styles and the factors to make impacts in governance...

Leadership entails both faith and action in carrying out his duty as a leader in the society.

Faith anchors leadership in deeply held belief about the word, people and the purpose of work.

When we place our faith in the lord we will be empowered to serve not through our own strength but from the strength of God. When we live in a relationship with God, God acts through us and we can trust that God will provide the ability to put our faith into action.