Let $K$ be a compact Lie group acting on a finite dimensional Hermitian vector space $V$ via some unitary representation. Then $K$ acts by automorphisms on the associated Heisenberg group $H_V = V \times \mathbb{R}$ and we say that $(K, H_V)$ is a Gelfand pair when the algebra $L^1_K(H_V)$ of integrable $K$-invariant functions on $H_V$ commutes under convolution. In this situation an application of the Orbit Method yields an injective mapping $\Psi$ from the space $\Delta(K, H_V)$ of bounded $K$-spherical functions on $H_V$ to the space $\mathfrak{h}_V^* \backslash \mathfrak{h}_V$ of $K$-orbits in the dual of the Lie algebra of $H_V$. We show that $\Psi$ is a homeomorphism onto its image provided that the action of $K$ on $V$ is “well-behaved” in a sense made precise in this work. Our result encompasses a widely studied class of examples arising in connection with Hermitian symmetric spaces. (Received September 15, 2010)