Why do we perform the tests we do??

Test	Reason
pH	FBS must be part of a physiological environment supporting cell viability. This pH range also helps confirm the serum has not been altered.
Osmolality	Reflects electrolyte/solute concentration and ensures material not diluted
Total Protein	Characteristic of bovine animal age. FBS has the lowest protein concentration
Endotoxin	Indicates gram negative bacterial contamination and thereby relative contamination by other bacteria prior to filtration. Endotoxin is not removed by filtration. Low endotoxin concentration indicates care in collection and processing of fetal bovine blood to FBS. It also indicates care of raw serum prior to filtration and filling. Endotoxin can affect cell growth characteristics
Hemoglobin (Hgb)	Lower Hgb indicates care taken during collection and processing. Higher Hgb may indicate extended time before serum separated from cells or lysis due to freeze/thaw prior to processing. Higher Hgb indicates red and white blood cell. White blood cell lysis may result in virus release.
Electrophoretic Pattern	Characteristic of bovine animal age. FBS has a very low gamma globulin fraction.
Performance Testing	Indicates relative performance to a control lot of FBS. Demonstrates FBS functionality. Customer use of FBS will be unique so a standard performance test is not specified.
Bacteria and Fungi/Sterility	Provide assurance that bacteria and fungi has been removed during manufacturing to provide a product suitable for cell culture applications. If 0.1 um pore size filters have integrity they will remove bacteria and fungi.
Mycoplasma	Common contaminant of wet environments. May cause cell culture contamination that is difficult to diagnose. Capable of passing through 0.2 um pore size filters.
Virus Testing - Cytopathic Agents	General virus test. Indicative of IBR like viruses.
Virus Testing - Hemadsorbing Agents	General virus test. Indicative of virus contamination by PI3 like viruses.
Virus Testing - Bovine Virus Diarrhea	Viruses are generally not removed by filtration. BVD is ubiquitous and a common adventitious agent in FBS. Gamma irradiation provides good log reduction while maintaining FBS functionality.
Immunoglobulin	A high level of Immunoglobulin is an identifying marker of NBCS
Gamma Glutamyl Transferase (GGT)	A high level of GGT is an identifying marker of NBCS